(August 2023)

# **Simon G. Scarpetta, PhD**

Assistant Professor of Environmental Science, University of San Francisco

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## **Research areas and interests**

Evolutionary biology, paleontology, phylogenomics, herpetology

## **Technical Skills**

Phylogenetics: MrBayes, BEAST, \*BEAST, RAxML, PAUP, ASTRAL, IQTREE

Mapping: QGIS

Computed-tomography data processing: Avizo, 3D Slicer, ImageJ

Programming and data analysis: R, Python, bash

## **Laboratory Skills**

DNA extraction, genomic library preparation, hybridization capture, PCR, gel electrophoresis

## **Education**

2015-2021 **The** **University of Texas at Austin**. PhD in Geosciences.

 Advisor: Dr. Christopher Bell

 Dissertation: Miocene modernization of the North American lizard fauna

2010-2014 **Stanford University**. B.S. Biology (Specialization in Ecology and Evolution)

 Advisor: Dr. Elizabeth Hadly

 Thesis: Phenotypic convergence obscures the biogeography of Anguillan *Ameiva*.

## **Academic Positions**

2023- **Assistant Professor** (Term), University of San Francisco

2021-2023 **Research Associate,** **FAVE Lab**, Department of Integrative Biology, UC Berkeley

2021-2023 **NSF** **Postdoctoral Research Fellow in Biology,** Museum of Vertebrate Zoology (McGuire Lab), UC Berkeley

## **Professional Experience**

2015-2021 **Graduate teaching assistant,** The University of Texas at Austin

2013-2015 **Senior conservation technician,** Stanford University Conservation Program

2011-2013 **Undergraduate research assistant**, Department of Biology, Stanford University. Metabolism of *Speyeria* butterflies; supervised by Dr. Carol Boggs

2010-2013 **High school and undergraduate research assistant**, Department of Biology, University of New Mexico. Morphology, ecology, and phylogenetics of *Anolis* lizards; supervised by Dr. Steven Poe

## **Fellowships and Academic Honors**

2021 **Jackson School of Geosciences Best Graduate Paper Award Winner**, The University of Texas at Austin

2021 **NSF** **Postdoctoral Research Fellowship in Biology**, Rules of Life Program, National Science Foundation ($138,000)

2019 **Graduate Student Paper Competition Award**, Texas Academy of Science

2019-2020 **Graduate Continuing Fellowship**, The University of Texas at Austin ($30,000)

2019 **Graduate School Summer Fellowship**, The University of Texas at Austin ($7,000)

2018 **Graduate School Summer Fellowship**, The University of Texas at Austin ($7,000)

2016-2017 **Whitney Endowed Presidential Scholarship**, University of Texas at Austin Graduate School ($3,500)

2014 **Departmental Honors (Biology)**, Stanford University

2010-2011 **Beleson Scholarship**, Stanford University

## **Research Grants**

2019 **Lundelius Award in Vertebrate Paleontology** ($876)

2018 **Lundelius Award in Vertebrate Paleontology** ($865)

2018 **Helen T. and Frederick M. Gaige Award,** American Society of Ichthyologists and Herpetologists ($500)

2018 **Graduate Student Competition Research Award**, Texas Academy of Science ($1500)

2017 **Lundelius Award in Vertebrate Paleontology** ($1,500)

2016 **Lundelius Award in Vertebrate Paleontology** ($1,500)

2016 **Summer off-campus research grant**, University of Texas at Austin ($1,000)

2016 **Research Grant and Diversity Award Recipient**, Geological Society of America ($2,490)

2013 **Undergraduate Advising and Research Grant**, Stanford University ($1,500)

## **Diversity, Equity, and Inclusion Grants**

2019 **Academic Enrichment Fund Award.** Written with Sarah Davis, Anna Weiss, and Erin Keenan-Early from UT Austin to bring diverse and underrepresented speakers to the UT Paleontology Seminar ($1000)

**Publications (published, in press, accepted).** \* indicates undergraduate mentee

18. Karin BR, Krone IW, Frederick JR, Amidy A, Laksono TW, Amini SS, Arida E, Arifin U, Bach BH, Bos C, Jennings C, Riyanto A, **Scarpetta SG**, Stubbs AL, McGuire JA. 2023. Elevational surveys of Sulawesi herpetofauna 1: Gunung Galang, Gunung Dako Nature Reserve. Accepted at *PeerJ*.

