

ARYEH HERSHEL MILLER

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RESEARCH AND ACADEMIC APPOINTMENTS

Research Fellow, Smithsonian Institution, National Museum of Natural History | August 2018 – August 2020

Curatorial Assistant, Zoology Collection, University of North Carolina Asheville | August 2017 – May 2019

EDUCATION

Ph.D., Evolution, Ecology and Population Biology (in progress) | Washington University in St. Louis
(Advisor: Jonathan B. Losos)

B.S., Biology, 2020 | University of North Carolina at Asheville (Honors College)
(Advisor: R. Graham Reynolds)

SELECT FUNDING AWARDS (\$21,300 USD)

Society for Systematic Biology Workshop Grant (\$500) | January 2020

UNC Asheville Honors Program Great Ideas Grant (\$200) | October 2019

Iguana Specialist Group Travel Award (\$750) | July 2019

Smithsonian Institution Global Genome Initiative Award, Principal Investigator (\$15,000, with R. Graham Reynolds and Kevin de Queiroz) | August 2018

UNC Asheville Undergraduate Travel Grant (\$1,900) | May 2018, July 2018, September 2019, January 2020

UNC Asheville Undergraduate Research Summer Grant (\$2,950) | May 2017, May 2019

AWARDS, SCHOLARSHIPS, AND FELLOWSHIPS

National Science Foundation Graduate Research Fellowship Program Honorable Mention | 2020, 2021

Research Fellow, Smithsonian Institution, National Museum of Natural History | 2018 - 2020

University Research Scholar, UNC Asheville | 2020

Distinction in Biology, UNC Asheville | 2020

Bernhardt-Perry Award for Undergraduate Research, UNC Asheville | 2020

Thomas W. Fisher Conservation & Environmental Studies Scholar | May 2016

The International Herpetological Symposium Junior Herpetologist Award | May 2015

Lazarus Leadership Fellow | January 2015

PEER-REVIEWED PUBLICATIONS

IN REVIEW/ IN REVISION:

14. Stroud, J.T., Swiston, S., **Miller, A.H.** Climatic constraints and the latitudinal diversity gradient: Why are arboreal lizards a tropical phenomenon? *In revision*

PUBLISHED:

14. **Miller, A.H.**, Stroud, J.T., and Losos, J.B. The ecology and evolution of key innovations. (2022). *Trends in Ecology and Evolution*. *In press*
13. Reynolds, R. G., **Miller, A. H.**, Pasachnik, S. A., Knapp, C. R., Welch, M. E., Colosimo, G., ... & Iverson, J. B. (2022). Phylogenomics and Historical Biogeography of West Indian Rock Iguanas (genus *Cyclura*). *Molecular Phylogenetics and Evolution*, 107548.
12. Vanerelli, A. A., **Miller, A. H.**, Comsa, L. C., Geneva, A. J., & Reynolds, R. G. (2022). Mitochondrial genome of the critically Endangered silver boa (*Chilabothrus argentum*; Squamata: Boidae). *Mitochondrial DNA Part B*, 7(6), 1180-1182.
11. **Miller, A.H.**, & Stroud, J.T. Novel Tests of the Key Innovation Hypothesis: Adhesive toepads in arboreal lizards. (2021). *Systematic Biology*, 71(1), 139-152.
- ScienceDaily, Phys.org, Newswise, ScienceNewsNet, Futurity, SverigeRadio (Swedish), St. Louis Public Radio
10. **Miller, A.H.**, G.R. Zug, G.O.U. Wogan, J.L. Lee, and D.G. Mulcahy. Phylogeny, Diversity, and Distribution of *Micryletta* (Anura: Microhylidae) in Myanmar. (2021). *Ichthyology & Herpetology*, 109(1): 245-257.
9. Reynolds, R.G., **A.H. Miller**, A. Ríos-Franceschi, C. Huffine, J. Fredette, N.F. Angeli, S.I. Vega-Castillo, L.J. Revell, and A.R. Puente-Rolón. (2021). Molecular phylogeny of Puerto Rico Bank dwarf geckos (Squamata: Sphaerodactylidae: *Sphaerodactylus*) with redescription of *S. macrolepis*. **bioRxiv** [preprint]. <https://doi.org/10.1101/2021.03.23.436310>
8. **Miller, A.H.**, H.R. Davis, Q. Do, M. Anh, C.T. Pham, T. Ziegler, J. L. Lee, K. de Queiroz, R.G. Reynolds, T.Q. Nguyen. (2020). Discovery of a New Species of Enigmatic Odd-Scaled Snake (Serpentes: Xenodermidae: *Achalinus*) from Ha Giang Province, Vietnam. *Copeia*, 108: 796-808.
- CNN, Smithsonian Magazine, AJC, Daily Mail, National Geographic
7. Freitas, E. S., **Miller, A. H.**, Reynolds, R. G., & Siler, C. D. (2020). A taxonomic conundrum: Characterizing a cryptic radiation of Asian gracile skinks (Squamata: Scincidae: *Riopa*) in Myanmar. *Molecular Phylogenetics and Evolution*, 146: 106754.
6. Lee, J. L., **Miller, A.H.**, Zug, G.R., & Mulcahy, D.G. (2019). The discovery of Rock Geckos *Cnemaspis* Strauch 1887 (Squamata, Gekkonidae) in the Tanintharyi Region, Myanmar with the description of two new species. *Zootaxa*, 4661(1), 40-64.
5. **Miller, A.H.**, Jackson, A., van den Burg, T., Knapp, C.R., Welch, M.E., and Reynolds, R.G. (2019). The complete mitochondrial genome of the critically endangered Lesser Antillean iguana (*Iguana delicatissima*; Squamata: Iguanidae). *Mitochondrial DNA Part B*, 4:2, 2479:2481.
4. Mulcahy, D.G., Lee, J.L., **Miller, A.H.**, Chand, M., Thura, M.K., & Zug, G.R. (2018). Filling the BINs of life: An amphibian and reptile inventory survey of the Tanintharyi (Tenasserim) Region of Myanmar, with DNA barcode data. *Zookeys*, (757), 85-152.

