

CURRICULUM VITAE

James W. Demastes

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Present Address:

Department of Biology
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Education:

- Ph.D. Louisiana State University, Baton Rouge, LA., Department of Zoology and Physiology. Dissertation: "Analysis of cospeciation: The effects of spatial and temporal scale." **1996.**
- M.S. Louisiana State University, Baton Rouge, LA., Department of Zoology and Physiology. Thesis: "Host-parasite coevolutionary relationships in two assemblages of pocket gophers and chewing lice." **1990.**
- B.S. Secondary Science Education (biology major, chemistry minor), Auburn University, Auburn, AL. **1982.**
- A.A. Education, Chattahoochee Valley State Community College, Phenix City, AL. **1980.**

Experience:

- 2009-pres. Professor, Department of Biology, University of Northern Iowa.
- 2003-2009. Associate Professor, Department of Biology, University of Northern Iowa.
- 1998- 2003. Assistant Professor, Department of Biology, University of Northern Iowa.
- 1996-1998 Research Associate, LSU Museum of Natural Science. Duties included administration of a multiple-investigator NSF grant, supervision of undergraduate lab workers, and to conduct research on cospeciation of hosts and their parasites (DNA isolation, primer design, PCR, cloning, sequencing, and data analysis).
- 1988-1995 Teaching assistant at LSU for freshman biology, mammalogy, and evolution classes (assisted in development of evolution labs).
- 1993-1994 Curatorial assistant for LSU Rural Life Museum. Duties included designing and initiating a plan of action for the cataloging and computerization of the collection.
- 1987-1993 Curatorial assistant for LSU Museum of Natural Science, Collection of Mammals.
- 1985-1987 Secondary science teacher (biology and physical science; grades 9-12), East Bay High School, Tampa, FL (certified in Florida)
- 1983-1985 Secondary science teacher (biology, chemistry, earth and physical science; grades 7-12), Chambers County High School, Lafayette, AL (certified in Alabama).

University Teaching:

Current teaching responsibilities at UNI include:

General Biology: Organismal Diversity (BIOL2051), Evolution, Ecology and the Nature of Science (BIOL3100), Mammalogy (BIOL4164/5164), Evolutionary Biology (BIOL4142/5142), Biological Diversity and Conservation (BIOL1200): 2024, Ecuador/Galapagos; 2025, Costa Rica

Curriculum Development:

Mammalogy (BIOL4164/5164): Developed new course in 1999 to serve upper-level biology majors. Involved building a teaching collection via direct collection and specimen preparation. Class has been offered (and filled) for the past 27 years.

Evolution, Ecology and the Nature of Science (BIOL3100): Worked with another faculty member to develop this unique, discussion-based course to serve as a required core course for all biology majors, fostering critical thinking, classroom involvement and knowledge of ecology and evolutionary concepts.

Biological Diversity and Conservation (BIOL1200): Developed this new UNIFI course in Responsibility that our department now uses for our many study abroad courses. Incorporating a rigorous ethics framework involved much outside reading and attending an ethics summer workshop offered by the Department of Philosophy & World Religions, in collaboration with UNIFI and CETL in 2014.

Faculty awards:

2017 Board of Regents Award For Faculty Excellence

2014 Dean's Award: Excellence in Teaching in the Liberal Arts Core

2009 UNI Apple Polisher

2008 UNI Beta Beta Beta Excellence in Teaching Award

2001 University Book and Supply Teaching Award, UNI College of Natural Science 1999

Field Experience:

Led or participated in fieldwork to collect small mammals and parasites throughout continental 48 states, Mexico, and Costa Rica.

Research Grants and Awards:

2018 OSP Capacity Grant: Analysis of a Fragmented Mitochondrial Genome in Chewing Lice (funded \$8,191.00) with T. Spradling

2014-2018 NSF EAGER Award: Testing geographic range-expansion models: Parasite population genetics in a colonizing species (funded: \$149,937) with T. Spradling and J. Light (Texas A&M)

2013 Provost/OSP Capacity Grant to develop DNA fingerprint library (funded: \$3000)

2012 NSF Pre-proposal: Collaborative: RUI: Genetic architecture of parasite populations at host hybrid zones (not invited)

2011 UNI Provost/OSP Seed Grant: "Host-Parasite Cospeciation: The Process Behind the Pattern". Co-PI with Theresa Spradling. (funded: \$15,000).

2004 "Molecular Studies of Cospeciation Enhanced by Exhaustive Sampling and GIS Technology" (with M.S. Hafner at Louisiana State University), National Science Foundation (funded: \$300,000; \$24,971 UNI subaward)

- 1999 Iowa Distributed Wind Generation Project (IDWGP), "Avian Risk, Fatality and Disturbance at the IDWGP Wind Farm, Algona, IA" (funded: \$24,505).
- 1999 Iowa Department of Natural Resources contract for "Inventory of the bats of White Pine Hollow State Preserve" (funded: \$1,587).
- 1995 Outstanding Graduate Student (1994), LSU Museum of Natural Science
- 1993 American Society of Mammalogists, Shadle Fellowship in Mammalogy (\$3025)
- 1993 American Museum of Natural History, Theodore Roosevelt Memorial Grant-in-Aid (\$975)
- 1993 Louisiana State University Molecular Evolution Grant-in-Aid (\$625)
- 1993 Local Chapter of Sigma Xi, Grant-In-Aid (\$300)
- 1992 Louisiana State University Molecular Evolution Fellowship, one-year fellowship in molecular evolution, (\$15000-stipend, \$2000-supply, \$500-travel)
- 1991 Southwestern Association of Naturalists, Wilks Award for best student paper (\$200)
- 1991 Louisiana Department of Wildlife and Fisheries, grant to conduct systematic study of possible endangered species (*Geomys breviceps breviceps*) and its chewing louse (*Geomydoecus ewingi*), (\$3000)
- 1991 American Society of Mammalogists, Grant-in-Aid of research (\$500)
- 1990 National Sigma Xi, Grant-in-Aid of research (\$350)
- 1989 American Society of Mammalogists, Grant-in-Aid of research (\$500)
- 1988 National Sigma Xi, Grant-in-Aid of research (\$450)
- 1980 Phi Delta Sigma (professional teachers), Outstanding Student in Education