17. **Scarpetta SG**, Ledesma DT. 2022. A strikingly ornamented fossil alligator lizard (Squamata: *Abronia*) from the Miocene of California. *Zoological Journal of the Linnean Society*, XX, 1–16. <https://doi.org/10.1093/zoolinnean/zlac024>

16. **Scarpetta SG,** Ledesma DT, Bell CJ. 2021. A new extinct species of alligator lizard (Squamata: *Elgaria*) and an expanded perspective on the osteology and phylogeny of Gerrhonotinae. *BMC Ecology and Evolution*, 21(184), 1–58. <https://doi.org/10.1186/s12862-021-01912-8>

15. Ledesma DT, **Scarpetta SG**, Bell CJ. 2021. Variation in the skulls of *Elgaria* and *Gerrhonotus* (Anguidae, Gerrhonotinae) and implications for phylogenetics and fossil identification. *PeerJ* 9, e11602 <https://doi.org/10.7717/peerj.11602>

14. **Scarpetta SG**. 2021. Iguanian lizards from the Split Rock Formation, Wyoming: exploring the modernization of the North American lizard fauna. *Journal of Systematic Palaeontology* 19(3), 1–31. <https://doi.org/10.1080/14772019.2021.1894612>

13. **Scarpetta SG**, Ledesma DT, Llauger FO, White BA. 2020. Evolution of North American lizards. *eLS* 1(4), 705–717. <https://doi.org/10.1002/9780470015902.a0029078>. **Invited submission.** All authors contributed equally to this work.

12. **Scarpetta SG**. 2020. Effects of phylogenetic uncertainty on fossil identification illustrated by a new and enigmatic Eocene iguanian. *Scientific Reports* 10(1), 1–10. <https://doi.org/10.1038/s41598-020-72509-2>

11. **Scarpetta SG**. 2020. Combined-evidence analyses of ultraconserved elements and morphological data: an empirical example in iguanian lizards. *Biology Letters* 16(8), 20200356. <https://doi.org/10.1098/rsbl.2020.0356>

10. **Scarpetta** **SG**. 2020. Unusual lizard fossil from the Miocene of Nebraska and a minimum age for cnemidophorine teiids. *Royal Society Open Science* 7(8), 200317. <http://dx.doi.org/10.1098/rsos.200317>

9. **Scarpetta SG**, Bell CJ. 2020. Novel and bizarre abnormalities of the tooth row in side-blotched lizards (*Uta*) and rock lizards (*Petrosaurus*). *The Anatomical Record* 303, 2014–2025. <https://doi.org/10.1002/ar.24279>

8. **Scarpetta SG.** 2019.The first known fossil *Uma*: Ecological evolution and the origins of North American fringe-toed lizards. *BMC Evolutionary Biology* 19(178), 1–22. <https://doi.org/10.1186/s12862-019-1501-5>

7. **Scarpetta** **SG.** 2019. *Aneides hardii* (Sacramento Mountains Salamander). *Catalogue of American Amphibians and Reptiles* 921, 1–23.

6**. Scarpetta** **SG.** 2019. *Peltosaurus granulosus* (Squamata: Anguidae) from the middle Oligocene of Sharps Corner, South Dakota, and the youngest known chronostratigraphic occurrence of Glyptosaurinae. *Journal of Vertebrate Paleontology* 39(3), e1622129. <https://doi.org/10.1080/02724634.2019.1622129>

5. Ledesma DT\*, **Scarpetta S**. 2018. The skull of the gerrhonotine lizard *Elgaria* *panamintina* (Squamata: Anguidae). *PLOS One* 13(6), e0199584. [https://doi.org/10.1371/journal.pone.0199584](https://doi.org/10.1371/journal.%20pone.0199584)

