

CURRICULUM VITAE
Nathan Steadman Upham, Ph.D.
February 2021

Arizona State University
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Yale University
Ecology and Evolutionary Biology
165 Prospect St., OML 122
New Haven, CT, 06511, USA
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EDUCATION

2014	Ph.D.	Evolutionary Biology	University of Chicago, Chicago, IL.
2010	M.S.	Evolutionary Biology	University of Chicago.
2008	M.A.	Biology	Occidental College, Los Angeles, CA. (Cal Tech courses)
2006	B.A.	Biology	Occidental College. (UK exchange, 2004)

PROFESSIONAL APPOINTMENTS

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- 2020-present. Assistant Research Professor, **Arizona State University**, School of Life Sciences
Associate Curator of Mammals, [ASU-NEON Biocollections](#).
- 2020-present. Research Associate, **Yale University**, Dept. of Ecology & Evolutionary Biology.
- 2014-present. Research Associate, **Field Museum of Natural History**, Division of Mammals.
- 2015-2020. Postdoctoral Associate, **Yale University**, Dept. of Ecology & Evolutionary Biology.
-Walter Jetz lab: NSF-funded [VertLife Terrestrial](#) project, focus on mammal tree of life.
- 2014-2015. Postdoctoral Fellow, **McMaster University**, Department of Biology.
-Ben Evans, Brian Golding labs: Evolution of vizcacha rats (largest mammal genome).
- 2008-2014. Doctoral Researcher, **University of Chicago**, Committee on Evolutionary Biology.
-Bruce Patterson lab (Field Museum): Biogeography of Neotropical mammals.
- 2006-2008. Curatorial Associate, **Moore Laboratory of Zoology**, Occidental College.
-Responsible for care and maintenance of 65,000+ bird and mammal specimens.

PUBLICATIONS

(pdfs [here](#); *co-first authors, ^U undergraduate students)

Journal Articles and Book Chapters

([Google Scholar](#), h-index of 15)

- In review. *Stewart, T. A., ^UYoo, I., and Upham, N. S.* The coevolution of mammae number and litter size. *eLife*. Pre-print on *bioRxiv*: <https://doi.org/10.1101/2020.10.08.331983>
- In review. Upham, N. S., Esselstyn, J. A., and Jetz, W. Molecules and fossils tell distinct yet complementary stories of mammal diversification. *Current Biology*. Pre-print on SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3761886
- In review. Upham, N. S., Poelen, J. H., Paul, D. L., Groom, Q. J., Simmons, N. B., Vanhove, M. P. M., Bertolino, S., Reeder, D. M., Bastos-Silveira, C., Sen, A., Sterner, B., Franz, N., Guidotti, M., Penev, L., and Agosti, D. Liberating host-virus knowledge from COVID-19 lockdown. *The Lancet Planetary Health*. Pre-print on *EcoEvoRxiv*: <https://doi.org/10.32942/osf.io/txeqg>
- In revision. Upham, N. S., Esselstyn, J. A., and Jetz, W. Ecological causes of speciation and species richness in mammals. Pre-print on *bioRxiv*: <https://doi.org/10.1101/504803> (now split).
- Accepted. Dávalos, L. M., Duncan, C., Upham, N. S., Harrison, X., Turvey, S. T. Where the wild things were: biological and environmental extinction predictors in the world's most depleted mammal fauna. *Proc Roy Soc B*.
- Accepted. Cisse O.H., Ma L., Dekker J.P., Khil P.P., Youn J.-H., Brenchley J.M., Blair R.V., Pahar B., Chabe M., Rompay K.K.A.V., Keesler R., Sukura A., Hirsch V., Kutty G., Liu Y., Li P.,

