

BRYAN S. MCLEAN, PHD

University of North Carolina Greensboro · Department of Biology

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EDUCATION

- 2017 Ph.D Biology, University of New Mexico (with distinction)
Pattern and Process in the Radiation of Ground-dwelling Squirrels
- 2011 M.S. Biology, University of North Carolina Wilmington
Late Quaternary Paleoecology of Two High-Elevation Mammal Species from the Southern Rocky Mountains, Colorado
- 2004 B.S. Biology, Appalachian State University

RESEARCH FOCI

mammalogy, phylogenetics, biodiversity informatics, seasonal adaptation, specimen-based research

APPOINTMENTS

University of North Carolina Greensboro

2019 - present Assistant Professor, Department of Biology

University of Florida, Florida Museum of Natural History

2019 - present Adjoint Curator

2018 - 2019 NSF Postdoctoral Fellow (*Sponsors: Rob Guralnick, David Blackburn, David Reed*)

2017 - 2018 Postdoctoral Associate

University of New Mexico, Museum of Southwestern Biology

2018 - present Research Assistant Professor

2014 Curatorial Assistant, Division of Mammals

2011 - 2014 Curatorial Assistant, Division of Genomic Resources

Smithsonian Institution, National Museum of Natural History

2015 Peter Buck Predoctoral Fellow (*Sponsors: Kristofer Helgen, Gene Hunt*)

PUBLICATIONS

- 28) **McLean BS**, Barve N, Guralnick RP. Sex-specific breeding phenologies in the North American deer mouse (*Peromyscus maniculatus*). *Ecosphere* in press.
- 27) Balk M, Deck J, Emery K, et al. (**author 25 of 35**). 2022. A solution to the challenges of interdisciplinary aggregation and use of specimen-level trait data. *iScience* 105101. <doi.org/10.1016/j.isci.2022.105101>
- 26) Abreu EF, Pavan SE, Tsuchiya MTN, **McLean BS**, Wilson DE, Percequillo AR, Maldonado JE. 2022. Old specimens for old branches: Assessing effects of sample age in resolving a rapid Neotropical radiation of squirrels. *Molecular Phylogenetics and Evolution* 175: 107576. <doi.org/10.1016/j.ympev.2022.107576>
- 25) Ponnusamy L, Garshong R, **McLean BS**, Wasserberg G, Durden LA, Crossley D, Apperson CS, Roe RM. 2022. *Rickettsia felis* and other *Rickettsia* Species in chigger mites collected from wild rodents in North Carolina, USA. *Microorganisms* 10: 1342. <doi.org/10.3390/microorganisms10071342>
- 24) Kays R, et al. (**author 9 of 14**). 2022. Which mammals can be identified from camera traps and crowdsourced photographs? *Journal of Mammalogy* 103:767—775. <doi.org/10.1093/jmammal/gyac021>
- 23) **McLean BS**, Bell KC, Cook JA. 2022. SNP-based phylogenomic inference in Holarctic ground squirrels (*Urocitellus*). *Molecular Phylogenetics and Evolution* 169: 107396 <doi.org/10.1016/j.ympev.2022.107396>
- 22) Hantak MM, **McLean BS**, Li D, Guralnick RP. 2021. Mammalian body size is determined by interactions between climate, urbanization, and ecological traits. *Communications Biology* 4:972. <doi.org/10.1038/s42003-021-02505-3> <Popular Press [here](#) [here](#) and [here](#)>
- 21) Colella JP, Stephens RB, Campbell ML, Kohli BA, Parsons DJ, **McLean BS**. 2021. The open-specimen movement. *BioScience* 71:405—414. <doi:10.1093/biosci/biaa146>
- 20) **McLean BS**, Guralnick RP. 2021. Digital biodiversity data sets reveal breeding phenology and its drivers in a widespread North American mammal. *Ecology* 102:e03258. <doi.org/10.1002/ecy.3258> <Popular Press [here](#) and [here](#)>