4**. Scarpetta S**. 2018. The earliest known occurrence of *Elgaria* (Squamata: Anguidae) and a minimum age for crown Gerrhonotinae: Fossils from the Split Rock Formation, Wyoming, USA. *Palaeontologia Electronica* 21.1.1FC, 1–9. <https://doi.org/10.26879/837>

3. **Scarpetta S**, Gray L, De Oca ANM, Castañeda MR, Herrel A, Losos J, Luna-Reyes R, Jiménez Lang N, Poe S. 2015. Morphology and ecology of the Mexican cave anole Anolis alvarezdeltoroi. *Mesoamerican Herpetology* 2(3), 260–270.

2. Poe S, **Scarpetta S**, Schaad E. 2015. A new species of *Anolis* (Squamata: Iguanidae) from Panama. *Amphibian and Reptile Conservation* 9(1), 1–13.

1. De Oca ANM, Poe S, **Scarpetta S**, Gray L, Lieb CS. 2013. Synonyms for some species of Mexican anoles (Squamata: Dactyloidae). Zootaxa 3637(4), 484–492. <http://dx.doi.org/10.11646/zootaxa.3637.4.8>

**Publications (preprint, submitted, in review, in revision)**

Ledesma DT, **Scarpetta SG**, Jacisin JJ III, Meza A, Kemp ME. Identification of Late Pleistocene and Holocene fossil lizards from Hall’s Cave and a primer on morphological variation in North American lizard skulls. *bioRxiv*.

Withnell CB, **Scarpetta SG**. A new perspective on the taxonomy and systematics of Arvicolinae (Gray, 1821) and a new time-calibrated phylogeny for the clade. In revision at *PeerJ*.

**Scarpetta SG**. A Paleogene stem crotaphytid (*Aciprion formosum*) and the phylogenetic affinities of early fossil pleurodontan iguanians. In revision at *Royal Society Open Science*.

Brownstein CD, Simões TR, Caldwell MW, Lee MSY, Meyer DL, **Scarpetta SG**. The affinities of the Late Triassic *Cryptovaranoides* and the age of crown squamates. In review at *Royal Society Open Science*.

**Publications (in prep)** \*indicates undergraduate mentee

Lai C, **Scarpetta SG**. The skull of *Cyclura carinata*.

**Scarpetta SG,** Karin BR, Corl A, McGuire JA. 150 million years of Earth history: Synthetic phylogenomics and biogeography of iguanian lizards.

**Scarpetta SG**, Kloess PA.A morphological assessment of alligator lizards using automated 3d geometric morphometrics.

**Scarpetta SG**.A history, redescription, and phylogenetic placement of *Paragerrhonotus ricardensis*.

Eshelman R, Bell CJ, Semken Jr HA, Withnell CB, **Scarpetta SG**, James HF, Godfrey SJ, Graham RW, Hodnett J-P, Grady FV, McCrady AD, Spielman TL. Middle Pleistocene Cumberland Bone Cave Local Fauna, Allegany County, Maryland: A Comprehensive Revision and Paleoecological Interpretation of the Irvingtonian of the Middle Appalachians, USA.

**Other Publications**

**Scarpetta SG.** Miocene modernization of the North American lizard fauna. PhD Thesis, The

University of Texas at Austin.

Bell CJ, LaDuc TJ, **Scarpetta SG**, Davis DR, Poteet MF. 2023. Amphibians and Reptiles of the

White Family Outdoor Learning Center, Hays County, Texas. University of Texas at Austin.

**Scarpetta, S.** *Litoria serrata*: Green-eyed treefrog. Amphibiaweb. <https://amphibiaweb.org/cgi-bin/amphib_query?where-genus=Litoria&where-species=serrata>

**Scarpetta S**. 2014. Phenotypic convergence obscures the biogeography of Anguillan *Ameiva*. Undergraduate Thesis, Stanford University.