- Chen J., Song J., Weissenbacher-Lang C., Xu J., **Upham N.S.**, Stajich J.E., Cuomo C.A., Cushion M.T., Kovacs J.A. 2020. Genomic insights into the host specific adaptation of the *Pneumocystis* genus and emergence of the human pathogen *Pneumocystis jirovecii*. *Communications Biology*: <https://doi.org/10.1101/2020.07.29.227421>
2021. Sterner B., Elliott S., Upham N.S., Franz N.M. Bats, objectivity, and viral spillover risk. *History & Philosophy of the Life Sciences* 43:7 <https://doi.org/10.1007/s40656-021-00366-x>
2020. Alhajeri, B. H., Fourcade, Y., **Upham, N. S.**, and Alhaddad, H. A global test of Allen's rule in rodents. *Global Ecology and Biogeography*. <https://doi.org/10.1111/geb.13198>
2020. **Upham N.S.**, Agosti D., Poelen J., Penev L., Paul D., Reeder D., Simmons N.B., Csorba G., Groom Q., Dimitrova M., Miller J. Liberating Biodiversity Data From COVID-19 Lockdown: Toward a knowledge hub for mammal host-virus information. *Biodiversity Information Science and Standards* 4: e59199. <https://doi.org/10.3897/biss.4.59199>
2020. Sen A., Franz N., Sterner B., **Upham N. S.** The Automated Taxonomic Concept Reasoner. *Biodiversity Information Science and Standards*. 4:e59074. <https://doi.org/10.3897/biss.4.59074>
2020. Sterner B., **Upham N.S.**, Sen A., Franz N. Avenues into Integration: Communicating taxonomic intelligence from sender to recipient. *Biodiversity Information Science and Standards* 4: e59006. <https://doi.org/10.3897/biss.4.59006>
2020. Franz N., Sterner B., **Upham N.S.**, and Hernández K.C. Redesigning the Trading Zone between Systematics and Conservation: Insights from Malagasy mouse lemur classifications, 1982 to present. *Biodiversity Information Science and Standards* 4: e59234. <https://doi.org/10.3897/biss.4.59234>
2020. Cook, J. A., Satoru, A., Armien, B., Bates, J., Carrion Bonilla, C. A., de Souza Cortez, M. B., Dunnum, J. L., Ferguson, A. W., Anwarali Khan, F. A., Paul, D. L., Reeder, D. M., Simmons, N. B., Thiers, B. M., Thompson, C. W., **Upham, N. S.**, Vanhove, M. P. M., Webala, P. W., Weksler, M., Yanagihara, R., Soltis, P. S. Integrating biodiversity infrastructure into pathogen discovery and mitigation of epidemic infectious diseases. *BioScience* (DOI: [10.1093/biosci/biaa064](https://doi.org/10.1093/biosci/biaa064)). Press: [The Conversation](#).
2019. **Upham N. S.**, Esselstyn J. A., Jetz W. Inferring the mammal tree: species-level sets of phylogenies for questions in ecology, evolution, and conservation. *PLOS Biology*. 17(12): e3000494. [Cover art](#). Data: [Github](#), [Dryad](#). Press: [Cosmos](#), [ScienceDaily](#), [Phys.org](#), [Twitter](#).
2019. McDonough, M. M., **Upham, N. S.**, and Ferguson, A. W. Nurturing the generations: the role of the American Society of Mammalogists in supporting students and early career scientists. *Journal of Mammalogy* 100: 690-700.
2019. Maestri, R., **Upham, N. S.**, and Patterson B. D. Tracing the diversification history of a Neogene rodent invasion into South America. *Ecography* 42: 683-695.
2018. *^UBurgin, C. J., *Colella, J. P., and **Upham, N. S.** How many species of mammals are there? *Journal of Mammalogy* 99: 1-14. Press: [IFLscience](#), [International Business Times](#), [Phys.org](#), [EurekAlert!](#), [Teinteresa \(Madrid\)](#).
2017. (alphabetical) *Cooke, S. B. *Dávalos, L. M., *Mychajliw, A. M., *Turvey, S. T., and ***Upham, N. S.** Anthropogenic extinction dominates Holocene declines of West Indian mammals. *Annual Review of Ecology, Evolution, and Systematics* 48: 301-327. Press: [Newsweek](#), [Nature E&E Blog](#), [New Scientist](#), [LiveScience](#), [Lab Manager](#), [Phys.org](#).
2017. **Upham, N. S.** and Borroto-Páez, R. Molecular phylogeography of endangered Cuban hutias within the Caribbean radiation of capromyid rodents. *Journal of Mammalogy* 98: 950-963.
2017. **Upham, N. S.** Past and present of insular Caribbean mammals: understanding Holocene extinctions to inform modern biodiversity conservation. *Journal of Mammalogy* 98: 913-917. Special Feature, including [cover image](#) by NSU.

2017. Lim, B. K., Loureiro, L. O., **Upham, N. S.**, and Brocca, J. L. Phylogeography of Dominican Republic bats and systematic relationships in Neotropics. *Journal of Mammalogy* **98**: 986-993.
2017. Evans, B. J., **Upham, N. S.**, Golding, G. B., Ojeda, R. A., and Ojeda, A. A. Evolution of the largest mammalian genome. *Genome Biology and Evolution* **9**: 1711-1724. Press: [ScienceDaily](#), [CBC Radio](#), [The Molecular Ecologist](#), [Yale Scientific](#).
2017. Maestri, R., Monteiro, L. R., Fornel, R., **Upham, N. S.**, Patterson B.D., and Freitas, T.R.O. The ecology of a continental evolutionary radiation: Is the radiation of sigmodontine rodents adaptive? *Evolution* **71**: 610-632. Press: [Evolution Digest](#).
2017. Fabre, P.-H., **Upham, N. S.**, Emmons, L. H., Justy, F., Leite, Y. L. R., Loss, A. C., Orlando, L., Tilak, M.-K., Patterson, B. D., and Douzery, E. J. P. Mitogenomic phylogeny, diversification, and biogeography of South American spiny rats. *Molecular Biology and Evolution*. **34**: 613–633.
2015. **Upham, N. S.** and Patterson, B.D. Evolution of caviomorph rodents: a complete phylogeny and timetree for living genera. [Pp. 63-120](#) In: *Biology of caviomorph rodents: diversity and evolution* (A.I. Vassallo and D. Antenucci, eds.). SAREM Series A, Buenos Aires, Argentina.
2015. D'Elia, G., Teta, P., **Upham, N. S.**, Patterson, B. D., and Pardiñas, U. F. J. Description of a new soft-haired mouse, genus *Abrothrix* (Sigmodontinae), from the temperate Valdivian rainforest. *Journal of Mammalogy* **96**: 839-853. Press: [Diario Austral](#).
2014. Patterson, B. D. and **Upham, N. S.** A newly recognized family of mammals from the Horn of Africa, the Heterocephalidae (Rodentia: Ctenohystrica). *Zoological Journal of the Linnean Society* **172**: 942-963. Press: [BrainScoop](#), [Field Museum Blog](#).
2014. Patterson, B. D. and **Upham, N. S.** A study in contrasts: two extensive Neotropical radiations. *Frontiers in Ecology and Evolution* **2**: 44.
2013. **Upham, N. S.**, Ojala-Barbour, R., Brito, J., Velazco P. M., and @Patterson, B. D. Transitions between Andean and Amazonian centers of endemism in the radiation of some arboreal rodents. *BMC Evolutionary Biology* **13**:191. Press: [UChicago](#).
2013. **Upham, N. S.**, and Hafner, J. C. Do nocturnal rodents in the Great Basin Desert avoid moonlight? *Journal of Mammalogy*. **94**: 59-72. Press: [ScienceLife Blog](#).
2012. **Upham, N. S.** and Patterson, B. D. Diversification and biogeography of the Neotropical caviomorph lineage Octodontoidea (Rodentia: Hystricognathi). *Molecular Phylogenetics and Evolution* **63**: 417-429.
2012. Light, J. E., Hafner, J. C., **Upham, N. S.**, and Reddington, E. Conservation genetics of kangaroo mice, genus *Microdipodops*. *Journal of Mammalian Evolution* **20**: 129-146.
2011. Hafner, J. C., and **Upham, N. S.** Phylogeography of the dark kangaroo mouse, *Microdipodops megacephalus*: cryptic lineages and dispersal routes in North America's Great Basin. *Journal of Biogeography* **38**: 1077-1097.
2008. Hafner, J. C., **Upham, N. S.**, Reddington, E. and Torres, C. W. Phylogeography of the pallid kangaroo mouse, *Microdipodops pallidus*: a sand-obligate endemic of the Great Basin, western North America. *Journal of Biogeography* **35**: 2102-2118.