- 19) Guralnick RP, Hantak MM, Li D, **McLean BS**. 2020. Body size trends in response to climate and urbanization in the widespread North American deer mouse, *Peromyscus maniculatus*. *Scientific Reports* 10:8882. <doi.org/10.1038/s41598-020-65755-x> <Popular Press>
- 18) Barve VV, Brenskelle L, Li D, Stucky BJ, Barve NV, Hantak MM, **McLean BS**, Paluh DJ, Oswald JA, Belitz MW, Folk RA. 2020. Methods for broad-scale plant phenology assessments using citizen scientists' photographs. *Applications in Plant Sciences* 8:e11315. <doi.org/10.1002/aps3.11315>
- 17) Phillips CD, Dunnum JL, Dowler RC, Bradley LC, Garner HJ, MacDonald KA, Lim BK, Revelez MA, Campbell ML, Lutz HL, Garza NO, **ASM Systematic Collections Committee**. 2019. Curatorial guidelines and standards of the American Society of Mammalogists for collections of genetic resources. *Journal of Mammalogy* 100:1690–1694. <doi.org/10.1093/jmammal/gyz111>
- 16) **McLean BS**, Cook JA, Durden LA, Hoberg EP, Guralnick RP. 2019. The next chapter of human-plague science. *Proceedings of the National Academy of Sciences* 116:14411-14412. <doi.org/10.1073/pnas.1908836116>
- 15) Durden LA, Robinson C, Cook JA, **McLean BS**, Nyamsuren B, Greiman SE. 2019. A new species of sucking louse from the long-tailed ground squirrel, *Urocitellus undulatus*, from Mongolia, with a key to species, and a review of host associations and geographical distributions of members of the Genus *Linognathoides* (Psocoda: Anoplura: Polyplacidae). *Journal of Parasitology* 105:469-479. <doi.org/10.1645/18-198>
- 14) **McLean BS**, Barve N, Flenniken J, Guralnick RP. 2019. Evolution of litter size in North America's most common small mammal: An informatics-based approach. *Journal of Mammalogy* 100:365–381 <doi.org/10.1093/jmammal/gyz057>
- 13) **McLean BS**, Bell KC, Allen JM, Helgen KM, Cook JA. 2019. Impacts of inference method and dataset filtering on phylogenomic resolution in a rapid radiation of ground squirrels (Xerinae: Marmotini). *Systematic Biology* 68:298–316. <doi.org/10.1093/sysbio/syy064> ** Featured on cover <https://bit.ly/304BOlr> **
- 12) Dunnum JD, **McLean BS**, Dowler RC, ASM Systematic Collections Committee. 2018. Mammal collections of the Western Hemisphere - A survey and directory of collections. *Journal of Mammalogy* 99:1307–1322. <doi.org/10.1093/jmammal/gyy151>
- 11) **McLean BS**. 2018. *Urocitellus parryii* (Rodentia: Sciuridae). *Mammalian Species* 50:84-99. <doi.org/10.1093/mspecies/sey011>
- 10) **McLean BS**, Nyamsuren B, Tchabovsky A, Cook JA. 2018. Impacts of late Quaternary environmental change on the long-tailed ground squirrel (*Urocitellus undulatus*) in Mongolia. *Zoological Research* 39:364-372. <doi.org/10.24272/j.issn.2095-8137.2018.042> ** Special issue on Mammal Biodiversity in Asia **
- 9) **McLean BS**, Helgen KM, Goodwin HT, Cook JA. 2018. Trait-specific processes of convergence and conservatism shape ecomorphological evolution in ground-dwelling squirrels. *Evolution* 72:473-489. <doi.org/10.1111/evo.13422>
- 8) Cook JA, et al. (**author 27 of 36**). 2017. The Beringian Coevolution Project: Holistic collections of mammals and associated parasites reveal novel perspectives on evolutionary and environmental change in the north. *Arctic Science* 3:585-617. <doi.org/10.1139/AS-2016-0042> ** Special issue on Arctic Museum Collections **
- 7) **McLean BS**. 2017. Splendid (continental) radiations. *Evolution* 71:802-803. <doi.org/10.1111/evo.13183>
- 6) **McLean BS**, Jackson DJ, Cook JA. 2016. Rapid divergence and gene flow at high latitudes shape the history of Holarctic ground squirrels (*Urocitellus*). *Molecular Phylogenetics and Evolution* 102:174-188. <doi.org/10.1016/j.ympev.2016.05.040>
- 5) Cook JA, **McLean BS**, Jackson DJ, Colella JP, Greiman SE, Tkach VV, Jung TS, Dunnum JL. 2016. First record of the Eurasian Least Shrew (*Sorex minutissimus*) and associated helminths from Canada: new light on northern Pleistocene refugia. *Canadian Journal of Zoology* 94:367-372. <doi.org/10.1139/cjz-2015-0212>
- 4) Cook JA, Lacey EA, Ickert-Bond SM, Hoberg EP, Galbreath KE, Bell KC, Greiman SE, **McLean BS**, Edwards S. 2016. From museum cases to the classroom: emerging opportunities for specimen-based education. *Archives of the Zoological Museum of Moscow State University* 38.
- 3) **McLean BS**, Bell KC, Dunnum JL, Abrahamson B, Colella JP, Deardorff ER, Weber J, Jones AK, Salazar-Miralles F, Cook JA. 2016. Natural history collections-based research: progress, promise and best practices. *Journal of Mammalogy* 97:287-297. <doi.org/10.1093/jmammal/gyv178>
- 2) **McLean BS**, Ward JK, Polito MJ, Emslie SD. 2014. Responses of high-elevation herbaceous plant assemblages to low glacial CO₂ concentrations revealed by fossil marmot (*Marmota*) teeth. *Oecologia* 175:1117-1127. <doi.org/10.1007/s00442-014-2982-y>
- 1) **McLean BS**, Emslie SD. 2012. Stable isotopes reflect the ecological stability of two high-elevation mammals from the late Quaternary of Colorado. *Quaternary Research* 77:408-417. <doi.org/10.1016/j.yqres.2012.02.001>