**Invited Talks**

2023 MVZ Herp Group. Tales of a rapid radiation: phylogenomics of iguanian lizards.

2021 MVZ Lunch, Fall Semester, October 27. Effects of phylogenetic uncertainty on fossil interpretation: case studies in alligator lizards and iguanian lizards

2018 UT Austin Paleontology Seminar, Fall Semester, November 8. Modernization concepts in evolutionary biology: Examples from the North American lizard biota

2015 UT Austin Paleontology Seminar, Fall Semester 2015, December 10: Morphology, Systematics, and Ecology of Mexican *Anolis* and Anguillan *Ameiva*

**Presentations** (\*indicates undergraduate mentee)

2023 **Scarpetta SG.** Phylogenomics of Iguanian lizards. 2023 MVZ Symposium. (Talk)

2022 **Scarpetta SG**, Kloess P. Automated geometric morphometrics of alligator lizards. Joint Meeting of Ichthyologists and Herpetologists in Spokane, WA. (Talk)

2022 **Scarpetta SG**. Automated geometric morphometrics of alligator lizards. 2022 MVZ Symposium. (Talk)

2020 **Scarpetta SG**. Ultraconserved elements overwhelm morphological signal in combined evidence analyses. Presented at the 80th Society for Vertebrate Paleontology (SVP) Meeting (virtual). (Talk)

2019 Bell CJ, **Scarpetta SG**, Anderson D\*. Diagnostic efficacy of published morphological characteristics of North American sand lizards. Presented at the 79th Society for Vertebrate Paleontology (SVP) Meeting in Brisbane, Queensland, Australia. (Poster)

2019 **Scarpetta SG.** The first known fossil of *Uma* demonstrates exaptation and ecological evolution in a specialized clade. Presented at the 79th Society for Vertebrate Paleontology (SVP) Meeting in Brisbane, Queensland, Australia. (Talk)

2019 Withnell CB, **Scarpetta S**, Bell C. Global arvicoline rodent phylogenetics: insights into diversification and biogeography. Presented at the 99th American Society of Mammalogists meeting in Washington, DC. (Talk)

2019 **Scarpetta S.** Miocene modernization of North American lizard fauna. Presented in the graduate student competition at the Texas Academy of Science Meeting in Brownwood, Texas. (Talk)

2018 **Scarpetta S.** A new Miocene gerrhonotine from the Caliente Formation, California. Presented at the 78th Society for Vertebrate Paleontology (SVP) Meeting in Albuquerque, New Mexico. (Poster)

2018 Ledesma D\*, **Scarpetta S.** New data on diagnostic and apomorphic morphology in the skulls of gerrhonotine lizards. Presented in the Colbert Prize session at the 78th Society for Vertebrate Paleontology (SVP) Meeting in Albuquerque, New Mexico. (Poster)

2018 **Scarpetta S.** A new Miocene gerrhonotine from the Caliente Formation, California. Presented at the 2018 Texas Academy of Science Meeting in Midland, Texas. (Talk)

2018 Ledesma D\*, **Scarpetta S.** A fossil alligator lizard from southern California. Presented at the Society for Integrative and Comparative Biology meeting in San Francisco, California. (Poster)

2017 **Scarpetta S.** A new Miocene gerrhonotine from the Caliente Formation, California. Presented at the 129th Geological Society of America Meeting in Seattle, Washington. (Poster)

2017 **Scarpetta S.** Latest Oligocene glyptosaurine lizards from the Sharps and Monroe Creek formations, South Dakota, and phylogenetic and biochronologic implications. Presented at the 77th Society for Vertebrate Paleontology (SVP) Meeting in Calgary, Canada. (Poster)

2017 **Scarpetta S**, Ledesma D\*. Cranial osteology of extinct and extant gerrhonotine lizards. Presented at the 59th Annual Joint Meeting of Ichthyologists and Herpetologists in Austin, Texas. (Poster)

2017 Ledesma D\*, **Scarpetta S.** The cranial osteology of a rare species of gerrhonotine lizard, *Elgaria* *panamintina*. Presented at the 2017 Jackson School of Geosciences Student Research Symposium, at the University of Texas at Austin. (Poster)

