

Daniel Steven Moen

Curriculum Vitae
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Dept. Integrative Biology
Oklahoma State University
501 Life Sciences West
Stillwater, OK 74078, USA

Tel: (+1) 405-744-6815
Email: daniel.moen@okstate.edu
Website: moenlab.okstate.edu

EDUCATION

Ph. D. in Ecology & Evolution, 18 August 2012
Stony Brook University, Stony Brook, NY
Major advisor: John J. Wiens

B. A. in Zoology, With Honor, 16 May 2003
North Dakota State University, Fargo, ND
Research advisor: Craig A. Stockwell

ACADEMIC POSITIONS

2015–present: Assistant Professor, Dept. Integrative Biology, Oklahoma State University

2014–2015: Darwin Post-doctoral Fellow, Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts at Amherst

2012–2014: Post-doctoral researcher, Center for Applied Mathematics, École Polytechnique, and Institut de Biologie, École Normale Supérieure (France)

PUBLICATIONS

2017 **Moen, D. S.**, and J. J. Wiens. 2017. Microhabitat and climatic niche change explain patterns of diversification among frog families. *American Naturalist* 190:29–44.

Bars-Closel, M., T. Kohlsdorf, **D. S. Moen**, and J. J. Wiens. 2017. Diversification rates are more strongly related to microhabitat than climate in squamate reptiles (lizards and snakes). *Evolution* 71:2243–2261.

2016 **Moen, D. S.**, H. Morlon, and J. J. Wiens. Testing convergence versus history: convergence dominates phenotypic evolution for over 150 million years in frogs. *Systematic Biology* 65:146–160.

- Yguel, B., H. Jactel, I. S. Pearse, **D. S. Moen**, M. Winter, J. Hortal, M. R. Helmus, I. Kühn, S. Pavoine, O. Purschke, E. Weiher, C. Violle, W. Ozinga, M. Brändle, I. Bartish, and A. Prinzing. 2016. The evolutionary legacy of diversification predicts ecosystem function. *American Naturalist* 188:388–410.
- 2014 **Moen, D. S.**, and H. Morlon. 2014. Why does diversification slow down? *Trends in Ecology and Evolution* 29:190–197.
- Moen, D. S.**, and H. Morlon. 2014. From dinosaurs to modern bird diversity: Extending the time-scale of adaptive radiation. *PLoS Biology*. 12:e1001854. (Invited commentary).
- 2013 **Moen, D. S.**, D. J. Irschick, and J. J. Wiens. 2013. Evolutionary conservatism and convergence both lead to striking similarity in ecology, morphology, and performance across continents in frogs. *Proceedings of the Royal Society of London B* 280:20132156.
- 2011 Wiens, J. J., R. A. Pyron, and **D. S. Moen**. 2011. Phylogenetic origins of local-scale diversity patterns and the causes of Amazonian megadiversity. *Ecology Letters* 14:643–652.
**Editor's Choice in *Science* (May 2011)
**Featured on msnbc.com, TODAY.com, Yahoo News, LiveScience, ScienceDaily, Top Science News, EarthSky, OurAmazingPlanet, and many other news websites
- 2010 Wiens, J. J., C. A. Kuczynski, X. Hua, and **D. S. Moen**. 2010. An expanded phylogeny of treefrogs (Hylidae) based on nuclear and mitochondrial sequence data. *Molecular Phylogenetics and Evolution* 55:871–882.
- 2009 **Moen, D. S.**, S. A. Smith, and J. J. Wiens. 2009. Community assembly through evolutionary diversification and dispersal in Middle American treefrogs. *Evolution* 63:3228–3247.
- Moen, D. S.**, and J. J. Wiens. 2009. Phylogenetic evidence for competitively driven divergence: body-size evolution in Caribbean treefrogs (Hylidae: *Osteopilus*). *Evolution* 63:195–214.
- 2008 Wiens, J. J., and **D. S. Moen**. 2008. Missing data and the accuracy of Bayesian phylogenetics. *Journal of Systematics and Evolution* 46:307–314.
**Outstanding Paper Award from journal (of papers published from 2008–2013)
- 2006 **Moen, D. S.** 2006. Cope's rule in cryptodiran turtles: do the body sizes of extant species reflect a trend of phyletic size increase? *Journal of Evolutionary Biology* 19:1210–1221.