3. Lee, J. L., Vogel, G., **Miller, A. H.**, & Zug, G. R. (2018). Rediscovery of *Xenochrophis bellulus* (Stoliczka, 1871) from Myanmar (Serpentes: Natricinae) with comments on its taxonomic status. *Proceedings of the Biological Society of Washington*, 131(1), 19–35.
2. Mulcahy D.G., Lee J.L., **Miller A.H.**, & Zug G.R. (2017). Troublesome Trimes: Potential cryptic speciation of the *Trimeresurus (Popeia) popieorum* complex (Serpentes: Crotalidae) around the Isthmus of Kra (Myanmar and Thailand). *Zootaxa*, 4347: 301–315.
1. **Miller, A.H.**, & Zug, G.R. (2016). Morphology and biology of the Asian Common Mockviper, *Psammodynastes pulverulentus* (Boie, 1827) (Serpentes: Lamprophiidae): a focus on Burmese populations. *Proceedings of the Biological Society of Washington*, 129(1), 173–194.

NATURAL HISTORY NOTES AND CONSERVATION ASSESSMENTS:

4. **Miller, A.H.**, H.N. Ngo, H. Quoc, P.Q. Tien, H.R., Davis, and R.G., Reynolds. 2021. *Protobothrops mucrosquamatus* (Brown Spotted Pitviper). Egg-guarding. *Herpetological Review*, 52(1): 169.
3. Reynolds, R. G., **Miller, A.H.**, & Puente-Rolón, A.R. 2021. *Chilabothrus schwartzi*. *The IUCN Red List of Threatened Species*. <https://www.iucnredlist.org/species/162923732/162923901>
2. Lee, J. L., **Miller, A.H.**, Connette, G.M., Oo, K.S., Zug, G.R., & Mulcahy, D.G. (2018). First record of the Malaysian Bridle Snake *Dryocalamus subannulatus* (Dumeril, Bibron & Dumeril, 1854) in Myanmar (Reptilia, Serpentes, Colubridae). *Check List*, 14(2), 341–345.
1. **Miller, A.H.**, & Zug, G.R. (2016). An enigmatic *Lygosoma* (Reptilia: Squamata: Scincidae) from northern Myanmar. *Herpetological Review*, 47(3): 373–374.

CONFERENCE PRESENTATIONS

- Miller, A.H.**, & Stroud, J.T. (2021). Novel Tests of the Key Innovation Hypothesis: Adhesive toepads in arboreal lizards. *Virtual Evolution 2021* [**Oral Presentation**].
- Miller, A.H.**, & Reynolds, R.G. (2020). Phylogenomic Bayesian species delimitation in West Indian iguanas (*Cyclura*). *Society for Systematic Biology Standalone Meeting* [**Lighting Talk**].
- Miller, A.H.**, & Reynolds, R.G. (2019). Phylogenomic Bayesian species delimitation in West Indian iguanas (*Cyclura*). *IUCN Iguana Specialist Group Meeting, Roatán, Honduras* [**Oral Presentation**].
- Miller, A.H.**, & Reynolds, R.G. (2019). Phylogenomic Bayesian species delimitation in West Indian iguanas (*Cyclura*). *University of North Carolina Asheville Undergraduate Research Symposium* [**Oral Presentation**].
- Miller, A.H.**, & Reynolds, R.G. (2018). Mitogenomics of West Indian iguanas (*Cyclura*). *University of North Carolina Asheville Undergraduate Research Symposium* [**Oral Presentation**].
- Miller, A.H.**, & Reynolds, R.G. (2018). Elucidating cryptic diversity in Burmese Supple Skinks (*Lygosoma*). *Joint Meeting of Ichthyologists and Herpetologists, Rochester, NY* [**Poster**].
- Miller, A.H.**, & Reynolds, R.G. (2018). Elucidating cryptic diversity in Burmese Supple Skinks (*Lygosoma*). *3rd Annual North Carolina Congress of Herpetology, Asheville, NC* [**Poster**].
- Huffine, C.A., **Miller, A.H.**, & Reynolds, R.G. (2018). A new species of dwarf gecko (*Sphaerodactylus*) from the Virgin Islands. *3rd Annual North Carolina Congress of Herpetology, Asheville, NC* [**Poster**].