2016 **Scarpetta S**, Ledesma D\*. Patterns of variation in the cranial osteology of extinct and extant gerrhonotine lizards. Presented at the 76th Society for Vertebrate Paleontology (SVP) Meeting in Salt Lake City, Utah. (Poster)

2016 **Scarpetta S**, Ledesma D\*. Cranial osteology of extinct and extant gerrhonotine lizards. Presented at the 2016 Jackson School of Geosciences Student Research Symposium, at the University of Texas at Austin. (Poster)

2013 **Scarpetta S**, Kemp M, Hadly E. Ancient DNA and the role of island fragmentation in divergence of lizards of the genus *Ameiva*. Presented at the 73rd Society for Vertebrate Paleontology (SVP) Meeting in Los Angeles, California. (Poster)

**Current Research Projects**

Phylogenomics, biogeography, and divergence timing of iguanian lizards (in collaboration with Jim McGuire, Ben Karin, and Ammon Corl)

Geometric morphometrics of alligator lizards (in collaboration with Peter Kloess)

**Peer Review Service**

Nature Communications (1); The Anatomical Record (1); Proceedings of the Royal Society B (1); The Journal of Systematic Palaeontology (1); PLOS ONE (1); International Journal of Oral Science (1); The Vertebrate Fossils of Louisiana [book] (1)

**Professional Service**

General Herpetology Oral Session Judge, Joint Meeting of Ichthyologists and Herpetologists 2022

Co-moderator of Squamates and Herpetofauna Technical Session, Society of Vertebrate Paleontology meeting 2019

Section chair of Systematics and Evolutionary Biology session, Texas Academy of Science meeting 2019

**Certifications**

Museum of Vertebrate Zoology Official Tour Guide

Teaching Certificate in First-Year Interdisciplinary Instruction (UT Austin Signature Course)

**Teaching Experience**

2021 Teaching Assistant for Environmental Change and Sustainability (BDP 101, undergraduate, Spring)

2020 Teaching Assistant for Geoscience Grand Challenges: Sustainability and Society (UGS 303, undergraduate, Fall)

2018 Teaching Assistant for Earth, Wind, and Fire (GEO 302E, undergraduate, Spring)

2017 Teaching Assistant for: Scientific Inquiry Across Disciplines (UGS 303, undergraduate freshman Signature Course, Fall)

2017 Teaching Assistant for: Earth, Wind, and Fire (GEO 302E, undergraduate, Spring)

2016 Teaching Assistant for: Digital Methods in Morphology (GEO 389P, graduate, Fall)

2016 Teaching Assistant for: Age of Mammals (GEO 302M, undergraduate, Spring)

2015 Teaching assistant for: Age of Dinosaurs (GEO 302D, undergraduate, Fall)

**Mentorship**

2022- **Chloe Lai**, UC Berkeley undergraduate recruited through URAP

2021 **Vivian Pham**, Cal State Fullerton REU student at UT Austin

2019 **Dakota Worley**, UT Austin undergraduate

2017 **Scientific Inquiry Across Disciplines** UT freshman signature course. Mentored 45 UT Austin freshman in conceiving and conducting original research projects.

2015-2017 **David Ledesma**, UT Austin undergraduate who completed an undergraduate honor’s thesis**.** Three papers published.

2016-2017 **Danny Anderson**, UT Austin undergraduate.

**Outreach**

2022 **MVZ Tour** 11/7/2022. Gave museum tour to FAVE lab graduate and undergraduate students

2022- **BCEENET** Design and implement Course-based undergraduate research course module on California phylogeography

2021 **UC Berkeley IB Research Mixer** lightning talk speaker 12/7/2021.

2020 **STEAM Middle School Curriculum Session** 11/18/2020. Participated in a STEAM curriculum session at a local middle school. Answered questions about climate change and evolutionary biology

2019-2020 **UT Paleontology Seminar Coordinator** (Fall 2019-Spring 2020)

2019 **HRI (high school research initiative)** 4/12/2019. Volunteered at and helped organize an event introducing students to fossils, analysis techniques in evolutionary biology and paleontology, and different paths to STEM.