Book Chapters and Invited Publications

2020. Burgin, C. J., Widness, J., and **Upham, N. S.** Introduction. [Pp. 23-40](#) In: *Illustrated Checklist of the Mammals of the World* (C. J. Burgin, D. E. Wilson, R. A. Mittermeier, A. B. Rylands, T. E. Lacher, and W. Sechrest, eds.). Lynx Ediciones, Barcelona.
2017. Ceriáco, L. M. et al. and 490 signatories (incl **Upham, N. S.**) Photography-based taxonomy is inadequate, unnecessary, and potentially harmful for biological sciences. *Zootaxa*. **4196**: 435-445.
2016. Pérez, M. E., and **Upham, N. S.** [Review] Mammals of South America, Volume 2: Rodents. *Ameghiniana* **53**: 523-525.

2016. Lacher, T. E., Murphy, W. J., Rogan, J., Smith, A. T., and **Upham, N. S.** Evolution, phylogeny, ecology, and conservation of the clade Glires: Lagomorpha and Rodentia. [Pp. 15-26](#) In: *Handbook of the Mammals of the World: Volume 6. Lagomorphs and Rodents I.* (D. E. Wilson, T.E. Lacher, Jr., and R. A. Mittermeier, eds.). Lynx Ediciones, Barcelona.

Web-based Publications

2020. Dávalos, L. M., and **Upham, N. S.** Coronavirus was low risk until it wasn't. Climate change is the same. *Medium*, [27 Mar 2020](#).
2014. **Upham, N. S.** At the edge of what we know. *The Human Geographic*, [issue 1](#) [online multimedia magazine, popular article on vizcacha rat fieldwork in Argentina].

Data publications

2020. Poelen J, **Upham N. S.**, Agosti D, Ruschel T, Guidoti M, Reeder D, et al. CETAF-DiSCCo/COVID19-TAF biodiversity-related knowledge hub working group: indexed biotic interactions and review summary. *Zenodo*. <http://doi.org/10.5281/zenodo.3839098>
2020. Mast A.R., Paul D.L., Rios N., Krimmel E.R., Bruhn R., Shorthouse D.P., Simmons N.B., **Upham N.S.**, Soltis P. 2020. Rapid Creation of a Data Product for the World's Specimens of Horseshoe Bats and Relatives, a Known Reservoir for Coronaviruses. *Zenodo*. <https://doi.org/10.5281/zenodo.4047200>
2020. **Upham, N. S.** Natural history specimens collected and/or identified and deposited. [Data set]. *Zenodo*. <https://doi.org/10.5281/zenodo.3858103>

Theses

2014. **Upham, N. S.** *Ecological diversification and biogeography in the Neogene: Evolution of a major lineage of American and Caribbean rodents (Caviomorpha, Octodontoidea)*. Unpubl. Ph.D. dissertation, University of Chicago, xvi + 272 pp. [Download](#) full text. [Abstract published](#) in *Mastozoología Neotropical* **21**: 193-194.
2008. **Upham, N. S.** *Rodent activity in relation to moonlight in sandy and open habitats of the Great Basin Desert*. Unpubl. M.A. thesis, Occidental College, viii + 65 pp. [Download](#) full text.
2006. **Upham, N. S.** *Phylogeography of the dark kangaroo mouse, Microdipodops megacephalus*. Unpubl. B.A. thesis, Occidental College, 35 pp.