... in review/revision

- 1) Chapman OS, **McLean BS**. Seasonal and sex-specific changes in the gastrointestinal tracts of *Peromyscus maniculatus*. *Journal of Mammalogy* in revision.

PRESENTATIONS († denotes student author)

McLean BS. Assembling life-history and phenology data for mammals from digitized NHC collections. BioDigiCon, *invited* oral pres. (Sep. 2022).

McLean BS, Guralnick RP. Assembling individual-level trait-bases for small mammal phenology research. American Society of Mammalogists 101st Annual Mtg, *invited* oral pres. (Jun. 2022).

Chapman OS†, **McLean BS**. Gut check: exploring gastrointestinal morphology as a continuous functional trait in Appalachian small mammal communities. American Society of Mammalogists 101st Annual Mtg, oral pres. (Jun. 2022).

Weller AK†, Chapman OS†, Gora SL†, **McLean BS**. Litter size variation among North American small mammals. American Society of Mammalogists 101st Annual Mtg, oral pres. (Jun. 2022).

Ivey L†, **McLean BS**. What's going on upstairs? - testing Dehnel's phenomenon in small mammals of the Appalachians. American Society of Mammalogists 101st Annual Mtg, oral pres. (Jun. 2022).

Ivey L†, **McLean BS**. Testing Dehnel's phenomenon in small mammals of the Eastern United States. UNCG 16th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo, poster pres. (Apr. 2022).

Worcester JN†, Reyes A†, **McLean BS**. Patterns of genetic diversity of the long-tailed ground squirrel (*Urocitellus undulatus*) in Mongolia. UNCG 16th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo, poster pres. (Apr. 2022).

Harris M†, Weller AK†, Agresti H†, **McLean BS**. The UNCG Mammal Collection as a conservation genetics resource for the Southern Appalachian ecosystem. UNCG 16th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo, poster pres. (Apr. 2022).

Anderson J†, Tkach VV, McLean BS, Greiman SL. Diversity of cestodes in two congeneric and syntopic shrew species, *Sorex cinereus* and *Sorex fumeus*, from North Carolina. Southeastern Society of Parasitologists Annual Mtg, oral pres. (Apr. 2022).

Moore N†, Tkach VV, McLean BS, Greiman SL. New species of *Mathevolepis* Spassky 1948 from two shrew species, *Sorex cinereus* and *Sorex fumeus*, collected from the Appalachian Mountains of North Carolina. Southeastern Society of Parasitologists Annual Mtg, oral pres. (Apr. 2022).

Chapman OS†, **McLean BS**. Seasonal and sex-specific changes in the gastrointestinal tract of *Peromyscus maniculatus*. Southeastern Bat Diversity Network 27th Annual Mtg, oral pres. (Mar. 2022).