Wiens, J. J., C. H. Graham, **D. S. Moen**, S. A. Smith, and T. W. Reeder. 2006. Evolutionary and ecological causes of the latitudinal diversity gradient in hylid frogs: treefrog trees unearth the roots of high tropical diversity. *American Naturalist* 168:579–596.

***Featured in "Science News", "EurekAlert!", and "ScienceDaily" Oct.-Nov., 2006

***Recommended article in Ecology, Faculty of 1000, November 9, 2006

Moen, D. S. and C. A. Stockwell. 2006. Specificity of the monogenean *Gyrodactylus tularosae*, Kritsky and Stockwell, 2005, to its natural host, the White Sands pupfish (*Cyprinodon tularosa*, Miller and Echelle 1975). *Comparative Parasitology* 73:278–281.

2005 **Moen, D. S.**, C. T. Winne, and R. N. Reed. 2005. Habitat-mediated shifts and plasticity in the evaporative water loss rates of two congeneric pitvipers (Squamata, Viperidae, *Agkistrodon*). *Evolutionary Ecology Research* 7:759–766.

GRANTS AND FELLOWSHIPS

2017 National Science Foundation: "Collaborative Research: Understanding large-scale patterns of ecomorph evolution" (lead PI, with John J. Wiens; DEB-1655812 and DEB-1655690)

2014 Darwin Postdoctoral Fellowship, Organismal and Evolutionary Biology, Univ. Massachusetts at Amherst (fellowship and research funding)

2013 Investissement d'Avenir grant, ANR (Co-PI, French national research funding agency; CEBA: ANR-10-LABX-0025)

2011 National Science Foundation: "Dissertation Research: The role of history in adaptation to novel environments: the relationship between morphology, performance, and phylogenetic history in frogs" (co-PI, DEB-1110704)

2011 Smithsonian Predoctoral Fellowship, Smithsonian Institution

2010 Fulbright Student Grant to Colombia

2010 Lewis and Clark Fund, American Philosophical Society

2010 Tinker Field Research Grant

D. S. Moen – CV

- 2009 National Science Foundation East Asia and Pacific Summer Institutes (EAPSI) Fellow: "EAPSI: How does evolutionary history influence adaptation to a new environment? A study of the relationship between habitat, performance, morphology, and phylogeny in Chinese frogs" (PI, OISE-0914012)
- 2005 National Science Foundation: Graduate Research Fellowship (3 years)
- 2004 Graduate Council Fellowship, Stony Brook University (3 years)
- 2002 Barry M. Goldwater Scholar

HONORS AND AWARDS

- 2012 Third runner-up, Herpetologists' League Graduate Research Award
- 2012 King / Miller Travel Scholarship, Stony Brook University
- 2012 Graduate Student Excellence Award, Dept. Ecology & Evolution, Stony Brook University
- 2010 Best Teaching Assistant of the Year, Dept. Ecology & Evolution, Stony Brook University
- 2009 Student award to attend the Species Tree Workshop, University of Michigan
- 2008 Finalist, Ernst Mayr Award competition, best student paper award of the Society of Systematic Biologists
- 2008 Cedar Brook Award (Dept. Ecology and Evolution, Stony Brook Univ.; best talk at the departmental retreat)
- 2005 Seibert Award in Evolution/Systematics (Society for the Study of Amphibians and Reptiles; best student oral presentation in evolution/systematics at Annual Meeting of Ichthyologists and Herpetologists)

TEACHING EXPERIENCE

Oklahoma State University, Stillwater, OK, USA

Instructor, BIOL 4133: Evolution (Fall 2016, Spring & Fall 2017, Fall 2018; 3-credit senior-level undergraduate course; typical enrollment 65 students)

Instructor, BIOL 4184/5184: Herpetology (Fall 2015, Spring 2018; 3-credit graduate/upper-level undergraduate course with lab; typical enrollment 20 students)

University of Massachusetts, Amherst, MA, USA

Instructor, Writing in Biology (Spring 2015, 3-credit undergraduate course; 30 students)

Instructor, Graduate Student Seminar Series (Spring 2015, 1-credit graduate course; 10 students)

Instructor, Discussion in Ecology and Evolutionary Biology (Fall 2014, 1-credit graduate course; 7 students)