Manuscripts in Preparation

- **Upham, N. S.** and Patterson, B. D. Testing for adaptively radiating clades in rodents. *Evolution*.
- **Upham, N. S.**, Quintero, I., Jetz, W. Big questions and big trees. *Systematic Biology*.
- Burgin, C. J., Widness, J., Liphardt, S., Becker, M., Parker, C., Rochon, I., and **Upham, N.S.** How many species of mammals are there in which countries? *Journal of Mammalogy* (invited).

RESEARCH GRANTS AND FELLOWSHIPS

2021. **U.S. National Institutes of Health**, “Intelligently predicting viral spillover risks from bats and other wild mammals” R21 in response to PA-19-068, Secondary Analysis of Existing Datasets for Advancing Infectious Disease Research (PI/PD with DeeAnn Reeder, Beckett Sterner, Atriya Sen, Nico Franz, Arvind Varsani, and Jonathan Rees). Pending: \$301,232 direct costs (2021-2023).
2018. **U.S. National Socio-Environmental Synthesis Center (SESYNC)**, Thematic Pursuit, “The death and life of biodiversity: Modeling extinction and resilience on islands” (co-PI with Siobhán Cooke, Liliana Dávalos, Alexis Mychajliw, & Angelo Soto-Centeno), \$30,000 for 3 meetings.
2016. **Instrumentl**, crowdfunding grant, “The super-sized genomes of desert vizcacha rats” (PI with Ben Evans and Agustina Ojeda as co-PIs), \$978 from 12 donations.

2014. **Royal Ontario Museum**, Schad Conservation Grant, “Integrating ecological and economic tools for sustainable conservation: Mammals as indicators of ecosystem and societal health in the Dominican Republic” (co-author with Burton Lim as PI), \$30,000.
2012. **Field Museum of Natural History**, Armour Graduate Fellowship, \$26,000 stipend.
2011. **U. S. National Science Foundation**, Doctoral Dissertation Improvement Grant (DDIG), “DISSERTATION RESEARCH Fossils and phylogeny: investigating the timing of diversification in a diverse lineage of Neotropical rodents (Caviomorpha: Octodontoidea)” (co-PI with Bruce Patterson as PI/PD), \$15,000 (2011-2013), [DEB-1110805](#).
2011. **University of Chicago**, Hinds Fund (Comm. on Evol. Biol.), “Time, species, and morphology: investigating the diversification of a diverse lineage of Neotropical rodents,” \$1000.
2010. **American Society of Mammalogists**, Grant-in-Aid of Research, “Diversification of the South American rodent superfamily Octodontoidea,” \$1290.
2009. **U.S. Department of Education**, GAANN Training Grant in Evolutionary Environmental Biology, \$30,000 stipend/yr (2009-2011), [P200A090336](#).
2009. **Field Museum of Natural History**, Pritzker Lab, “Timetree of Neotropical rodents,” \$2000.
2005. **Norris Foundation**, Norris Scholars Fellowship, “Molecular phylogenetics of the dark kangaroo mouse, *Microdipodops megacephalus*,” \$3000 project, \$8000 stipend.
2004. **Howard Hughes Medical Institute**, Undergrad Summer Fellow, \$200 project, \$4150 stipend.
2004. **Howard Hughes Medical Institute**, Undergraduate Research Grant, \$500 project, \$600 stipend.
2003. **Occidental College**, Academic Student Projects Research Grant, \$300 project.
2002. **Occidental College**, President’s Scholarship, \$50,000 for tuition (2002-2006).

Unfunded Grant Applications

2020. **NSF**, Division of Biological Infrastructure. “RAPID: Generating robust estimates of viral spillover risk within bats and other mammals.”
2016. **NSF**, Division of Environmental Biology: Evolutionary Genetics. “Understanding the quantum genome expansion of desert vizcacha rats”. Full proposal.
2015. **NSF**, Division of Environmental Biology: Evolutionary Genetics. “Mechanisms and consequences of genome expansion in vizcacha rats”. Pre-proposal.
2015. **National Geographic Society**, Committee for Research and Exploration. “The humongous genomes of Argentine vizcacha rats: biodiversity conservation, mechanisms, and consequences”.
2015. **NSF**, Postdoctoral Fellowship in Biology FY 2015.
2014. **NSF**, Science, Engineering and Education for Sustainability Fellows. “Integrating ecological and economic tools for sustainable communities: Native species as indicators of ecosystem and societal health in Miches, Dominican Republic”.

HONORS AND AWARDS

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2019. **Art in Research Competition, Yale Office of the Provost**, [1st place in two categories and Overall Best Entry](#) for ‘Species-level relationships of mammals’ (Figure 1 [here](#)).
 2018. **North American Rodents Landscapes Ecology & Evolution (NARLEE) Working Group**, providing rodent evolution expertise in 30-person RCN of geologists, modelers, and biologists.
 2017. **IUCN**, appointed as Taxonomy Advisor of the IUCN Small Mammal Specialist Group.
 2017. **State of the Tree of Life (SoToL) Working Group**, invited to represent Mammalia in 40-person group spanning microbes, sponges, fungi, plants, and animals.
 2016. **American Society of Mammalogists**, appointed Chair of the Biodiversity Committee.
 2015. **IUCN**, appointed member of the IUCN Small Mammal Specialist Group, South America Team.
 2014. **American Society of Mammalogists**, elected to Board of Directors (2014-2017).