McLean BS. Three-dimensional data for the trait-based revolution. Joint School of Nanoscience and Nanoengineering (Greensboro), *invited* oral pres. (Nov. 2021).

Davis E, Balk M, Bernor R, Deck J, Emery K, Guralnick RP, Hank M, **McLean BS**, Meshida K, Walls RL. FuTRES, a functional trait resource for environmental studies, allows more precise body mass estimation for extinct mammals. Ecological Society of America Annual Mtg, oral pres. (Aug. 2021).

McLean BS. Informatics workflows for reconstructing breeding phenologies and phenological change through time in North American small mammals. Ecological Society of America Annual Mtg, *invited* oral pres. (Aug. 2021).

McLean BS, Bell KC, Cook JA. SNP-based phylogenomics in Holarctic ground squirrels. American Society of Mammalogists 100th Annual Mtg, oral pres. (Jun. 2021).

Abreu EF, Pavan S, Tsuchiya M, **McLean BS**, Wilson D, Percequillo AR, Maldonado JE. Assessing effects of sample age in resolving a rapid Neotropical radiation of squirrels. American Society of Mammalogists 100th Annual Mtg, oral pres. (Jun. 2021).

Chapman OS†, **McLean BS**. Gastrointestinal morphology as a continuous functional trait in Appalachian small mammal communities. American Society of Mammalogists 100th Annual Mtg, poster pres. (Jun. 2021).

Weller AK†, Chapman OS†, Gora SL†, **McLean BS**. Litter size variation among North American small mammals. American Society of Mammalogists 100th Annual Mtg, poster pres. (Jun. 2021).

McLean BS, Guralnick RP. Individual-level trait-bases for small mammal phenology research. iDigBio 5th Annual Digital Data Conference, oral pres. (Jun. 2021).

Ivey L†, **McLean BS**. Predicting species range expansions using new integrative datasets and species distribution modeling. UNCG 15th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo, poster pres. (Apr. 2021).

Kohn C†, **McLean BS**. Understanding the role of the baculum in a rapid evolutionary radiation of tree squirrels. UNCG 15th Annual Carolyn and Norwood Thomas Undergraduate Research and Creativity Expo, poster pres. (Apr. 2021).

- McLean BS**, Guralnick RP. Leveraging digitized trait data for new insight into small mammal phenology across North America. iDigBio 4th Annual Digital Data Conference, oral pres. (Jun. 2020).
- McLean BS**, Cook JA, Guralnick RP. The disparate evolutionary histories of Great Basin ground squirrels (*Uroditellus*). American Society of Mammalogists 99th Annual Mtg, oral pres. (Jun. 2019).
- McLean BS**. Insights into rodent speciation from small bones and big biodiversity data. Florida Museum of Natural History seminar series, oral pres. (Mar. 2019).
- McLean BS**, Guralnick RP, Barve N. Evolution of litter size in North America's most common small mammal: An informatics-based approach. American Society of Mammalogists 98th Annual Mtg, oral pres. (Jun. 2018).
- McLean BS**. Pattern and process in the radiation of ground-dwelling squirrels. American Society of Mammalogists 97th Annual Mtg, plenary presentation (Jun. 2017).
- McLean BS**, Bell KC, Allen JM, Helgen KM, Cook JA. Impacts of phylogenomic dataset filtering for resolving a rapid radiation of ground squirrels. Society of Systematic Biologists standalone mtg, oral pres. (Jan. 2017).
- McLean BS**, Cook JA. Pattern and process in the Pleistocene diversification of small-eared ground squirrels (*Uroditellus*). American Quaternary Association 24th Biennial Mtg, poster pres. (June 2016).
- McLean BS**, Cook JA. Parallel ecomorphological evolution in ground-dwelling squirrels: roles of phylogeny, allometry, and integration. Evolution 2016, poster pres. (Jun. 2016).
- McLean BS**, Jackson DJ[†], Cook JA. Diversity, distribution and conservation of Holarctic ground squirrels (*Uroditellus*): new phylogenetic insights. American Society of Mammalogists 95th Annual Mtg, oral pres. (Jun. 2015).
- McLean BS**, Cook JA. A history of high-latitude adaptation in Holarctic ground squirrels. Evolution 2014, oral pres. (Jun. 2014). <https://www.youtube.com/watch?v=ilsG5SQJkdk>
- McLean BS**. An isotopic role for fossil small mammals in paleoecology and paleoclimatology. Wisc-SIMS High Resolution Proxies of Paleoclimate workshop, University of Wisconsin, oral pres. (Jun. 2013).
- McLean BS**, Cook JA. New geometric morphometric methods for taxonomic identification of fossil ground squirrels (Rodentia: Marmotini). American Society of Mammalogists 93rd Annual Mtg, oral pres. (Jun. 2013).
- McLean BS**. Inferring geographic modes of speciation in ground-dwelling sciurids. American Society of Mammalogists 92nd Annual Mtg, poster pres. (Jul. 2012).
- McLean BS**, Emslie SD. A unique isotopic record of mammal ecology from the Southern Rockies during and after the last glacial period. American Society of Mammalogists 91st Annual Mtg, poster pres. (Jul. 2011).
- McLean BS**, Emslie SD. Mammalian paleoecology across the Last Glacial Maximum in the Southern Rocky Mountains. American Quaternary Association 21st Biennial Mtg, poster pres. (Aug. 2010)
- McLean BS**, Emslie SD. Mammalian paleoecology across the Last Glacial Maximum in the Southern Rocky Mountains. American Society of Mammalogists 90th Annual Mtg, poster pres. (Jun. 2010)