Instituto de Biología, Universidad Nacional Autónoma de México, Mexico City, Mexico

Instructor, "A workshop on the relationship between trait evolution and species diversification, with a focus on the R package *diversitree*" (3-day computer-based workshop; 25 participants)

La Universidad de Los Andes, Bogotá, Colombia

Co-Instructor, Historical Approaches in Biodiversity Studies (Spring 2011, 3-credit graduate course on phylogenetic comparative analysis, which I developed from scratch and co-taught with Dr. Andrew Crawford; 18 students)

Stony Brook University, Stony Brook, NY, USA

Co-Instructor, How Science Works (Fall 2009; 3-credit course for non-science majors; 50 students)

Teaching Assistant, Biometry (Spring 2009; graduate course; **Best Teaching Assistant of the Year departmental award**)

Student writing tutor, NSF Alliances for Graduate Education and the Professoriate (2006–2010; lead instructor: 2008–2010)

Teaching Assistant, Herpetology (Spring 2006)

Lab Instructor, Foundations of biology: organisms to ecosystems (Fall 2004)

INVITED RESEARCH PRESENTATIONS

2018 Evolutionary origins of phenotypic and species diversity in frogs. Dept. Anatomy, Oklahoma State University-Health Sciences Center.

2017 Evolutionary origins of phenotypic and species diversity in frogs. Dept. Physiological Sciences, Oklahoma State University.

2016 The evolution of ecology and morphology in frogs: the roles of convergence and evolutionary history. Dept. of Ecology and Evolutionary Biology, University of Arizona.

2016 Using biomechanics and phylogenetic comparative methods to understand phenotypic evolution. University of Kansas Biodiversity Institute and Natural History Museum, Herpetology Lunch brown-bag seminar.

- 2016 The diversification of ecology and morphology in frogs: the roles of history and convergent evolution. Oklahoma State University, Dept. Plant Biology, Ecology, and Evolutionary Biology.
- 2015 Why are communities of frogs so similar around the world? Dept. Biological Science, University of Tulsa.
- 2014 The evolutionary origins of phenotypic diversity in frog assemblages. Dept. Zoology, Oklahoma State University.
- 2014 Diversification and dispersal both contribute to species similarity across continents in frogs. Séminaire d'Ecologie, Systématique et Evolution, Orsay, France.
- 2014 Diversification and dispersal both contribute to species similarity across continents in frogs. Séminaire Evolution et Diversité Biologique, Toulouse, France.
- 2014 The evolutionary origins of phenotypic diversity in frog assemblages. Graduate Program in Organismic and Evolutionary Biology, University of Massachusetts at Amherst
- 2014 The evolutionary origins of phenotypic diversity in frog assemblages. Graduate Program in Ecology, Evolutionary Biology, and Behavior, Michigan State University
- 2013 Why does diversification slow down? Séminaire d'Origine, Structure, et Evolution de la Biodiversité, Muséum Nationale d'Histoire Naturelle, Paris, France.
- 2013 Evolutionary conservatism and convergence both lead to striking similarity in ecology, morphology, and performance in assemblages across continents in frogs. Oxford Brookes University, Oxford, United Kingdom.
- 2013 The origins of diversity in frog assemblages: phylogeny, morphology, performance, and dispersal. Estación Biológica de Doñana, CSIC, Sevilla, Spain.
- 2012 The origins of diversity in frog assemblages: phylogeny, morphology, performance, and dispersal. Chaire Modélisation Mathématique et Biodiversité, Muséum National d'Histoire Naturelle, Paris, France.
- 2012 The evolution of phenotypic diversity in clades and communities of frogs. California Academy of Sciences, San Francisco, CA.
- 2011 The role of history in adaptation to novel environments: the relationship between morphology, performance, and phylogenetic history in frogs. Tropical Ecology Research Facility, University of Sydney, Northern Territory, Australia.

- 2010 The evolution of phenotypic diversity in clades and communities of frogs. Universidad de Los Andes, Bogotá, Colombia.
- 2009 The evolution of phenotypic diversity in clades and communities of frogs. Fudan University, Shanghai, China.
- 2009 The evolution of phenotypic diversity in clades and communities of frogs. Kunming Institute of Zoology, Kunming, Yunnan, China.