2018 **Fossil Fest** 11/3/2018. Volunteered at and helped organize paleontology table from UT Austin, talked about Cretaceous seaways and careers in science.

2018 **Meridian Science Saturday** 4/14/2018. Volunteered at paleontology table, educated elementary-high schoolers on fossils, paleontology, and evolution.

2017-2018 **Darwin day** 2/11/2017, 2/12/2018. Volunteered at Vertebrate Paleontology Lab table and “walk like a dinosaur” educational activity.

2017-2018 **Middle and high school Science Olympiad, herpetology** **section**. 11/11/2017; 2/24/2018; 10/27/2018. Created questions for and proctored the herpetology section of Austin area middle and high school Science Olympiad.

2016 **Thinkery21 JingleBooze** 12/1/2016. Volunteered at geology table, demonstrated glacier simulations.

**Fieldwork Experience**

2019 **Bighorn Basin, Wyoming** with Evan Ramos from the Jackson School of Geosciences, UT Austin; July 23-29. Collected paleosols and carbonate nodules for stable isotope geochemistry research.

2019 **Peru, Amazon Rainforest** with students from Green Farms Academy in Westport, Connecticut; March 9-20. Served as a TA for a high school tropical field ecology trip.

2018-2019 **Jackson School of Geosciences** **White Family Outdoor Learning Center** with Dr. Chris Bell and Dr. Travis LaDuc; October 6, 2018, and April 27, 2019. Conducted the first herpetological surveys at the White Family Outdoor Learning Center. We collected reptile and amphibian specimens for the Texas Natural History Collection to document the natural history at the center and to establish baseline distribution and population data for the species that live there.

2016 **Katy Prairie, east Texas** with Dr. Chris Bell and paleontology graduate students; November 10-11. Prospected for fossils in a Pleistocene creek deposit.

2013-2015 **Employment as a field conservation technician** at Stanford University. Conducted conservation projects on the Stanford campus and nearby properties, including surveys and habitat preservation for the red-legged frog, California tiger salamander, steelhead trout, and serpentine grassland ecosystem.

2012 **Guadalupe and Desirade** with Dr. Melissa Kemp from Stanford University; August 17-22. Prospected for fossils in island cave deposits for Dr. Kemp’s dissertation work and observed behavior and habitat of extant *Anolis* lizards.

2011 **Mexico (Guerrero, Oaxaca, Veracruz)** with Dr. Steven Poe from the University of New Mexico; July 1-16. Collected *Anolis* lizards and other reptiles and amphibians, resulting in two publications in collaboration with researchers from the Universidad Nacional Autónoma de México (UNAM).

**Professional Affiliations**

Geological Society of America

Society of Vertebrate Paleontology

American Society of Ichthyologists and Herpetologists

**Graduate Coursework (University of Texas at Austin)**

First Year Graduate Student 2015-2016

Fall 2015: GEO 391 (Transitions in the History of Life), GEO 389P (Digital Methods in Morphology)

Spring 2016: BIO 384K (Advanced Systematics), GEO 389R (Morphology of the Vertebrate Skeleton), BIO 369F (Field Herpetology), GEO 191 (Proposal Writing)

Second Year Graduate Student 2016-2017

Fall 2016: BIO 384K (Phylogenetic Perspectives in Ecology and Evolutionary Biology), BIO 369L (Herpetology), 389E (Evolution of Reef Ecosystems).

Spring 2017: BIO 384K (Recent Advances in Biogeography and Phylogeography), GEO 391 (Topics in Paleontology)

Third Year Graduate Student 2017-2018

Spring 2018: GEO 291 (Asian Monsoon)

Sixth Year Graduate Student 2020-2021

 Fall 2020: Geo 391 Python in Geoscience Research

Spring 2021: BCH 394P Bioinformatics