2012. **American Society of Mammalogists**, A. Brazier Howell Graduate Student Honorarium for “Diversification and biogeography of a major lineage of Neotropical rodents (Caviomorpha: Octodontoidea)” (plenary session talk).
2006. **American Society of Mammalogists**, Undergraduate Student Research Honoraria for “Phylogeography of the dark kangaroo mouse, *Microdipodops megacephalus*”.
2006. **Occidental College**, graduated *magna cum laude* in Biology.
2005. **Occidental College**, Kurata Student Award for Outstanding Senior in Biology.
- TRAVEL: **Society of Systematic Biologists**, early career travel award (2017).
American Society of Mammalogists, Student Travel Fellowship (2016-2018, 2014, 2010).
Occidental College, Graduate Student Travel Awards (2008, 2007).

RESEARCH EXPERIENCE

Curatorial Experience

- 2008-14. Field Museum of Natural History (220,000+ specimens of mammals)
 - Mentor: Bruce D. Patterson, MacArthur Curator of Mammals.
- 2006-08. Moore Laboratory of Zoology, Occidental College (65,000+ bird and mammal specimens)
 - Mentor: John C. Hafner, Professor of Biology and Curator of Birds & Mammals.

Field Collecting and Courses

2017. Cuba (0.5 month): Scouting and permit discussions with Cuban biologists.
2016. Colombia (0.25 month): Spotlighting small mammals, Sierra Nevada de Santa Marta.
2015. Argentina (0.5 month): Second trip to collect octodontid rodents to study the genomics of mammalian tetraploidy. Provinces of Mendoza and San Juan (Ischigualasto).
2015. Dominican Republic (0.75 month): Surveying endemic bats and small mammals (hutias, solenodon) for a project on biodiversity patterns and tourism sustainability. Provinces of La Vega, Sánchez Ramírez, Monte Plata, El Seibo, and La Altagracia.
2014. Argentina (0.5 month): Collecting octodontid rodents to study the genomics of mammalian tetraploidy. Provinces of Mendoza and San Juan (Ischigualasto).
2011. Chihuahuan and Sonoran Deserts, USA (1 month): Teaching assistant on the University of Chicago’s Desert Ecology Field School.
2009. Costa Rica (1 month): Participant in an NSF Pan-American Advanced Studies Institute graduate course through the Organization for Tropical Studies. La Selva, Monteverde, Palo Verde, and Las Cruces.
2007. Yosemite and the eastern Sierra Nevada, USA (0.5 month): Teaching assistant on Occidental College’s California Environment Semester.
- 2003-06. Great Basin Desert, USA (12 trips, 3 months): Collected rodents at ~25 localities for several projects. Nevada, Oregon, and California.

Molecular Genetics Labwork

- 2012-2013. McMaster University, Ancient DNA Centre (Hamilton, Canada): Performed clean-room DNA extractions and genomic sequencing from dried tissues (museum specimens).
2012. Universidade Federal do Espírito Santo, Laboratório de Mastozoologia e Biogeografia (Vitória, Brazil): PCR and DNA sequencing of rodent specimens from Brazil.
2012. Royal Ontario Museum, Laboratory for Molecular Systematics (Toronto, Canada): DNA sequenced imported tissues of Caribbean rodents.
- 2010-2012. Field Museum of Natural History, Pritzker Laboratory for Molecular Systematics and Evolution (Chicago, USA): Resident Ph.D. student; researched the molecular phylogeny and diversification of caviomorph rodents using DNA from fresh and dried tissues.
- 2003-2007. Occidental College, Moore Laboratory of Zoology (Los Angeles, USA): Undergraduate

student (8 semesters, 3 summers) and Master's student; researched the molecular systematics and phylogeography of kangaroo mice using PCR and DNA sequencing.

Museum Collections Work

Argentina: Museo Argentino de Ciencias Naturales “Bernardino Rivadavia” (Buenos Aires—2011, 2012); Museo de Ciencias Naturales de La Plata (La Plata—2011); Museo Municipal de Ciencias Naturales “Lorenzo Scaglia” (Mar del Plata—2011); Museo Paleontológico Edigio Feruglio (Trelew—2011); Instituto Argentino de Investigaciones de Zonas Áridas (Mendoza—2015)

Brazil: Museu de Zoologia, Universidade de São Paulo (São Paulo—2012); Museu Nacional (Rio de Janeiro—2012)

Canada: Royal Ontario Museum (Toronto—2012)

USA: Field Museum of Natural History (Chicago—2009-2014); Florida Museum of Natural History (Gainesville—2012); Moore Laboratory of Zoology (Los Angeles—2006-2008); University of California Museum of Vertebrate Zoology (Berkeley—2012); University of California Museum of Paleontology (Berkeley—2012)

TEACHING EXPERIENCE

Arizona State University

Evolution, BIO 345 (Spring 2021)

- Primary co-instructor; lectured and designed exams for a fully online course of 170 students.

Yale University

Postdoctoral Teaching Scholar, Foundations in Biology series: Evolution & Ecology (Fall 2019).