CONTRIBUTED RESEARCH PRESENTATIONS (= undergrad.)**

- 2017 **Moen D. S.** Many-to-one mapping and trade-offs in the evolution of frog ecomorphology and performance. Evolution annual meetings (oral). Portland, OR.
- 2017 **Moen D. S.**, and D. K. Hanson**. Functional redundancy permits morphological differences between frog ecomorphs without reducing performance. Society for Integrative and Comparative Biology Annual Meeting (oral). New Orleans, LA.
- 2015 **Moen, D. S.**, H. Morlon, and John J. Wiens. Testing convergence versus history: convergence dominates phenotypic evolution for over 150 million years in frogs. Society for the Study of Amphibians and Reptiles (oral). Lawrence, Kansas, U.S.A.
- 2012 **Moen, D. S.**, Duncan J. Irschick, and John J. Wiens. The origins of diversity in frog assemblages: phylogeny, morphology, performance, and dispersal. World Congress of Herpetology (oral). Vancouver, Canada. *****Third runner-up, Herpetologists' League Graduate Research Award**
- 2012 **Moen, D. S.**, Duncan J. Irschick, and John J. Wiens. Evolution of phenotypic diversity in assemblages of frogs from three continents. Evolution annual meetings (oral). Ottawa, Canada.
- 2008 **Moen, D. S.**, and J. J. Wiens. Phylogenetic evidence for competitively driven divergence: body-size evolution in Caribbean treefrogs (Hylidae: *Osteopilus*). Evolution annual meetings (oral). Minneapolis, MN. *****Finalist for Ernst Mayr award (best student paper, Society of Systematic Biologists).**
- 2008 **Moen, D. S.**, S. A. Smith, and J. J. Wiens. Community assembly through evolutionary diversification and dispersal in Middle American treefrogs. Annual Joint Meeting of Ichthyologists and Herpetologists (oral). Montreal, Quebec.
- 2005 **Moen, D. S.** Cope's rule in cryptodiran turtles: do extant species reflect a trend of phyletic size increase? Annual Joint Meeting of Ichthyologists and Herpetologists (oral). Tampa, FL. *****Winner of the Seibert Award for best student paper in evolution and systematics (Soc. Study of Amphibians and Reptiles)**

- 2004 **Moen, D. S.**, C. T. Winne, and R. N. Reed. Evaporative water loss and humidity acclimation in two congeneric pitvipers (*Agkistrodon*). Annual Joint Meeting of Ichthyologists and Herpetologists (oral). Norman, OK.
- 2002 **Moen, D. S.**, and C. A. Stockwell. A test for local adaptation of a fish fluke parasite (*Gyrodactylus sp.*) to its host the White Sands pupfish (*Cyprinodon tularosa*). Annual meeting of The Wildlife Society (poster). Bismarck, ND.
- 2002 **Moen, D. S.**, C. T. Winne, and R. N. Reed. Ecology or taxonomic position? Evaporative water loss in the copperhead (*Agkistrodon contortrix*) and the cottonmouth (*A. piscivorus*). Savannah River Ecology Lab undergraduate symposium (oral). Aiken, SC.

RESEARCH MENTORSHIP

Post-doctoral researchers

S. P. Vijayakumar (10/2017–9/2018)

Graduate students

Jack Spicer (M. S.; 08/2018–present)

Alison Hanna (M. S.; 08/2016–present)

Elizabeth Mendoza (M. S.; 01/2016–07/2018)

Undergraduate students

Halee Brew (2017–2018; HHMI Life Sciences Freshman Research Scholar)

Loretta Lacy (2017–2018; HHMI Life Sciences Freshman Research Scholar)

Mardi Wisdom (2018–present; research volunteer)

Baylee Rae (2017–present; independent study)

Antonio Loper (2017–present; undergraduate honors thesis)

Colton Farmer (2017–2018; independent study)

Krista Thomas (2017–2018; research volunteer)

Madison Stevens (2017–present; REU fellow and independent study)

Joseph Tucker (Fall 2017; research volunteer)

Kelsey Speer (all of 2017; undergraduate honors thesis)

Ulysses de la Rosa (2016–2017; research volunteer and independent study)

Dalton Hanson (2015–2017; independent study, lab technician)

Melissa Koehler (2016; NSF URM research scholar)

Kate Adams (2015–2016; HHMI Life Sciences Freshman Research Scholar)

Roy Cruz (2016; independent study)

Chris Williams (2016; independent study)

Marianne Caron (2015–2016; research volunteer, lab technician)
Elissa Brouwer (2015; HHMI Life Sciences Freshman Research Scholar)
Michelle Tran (2015; independent study)
Yuliya Kulyomina (01/2015–present; independent study at Umass Amherst)
Meaghan Wheeler (12/2014–04/2015; independent study at Umass Amherst)
Lauren Malave (09/2009–05/2010; honors thesis at Stony Brook Univ.)