FUNDING AND AWARDS (to date >\$1.7 million)

- 2022 **UNCG College of Art and Sciences**, Proposal Preparation Program (P3) (\$3,000)
- 2021 **National Science Foundation**
Collaborative Research: STEPP-NET: Steppe Parasite Networks (\$850,000)
Career-Life Balance Supplement to STEPP-NET (\$46,808)
- 2021 **National Science Foundation**
MRI: Acquisition of Micro-computed Tomography and 3D Imaging Infrastructure for Interdisciplinary STEM Research in North Carolina (\$642,892)
- 2018 **National Science Foundation**, Postdoctoral Research Fellowship in Biology
Linking processes of speciation and extreme genital evolution: a multi-clade comparison in squirrels (\$138,000)
- 2016 **United States Fish and Wildlife Service**, Candidate Conservation Fund
*Distribution and Population Connectivity of Merriam's Ground Squirrel (*Uroditellus canus vigilis*)* (\$10,000)
- 2016 **American Society of Mammalogists**, ASM Fellowship
Pattern and process in the radiation of ground-dwelling squirrels (\$7,500)
- 2015 **National Museum of Natural History**, Peter Buck Predoctoral Fellowship
Finding common ground: towards a timescale for analyzing the radiation of ground-dwelling squirrels (\$32,000)
- 2015 **American Museum of Natural History**, Theodore Roosevelt Memorial Grant (\$2,275)
- 2014 **American Society of Mammalogists**, Grant-in-Aid of Research (\$2,000)
- 2014 **American Society of Mammalogists**, Elizabeth Horner Award (\$500)
- 2014 **UNM Department of Biology**, Joseph Gaudin Scholarship (\$2,750)
- 2013 **UNM Department of Biology**, Joseph Gaudin Scholarship (\$2,250)
- 2012 **UNM Department of Biology**, Joseph Gaudin Scholarship (\$1,000)

- 2012 **Prairie Biotic Research**, Research Grant (\$900)
 2012 **National Speleological Society**, Research Grant (\$750)
 2012 **T&E, Inc. of New Mexico**, Research Grant (\$2,500)
 2011 **Rocky Mountain Biological Lab**, Lee R.G. Snyder Graduate Research Fellowship (\$600)
 2010 **UNCW Dept. of Biology**, Dr. James F. and Frances B. Parnell Fellowship (\$2,300)
 2010 **UNCW Graduate School**, Dr. Ralph W. Brauer Fellowship (\$800)
 *** \$8,102 in additional research and travel support since 2010