- Led a weekly discussion section of 20 students on topics in evolutionary biology.

Scientific Teaching Fellow, Biological Sciences (Spring 2016).

McMaster University

Biodiversity, Evolution & Humanity, Department of Biology (Fall 2014)

- Primary co-instructor; lectured and designed exams for an introductory course of 700 students.

University of Chicago

Ecology & Evolution in the Southwest, Department of Biological Sciences (Spring 2012).

- Led a weekly discussion section of 20 students on topics in desert ecology.
- Field supervision and teaching during a four-week fieldtrip to the SW USA deserts.

Biogeography, Department of Biological Sciences (Winter 2011). Led weekly labs; gave one lecture.

Insect Ecology & Evolution, Department of Biological Sciences (Fall 2010). Lectured; graded exams.

Mammalian Ecology, Department of Biological Sciences (Spring 2009). Led weekly labs.

Occidental College

Evolutionary Biology, Biology Department (Fall 2007, Fall 2005). Led review sessions, graded.

High School Summer Oceanology Program, Biology Department (Summer 2006, Summer 2007)

Pedagogy courses

SERTS Teaching Program, Northwestern University (Summer 2010)

Teaching Assistant Training Course, University of Chicago (Fall 2009).

OUTREACH EXPERIENCE

Mentoring Undergraduate Students

Arizona State University student (♀), mammal host-virus interactions (2021).
 Western Connecticut State University student (♂), systematics of rodents (2020-2021).
 iNaturalist intern & Ursinus College student (♂), taxonomy research on mammals (2019).
 Yale University student (♀), biodiversity research for Mammal Diversity Database project (2018).
 Yale University student (♀), summer biodiversity research for the Map of Life project (2016).
 Loyola University student (♀; at FMNH); summer & honors research on bat phylogenetics (2012).
 Cornell University student (♀; at FMNH); summer project on rodent morphometrics (2012).
 University of Wisconsin-Madison student (♀; at FMNH); project on rodent life-history traits (2011).
 Occidental College student (♀; at MLZ); honors research on kangaroo mice phylogenetics (2006-7).

Outreach to K-12 students:

New Haven, CT

- Science Fair judge at Worthington Hooker Middle School (2017, 2018).

Hamilton, Canada

- Weekly tutor, Empowerment Squared program for Liberian immigrants (2014-15).
- Weekly tutor, Reading Buddies & Homework Help, Hamilton Public Library (2013-14).

Chicago, IL

- Program Facilitator for 10 weeks in Project Exploration's "Brothers4Science" program for 6-8th grade boys at Ariel Community Academy (2012).
- Host for "Talk to the Scientist Hour" programs, Field Museum's Pritzker Laboratory (2012-13).
- My research on digital touch-screen, Field Museum's DNA Discovery Center exhibit (2012-13).
- Lecturer on anatomy for Project Exploration's Junior Paleontologists course (8-12th gr.; 2012).
- Discussed science careers with 7th grade class, Young Women's Leadership School (2012).
- Lecturer on mammalogy for Project Exploration's All Girls Expedition course (8-12th gr.; 2011).
- Regularly presented mammal specimens to 7-8th graders, Project Exploration's Sisters4Science courses (2010-2012).
- Weekly tutoring in 8th grade geometry, Canter Middle School (2010).
- Public presentation of mammal specimens, Field Museum Member's Nights (2009-12).

INVITED TALKS

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2020. TDWG 2020 Virtual Conference. Symposium on "[Using Collections to Mitigate and Prevent Zoonotic Disease](#)": *Liberating host-virus data from COVID-19 lockdown*.
2020. [CETAF-DiSCCo Covid-19 Taskforce](#) public event. *Biodiversity knowledge hub for Covid-19 and preventing future pandemics*. [Link](#) to YouTube-streamed talk (10 minutes).
2020. Panelist in the discussion section "Taxonomically intelligent biodiversity data: Taking stock of our progress and next steps to scale up implementation," iDigBio 4th Annual Conference.
2020. Yale University, Lab of Ruslan Medzhitov. *Mammalian tree of life as an essential tool for comparative biology*.
2020. Yale University, Yale Institute for Biospheric Studies (YIBS) seminar series. *Ecological causes of uneven mammalian diversity*.
2019. Universidade de São Paulo, Departamento de Ecologia. *Ecological causes of birth and death in the mammal tree of life*.
2019. Yale-CAPES Seminars in Biomedical Sciences, Porto Alegre, Brazil. *Mammalian tree of life as an essential tool for comparative biology*.
2019. University of Rutgers Newark, Biological Sciences. *Ecological causes of speciation and species richness in the mammal tree of life*.
2019. Western Connecticut State University, Department of Biological and Environmental Sciences. *Why are there so many rodents? And other (r)evolutionary questions*.