PROFESSIONAL AFFILIATIONS

American Society of Naturalists (2012–present)
Society for the Study of Reptiles and Amphibians (2002–present)
Society for the Study of Evolution (2003–present)
Society for Integrative and Comparative Biology (2016–present)
Society for Systematic Biologists (2004–present)

PROFESSIONAL SERVICE

Professional reviews

American Naturalist, Axios Reviews, Biology Letters, Caldasia, Ecography, Ecology Letters, Evolution, Evolutionary Ecology, Functional Ecology, Global Ecology and Biogeography, Journal of Biogeography, Journal of Evolutionary Biology, Journal of Herpetology, Journal of Morphology, Methods in Ecology and Evolution, Molecular Phylogenetics and Evolution, Nature Ecology and Evolution, Oecologia, Proceedings of the National Academy of Sciences of the United States, Proceedings of the Royal Society of London B., Systematic Biology

Editorial service

Board of Reviewing Editors, *Journal of Evolutionary Biology* (2017–present)

Proposal reviews

NSF DEB Evolutionary Ecology (2016)

Service to Oklahoma State University

Judged posters at the Spring 2017 Graduate College research symposium
Judged research talks at the Spring 2016 OSU Graduate Research Symposium
OSU Interdepartmental workshop: Transitioning from student to faculty (panel member; 2016)

Service to OSU Dept. Integrative Biology

Seminar committee (07/2015–present; Chair 06/2017–present)
Technology committee (05/2017–present)
Asst. Professor search committee (Fall 2017)

Reviewer of scientific content

Educational film EVO: Ten Questions Everyone Should Ask about Evolution, by John Feldman (Hummingbird Films; <http://www.hummingbirdfilms.com/evo.html>)

Outreach talks

Red River Zoo (Fargo, ND; 2001–2002); 1st grade classroom of Veronica Moen (Grand Forks, ND; 2001–2004); pre-school classroom of Michelle Voller (Bismarck, ND; 2010); Oklahoma State University Science Café: "Why and how evolution repeats itself: studies of frogs and toads" (Stillwater, OK; 15 November 2016); OSU Student Chapter of the Wildlife Society: "Recognizing and handling venomous snakes in the wild" (Stillwater, OK; 2 October 2018)

LANGUAGES

Computing: advanced **R**, intermediate MatLab, beginner *bash*

English: mother tongue

French: fluent speaking, reading, and writing (self-taught)

German: intermediate speaking, reading, and writing (high school and university courses)

Italian: beginner in speaking and writing; intermediate understanding and reading (self-taught)

Mandarin Chinese: beginner in speaking, reading, and writing (self-taught)

Spanish: fluent speaking, reading, and writing (self-taught)

RESEARCH SKILLS

Fieldwork experience and skills

U.S.A.: 13 months in 14 states (AZ, CA, GA, MD, MN, MT, NC, ND, NM, NY, OK, SC, TX, VA)

International: 13 months in 8 countries (Australia, Cameroon, China, Colombia, Ecuador, France [French Guiana], Madagascar, Mexico). Upcoming work in Spain (fall 2018).

Techniques: aquatic sampling (seines, minnow traps, dip nets); terrestrial sampling (foot and road surveys, call tracking, drift fences, venomous snake handling); euthanization of fishes, amphibians, and reptiles; formalin/alcohol preservation

Labwork with live organisms: quantification of jumping and swimming performance using high-speed video and force plates; measurement of evaporative water loss; live maintenance

Data analysis: experimental design, standard biostatistics, maximum likelihood and Bayesian modeling, phylogeny estimation, phylogenetic comparative methods (e.g. diversification rate estimation, rate of character evolution, biogeographic inference), multivariate statistics, geometric morphometrics of landmark data.