Miller, A.H., & Reynolds, R.G. (2018). Elucidating cryptic diversity in Burmese *Lygosoma* skinks via integrative taxonomy. *University of North Carolina Asheville Undergraduate Research Symposium* [Oral Presentation].

Miller, A.H., & Reynolds, R.G. (2017). A new species of Asian Scincidae from Kachin State, Myanmar. *University of North Carolina Asheville Undergraduate Research Symposium* [Poster].

FIELDWORK EXPERIENCE

Puerto Rico, August 2021. Performance, ecology, and thermal biology of *Anolis* lizards. With Kristin Winchell (Washington University).

Vietnam, May – July 2019. Amphibian and reptile surveys in karstic regions of northern Vietnam. With Truong Q. Nguyen (IEBR), Hayden R. Davis (University of Washington), and R. Graham Reynolds (UNCA).

Turks and Caicos Islands, January 2019. Worked with R. Graham Reynolds (UNCA) radio tracking Turks Island boas (*Chilabothrus chrysogaster*).

U.S. Virgin Islands, December 2018. Worked with R. Graham Reynolds (UNCA) and the NC Zoo capturing and processing endangered VI Boas (*Chilabothrus granti*).

Costa Rica, June – July 2014. Tropical herpetology course led by Thomas C. LaDuke at El Zota Biological Field Station.

United States, ongoing. General collecting and surveying in Maryland, Virginia, and North Carolina.

TEACHING EXPERIENCE

BIOL 3501 *Evolution* (Washington University in St. Louis)

OTHER RELEVANT EXPERIENCE

Experienced with phylogenetic analyses, statistical analyses, GIS, and figure design in R and RStudio®, Python, and Julia.

Experienced with laboratory genetics, including DNA extraction manual kits and the AutoGen® system, PCR, clean-up, gel electrophoresis, Sanger sequencing, and DNA quantitation with Qubit® 3.0.

Experienced with genetic data analysis, including Sanger and next-gen sequence data in programs such as Trimmomatic, FastQC, bwa, samtools, GATK, Geneious®, R, RevBayes, Python, Julia, MEGA, BEAST, BPP, BAMM, etc.

Experienced with scripting in shell and command prompt; learning to push intensive projects to off-site servers like Jetstream.

COMMUNITY OUTREACH AND MEMBERSHIPS

Mentor, Washington University Continued Mentoring Young Scientist Program | September 2022 – Present

Tutor/Mentor, Washington University Young Scientist Program | June 2021 – July 2021

Member, Society for the Study of Evolution | June 2021 – Present

Member, Society of Systematic Biologists | October 2020 – Present

Volunteer, Christine W. Avery Learning Center | January 2020 – March 2020

Member, The Order of Pisgah | March 2019 – Present

Volunteer, Pisgah View Learning Center | January 2019 – May 2019

President, University of North Carolina Asheville Biology Club | August 2018 – August 2019

Member, American Society of Ichthyologists and Herpetologists | March 2018 – Present

Member, North Carolina Herpetological Society | November 2016 – Present

Inventory Leader, National Geographic BioBlitz (Washington D.C.) | May 2016

Member, Virginia Herpetological Society | April 2013 – Present

Volunteer, Audubon Naturalist Society at Woodend (Chevy Chase, MD) | May 2012- July 2015

PROFESSIONAL SERVICE

Peer Reviewer: *Asian Herpetological Research*, *Biological Invasions*, *Caribbean Naturalist*, *Checklist*, *Comparative Biochemistry and Physiology – Part A*, *Ecology and Evolution*, *Functional Ecology*, *Herpetozoa*, *Journal of Herpetology*, *Israel Journal of Ecology and Evolution*, *PeerJ*, *Zoological Systematics*, *Zootaxa*,

Advisory Member: 2021-2025 IUCN Species Survival Commission Snake Specialist Group

REFERENCES

1. Dr. R. Graham Reynolds, Associate Professor
Department of Biology
University of North Carolina Asheville
greynold@unca.edu
828-232-5153 (office)
2. Dr. George R. Zug, Curator Emeritus
Division of Amphibians and Reptiles, Department of Vertebrate Zoology
National Museum of Natural History, Smithsonian Institution
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202-633-0738 (NHB office)
3. Dr. Daniel G. Mulcahy, Genomic Tissue and DNA Collections Manager
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