2019. Smithsonian Institution, National Museum of Natural History. *Uniting micro- and macro-evolution in the Mammalia tree of life*.
2019. Field Museum of Natural History, A. Watson Armour seminar series. *Ecology unites micro- and macro-evolution in the mammal tree of life*.
2019. Portland State University, Department of Biology seminar series. *Mammalian tree of life and the inverse latitudinal gradient of speciation rates*.
2019. Natural History Museum of Los Angeles County, Research & Collections seminar series. *Mammalian tree of life from ancient lineages to modern backyards*.
2019. Columbia University, E3B Department seminar series. *The ecology of species diversification in the mammal tree of life*.
2017. University of New Hampshire, College of Life Sciences and Agriculture. *Untangling the bank: Mammalian evolution across scales to understand rates & drivers of species diversification*.
2016. University of Oklahoma, Sam Noble Museum of Natural History. *Mammalian evolution across scales: Untangling rates and drivers of diversification in species, clades, and higher taxa*.
2014. Instituto Argentino de Investigaciones de Zonas Aridas (IADIZA), Mendoza-CONICET (delivered in English with Spanish slides). *Pruebas para la radiación adaptativa y limitaciones ecológicas en un linaje principal de roedores*.
2012. Universidade Federal do Espírito Santo, Departamento de Ciências Biológicas, Vitória, Brasil (delivered in English with Portuguese slides). *Diversificação molecular e morfológica de Neotropical roedor linhagem maior (Caviomorpha: Octodontoidea)*.

CONFERENCE PARTICIPATION

Symposia and Workshops Organized

2020. Organizer and moderator of the discussion section “[Avenues into integration: communicating taxonomic intelligence from sender to recipient](#),” TDWG 2020 Virtual Conference.
2019. Organizer and moderator of the discussion section “Synonyms: can we find durable solutions to name-based biodiversity data?” at the 3rd Annual Digital Data Conference (iDigBio).
2019. Co-organizer of the featured symposium “[Mammal diversity from GenBank to the RedList](#): Challenges and rewards of integrating museum specimens in global databases of genetics, taxonomy, and spatial biodiversity” at the American Society of Mammalogists, 99th Annual Meeting; Washington, DC.
2019. Co-organizer of the workshop “[Hackathon for the Mammal Diversity Database](#)” at the American Society of Mammalogists, 99th Annual Meeting; Washington, DC.
2015. Co-organizer of the featured symposium “The Last Remaining Caribbean Mammals: Conservation Priorities and the Historical Context of Extinctions in an Island Biodiversity Hotspot” at the American Society of Mammalogists, 95th Annual Meeting; Jacksonville, FL.
- Two, two-hour sessions including eight invited speakers from five countries.
 - Talks published in a [recent Special Feature](#) in the Journal of Mammalogy.
2009. Organizing committee, *Darwin / Chicago Symposium*, University of Chicago.

Papers Presented

2019. American Society of Mammalogists, 99th Annual Meeting; Washington, DC (oral). *Evolving the Mammalia tree of life*.
2019. Evolution Meetings; Providence, RI (oral). *Species and speciation in global Mammalia: how do species-level phylogenies compare?*
2018. American Society of Mammalogists, 98th Annual Meeting; Manhattan, KS (oral). *Ecological causes of uneven diversification and richness in the mammal tree of life*.
2018. American Association for the Advancement of Science; Austin, TX (e-poster). *Rates and drivers of recent species diversification in global Mammalia*.

2017. American Society of Mammalogists, 97th Annual Meeting; Moscow, ID (oral). *Repeated radiations in the history of mammals: what drives rate variation across a new global tree?*
2017. Society of Systematic Biologists standalone meeting, Baton Rouge, LA (5-min oral). *Rates and drivers of species-level diversification in global Mammalia.*
2016. American Society of Mammalogists, 96th Annual Meeting; Minneapolis, MN (oral). *All mammals in one tree: species-level phylogeny of Mammalia using a supermatrix of 31 genes.*
2016. Evolution Annual Meetings; Austin, TX (oral). *A complete species-level phylogeny of Mammalia using a supermatrix of 31 genes.*
2016. American Society of Naturalists standalone meeting, Asilomar, CA (20-min oral). *Mammalian phylogeny enters the matrix: A complete species-level analysis of mammals using a supermatrix of 31 genes.*
2015. American Society of Mammalogists, 95th Annual Meeting; Jacksonville, FL (oral). *Endangered Cuban hutias: Population genetics and biogeography in the context of an evolutionary radiation.*
2015. Society of Systematic Biologists standalone meeting, Ann Arbor, MI (5-min oral). *Testing for adaptively radiating clades.*
2014. American Society of Mammalogists, 94th Annual Meeting; Oklahoma City, OK (oral). *Testing for adaptive radiation and ecological constraint in a major lineage of rodents (Caviomorpha, Ctenohystrica).*
2014. Genomes to Biomes, 1st Joint Conference of the Canadian Societies CSEE, CSZ, and SCL; Montreal, QC (oral). *Testing for adaptive radiation and ecological constraint in a major lineage of rodents (Caviomorpha, Ctenohystrica).*
2013. Evolution Annual Meetings; Snowbird, UT (oral). *Andes-Amazon diversification in a diverse lineage of tropical rodents: integrating DNA sequences, fossils, and species traits.*
2012. II Congreso Latinoamericano de Mastozoología; Buenos Aires, Argentina (oral). Invited participant in the symposium “Biología de los roedores Caviomorfos: diversidad y evolución” (delivered in English with Spanish slides). *Diversificación molecular y morfológica de un linaje mayor de roedores neotropicales (Caviomorpha: Octodontoidea).*
2012. Society for Conservation Biology, 1st North America Congress; Oakland, CA (poster). *Biogeography and conservation of Cuba’s endemic non-flying mammals.*
2012. American Society of Mammalogists, 92nd Annual Meeting; Reno, NV (oral). Invited participant in the opening plenary session. *Diversification of a major lineage of Neotropical rodents (Caviomorpha, Octodontoidea): insights from DNA sequences and fossil mandibles.*
2011. IV Congreso Latinoamericano Paleontología de Vertebrados, San Juan, Argentina (oral). Invited participant in the symposium “Orígenes y Evolución del Neotropico Sudamericano.” *Molecular phylogeny, divergence timing, and biogeography of the Neotropical caviomorph lineage Octodontoidea (Rodentia: Hystricognathi).*
2011. American Society of Mammalogists, 91st Annual Meeting; Portland, OR (poster). *A preliminary analysis of divergence timing and historical biogeography in the Neotropical caviomorph lineage Octodontoidea (Rodentia: Hystricognathi).*
2010. American Society of Mammalogists, 90th Annual Meeting; Laramie, WY (oral). *Evolution of the New World rodent superfamily Octodontoidea: preliminary patterns using multiple genes and fossils.*
2009. 10th International Mammalogical Congress; Mendoza, Argentina (poster). *Moonlight avoidance by bipedal, but not quadrupedal, rodents in sandy and open habitats of the Great Basin Desert, U.S.*
2007. American Society of Mammalogists, 87th Annual Meeting; Albuquerque, NM (oral). *Rodent activity in response to lunar illumination in sandy habitats of the Great Basin Desert.*