TEACHING

University of North Carolina Greensboro

- 2022 Host-Parasite Networks
 2021-22 Biostatistics II
 2021 Seminar in Animal Ecology
 2019-21 Landscape Ecology, Landscape Ecology lab
 2022 Symbiosis (Guest Lecture)
 2021 Ecology: “Large-Scale Patterns in Biodiversity” (Guest Lecture)
 2021 EHS: “Informatics workflows for reconstructing breeding phonologies and phenological change through time in small mammals” (Guest Lecture)
 2020 EHS: “Detecting Global Change Responses in Mammal Communities” (Guest Lecture)
 2019 EHS: “Detecting Global Change Responses in Mammal Communities” (Guest Lecture)
 2017 EHS: “Detecting Global Change Responses in Mammal Communities” (Guest Lecture)
 2017 Ecology: “Large-Scale Patterns in Biodiversity” (Guest Lecture)
 2016 Evolution: “Molecular Phylogenetics” (Guest Lecture)

University of South Florida

- 2016 Mammalogy: “Mammalian Phylogenetics and Morphological Evolution” (Guest Lecture)

University of New Mexico

- 2014 Mammalogy: “Order Cetacea” (Guest Lecture)
 2013 Mammalogy: “Defining Characteristics of Mammals” (Guest Lecture)
 2013 Mammalogy: “Orders Dermoptera and Scandentia” (Guest Lecture)
 2014 Mammalogy Laboratory (Instructor)
 2013 Mammalogy Laboratory (Instructor)

University of North Carolina Wilmington

- 2011 Human Anatomy and Physiology Laboratory (Instructor)
 2010 Human Anatomy and Physiology Laboratory (Instructor)
 2010 Human Anatomy and Physiology Laboratory (Instructor)
 2009 Human Anatomy and Physiology Laboratory (Instructor)

Appalachian State University

- 2004 Introductory Botany Laboratory (Lab Assistant)
 2003 General Chemistry Laboratory (Teaching Assistant)

SERVICE AND OUTREACH

Biocollections Development and Digitization · Specimen-based inquiry is at the core of my research and teaching program, and I am committed to building and digitizing natural history collections for future generations of biodiversity scientists. Since 2006, I have led or participated in national and international field expeditions resulting in >11,000 vouchers (most with associated tissues and/or parasites), deposited in multiple U.S. museums (see [Bionomia](#) profile). The mammal collection I curate at UNCG is 100% digitized and globally discoverable via the Arctos multi-collection database and biodiversity data aggregators.

Student Mentorship and Inclusion · I have mentored 4 graduate students since 2019 (all at UNCG), each of whom developed and executed independent research projects. I have also mentored 23 undergraduate students since 2006 (18 at UNCG), including 11 women and 7 URMs in STEM. My goal is to open the “black box” of involvement in research for students by exposing them to as much of my lab’s research workflow as possible. This includes field methods (small mammal trapping and sampling), specimen preparation and curatorial methods, wet lab methods (DNA extraction, sequencing), data analysis, and biodiversity informatics.

Federal Grant Review · I have participated in 8 federal grant panels/ad hoc reviews since 2019: *NSF Division of Integrative Organismal Systems (2022)*; *NSF Division of Biological Infrastructure (2022)*; *NSF Division of Environmental Biology (2021,2022)*; *NSF Graduate Research Fellowship (2019,2020,2021,2022)*.

Peer Review · I have reviewed manuscripts for 17 journals since 2017: *Biological Conservation*; *Biological Journal of the Linnaean Society*; *Conservation Genetics Resources*; *Diversity and Distributions*; *Ecography*; *Ecology and Evolution*; *Journal of Animal Ecology*; *Journal of Mammalogy*; *Journal of Zoological Systematics and Evolutionary Research*; *Mammalia*; *Methods in Ecology and Evolution*; *Molecular Phylogenetics and Evolution*; *Occasional Papers of the Museum (Texas Tech University)*; *Paleogeography, Paleoclimatology, Paleoecology*; *PloS Neglected Tropical Diseases*; *PloS One*; *Systematic Biology*

Society Service · I regularly serve on committees of the American Society of Mammalogists (*Systematic Collections Committee, 2013-present*) and as a small grants reviewer (*American Society of Mammalogists, Grants-in-Aid of Research, 2018,2019,2020,2021,2022*; *Society of Systematic Biologists, Graduate Research Fellowships 2018,2019*).

PROFESSIONAL AFFILIATIONS

American Society of Mammalogists
Society of Systematic Biologists
Ecological Society of America