2006. American Society of Mammalogists, 86th Annual Meeting; Amherst, MA (oral).

Phylogeography of the dark kangaroo mouse, Microdipodops megacephalus.

2005. American Society of Mammalogists, 85th Annual Meeting; Springfield, MO (oral). *Molecular phylogenetics of the dark kangaroo mouse, Microdipodops megacephalus.*

PROFESSIONAL SERVICE

Current Positions

2016-present. *Chair*, Biodiversity Committee, American Society of Mammalogists.

2017-present. *Taxonomy Advisor*, IUCN Small Mammal Specialist Group.

Society Memberships and Service

American Society of Mammalogists, ASM (2005-present)

Board of Directors (2014-2017)

Conservation Committee (2012-present)

Biodiversity Committee (2016-present)

Systematic Collections Committee (2011-present)

American Society of Naturalists (2013-present)

American Association for the Advancement of Science, AAAS (2006-2010, 2017-present)

Society of Systematic Biologists, SSB (2009-2011, 2013, 2017-present)

Canadian Society for Ecology and Evolution (2014-2015)

European Society for Evolutionary Biology (2013)

Sociedad Argentina para el Estudio de los Mamíferos, SAREM (2012-2014)

Sociedade Brasileira de Mastozoologia, SBMz (2012-2013)

Society for Conservation Biology, SCB (2012)

Refereeing Service ([Publons profile](#))

Manuscript referee for *American Naturalist* (2021), *BioScience* (2020), *BMC Evolutionary Biology* (2014 [x2]), *CheckList* (2017), *Conservatio American Midland Naturalist* (2012)n *Biology* (2018), *Current Biology* (2021), *Ecology & Evolution* (2020), *Ethology, Ecology & Evolution* (2014), *Evolution* (2018, 2020), *Genome Biology & Evolution* (2020), *Global Ecology & Biogeography* (2019 [x3]), *Heredity* (2020), *Historical Biology* (2017), *ISME Journal* (2020), *Journal of Biogeography* (2014, 2017 [x2]), *Journal of Mammalian Evolution* (2013), *Journal of Mammalogy* (2013, 2014 [x3], 2015, 2018, 2019 [x2], 2020 [x2], 2021), *Journal of Vertebrate Paleontology* (2016 [x2]), *Journal of Zoology* (2012), *Mammalia* (2017), *Methods in Ecology & Evolution* (2018 [x2]), *Molecular Biology & Evolution* (2020), *Molecular Phylogenetics & Evolution* (2014 [x2]), *Proceedings of the Royal Society B* (2019, 2020 [x2]), *Organismal Diversity & Evolution* (2016), *PLoS One* (2013, 2019), *Systematic Biology* (2020 [x2]), *Zootaxa* (2012, 2015, 2017).

Grant referee for FONDECYT-Chile (2017), Society of Systematic Biologists (2020).

RELATED PROFESSIONAL SKILLS

Languages

- Spanish and Portuguese – proficient written and spoken.
- Computer programing – proficient in R and Bash-shell scripting, some experience with Python and relational databases (psql)

Fieldwork

- Specimen sampling and collecting – mammal live-trapping and museum specimen preparation

- Navigation – Driving manual transmission and four-wheel drive vehicles; orienteering with map and compass; use of GPS devices
- Medical and risk – certified as Wilderness First Responder and in First-Aid (valid to April 2019, National Outdoor Leadership School)

Research Methods

- Statistical phylogenetics software – e.g., BEAST, RAxML, MrBayes, Geneious, Mesquite
- Spatial analysis software – ArcGIS, R, GrassGIS
- Molecular genetics – fluent in methodologies for ancient DNA and modern DNA extraction, PCR amplification, Sanger DNA sequencing, bioinformatics for next-gen (Illumina) data

REFERENCE CONTACTS

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