Publications:

- 2024 Bruns, C. E.*, Demastes, J. W., Berendzen, P. B., & Wen, A. The genetic structure of founding bumblebee populations in reconstructed prairie habitat 3 years after planting. **Restoration Ecology**, 32(5), e14176.
- 2021 Spradling, T. A., Place, A. C.*, Campbell, A. L.*, & Demastes, J. W. Mitochondrial genome of *Geomydoecus aurei*, a pocket-gopher louse. **Plos one**, 16(7), e0254138.
- 2019 Hafner, D. J., M. S. Hafner, T.A. Spradling, J. Light, J. W. Demastes. Temporal and spatial dynamics of competitive parapatry in chewing lice. **Ecology and Evolution**, 9:7410-7424.
- 2019 Poppinga, A.*, J. W. Demastes, T. A. Spradling, D. J. Hafner, and M. S. Hafner. Hostparasite associations of the *Cratogeomys fumosus* species group and their chewing lice, *Geomydoecus*. Accepted: **Therya** 10, no. 2 . (*UNI undergraduate student)
- 2018 Demastes, J, Hafner, D, Hafner, M., Light, J., Spradling, T and. Loss of genetic diversity, recovery, and allele surfing in a colonizing parasite, *Geomydoecus aurei*. **Molecular Ecology** 28:703-720.
- 2018 Light, J. E., Harper, S.*, Johnson, K., Demastes, J., & Spradling, T. Development and Characterization of 12 Novel Polymorphic Microsatellite Loci for the Mammal Chewing Louse *Geomydoecus aurei* (Insecta: Phthiraptera) and a Comparison of Next-Generation Sequencing Approaches for Use in Parasitology. **Journal of Parasitology**, 104:89-95. (*UNI undergraduate student)
- 2016 Pietan, L. L.*, Spradling, T. A., & Demastes, J. W. The Mitochondrial Cytochrome Oxidase Subunit I Gene Occurs on a Minichromosome with Extensive Heteroplasmy in Two Species of Chewing Lice, *Geomydoecus aurei* and *Thomomydoecus minor*. **PloS One**, 11(9), e0162248. (*UNI undergraduate student)
- 2016 Spradling, T. A., Demastes, J. W., Hafner, D. J., Milbach, P. L.*, Cervantes, F. A., & Hafner, M. S. (2016). Systematic revision of the pocket gopher genus *Orthogeomys*.

- Journal of Mammalogy**, 97(2), 405-423. (*UNI undergraduate student)
- 2015 Harper, S. E.** , T. A. Spradling, J. W. Demastes, and C. S. Calhoun*. Host behavior drives parasite genetics at multiple geographic scales: Population genetics of the chewing louse, *Thomomydoecus minor*. **Molecular Ecology**. 24:4129-4144. (*UNI undergraduate student, ** UNI M.S. student)
- 2014 Hafner, M. S., D. J. Hafner, E. E. Gonzales, J. W. Demastes, T. A. Spradling, and F. A. Cervantes. Rediscovery of the pocket gopher *Orthogeomys lanius* (Rodentia: Geomyidae) in Veracruz, Mexico. **Journal of Mammalogy**. 95:792-802.
- 2013 Mathis, V. L., M. S. Hafner, M. S., D. J. Hafner, and J. W. Demastes. *Thomomys nayarensis*, a new species of pocket gopher from the Sierra del Nayar, Nayarit, Mexico. **Journal of Mammalogy**. 94: 983-994.
- 2013 Mathis, V. L., M. S. Hafner, D. J. Hafner, and J. W. Demastes. Resurrection and Redescription of the pocket gopher *Thomomys sheldoni* from the Sierra Madre Occidental of Mexico. **Journal of Mammalogy**. 94: 544-560.
- 2012 Demastes, J. W., T. A. Spradling, M. S. Hafner, D. J. Hafner, J. E. Light, G. R. Spies*. Cophylogeny on a fine scale: *Geomydoecus* chewing lice and their Pocket Gopher Hosts (*Pappogeomys bulleri*). **Journal of Parasitology**, 98:262-270. (*UNI undergraduate student)
- 2011 Hafner, M.S., A. R. Gates, V.L. Mathis, J. W. Demastes and D. J. Hafner. Redescription of *Thomomys atrovarius*. **Journal of Mammalogy**. 92:1367-1382.
- 2009 Hafner, M. S. , D. J. Hafner, J. W. Demastes, T. A. Spradling, G. L. Hasty, and J. E. Light. Evolutionary Relationships of pocket gophers of the Genus *Pappogeomys* (Rodentia: Geomyidae). **Journal of Mammalogy**, 90:47-56.
- 2008 Richtsmeier, R. J.*, N. P. Bernstein, J. W. Demastes, and R. W. Black. Migration, gene Flow, and genetic diversity within and among Iowa populations of ornate box turtles (*Terrapene ornata ornata*). **Chelonian Conservation and Biology**, 7:3-11. (*UNI M.S. student)
- 2008 Hafner, D. J., M. S. Hafner, G. L. Hasty, T. A. Spradling, and J. W. Demastes. Evolutionary Relationships of pocket gophers (*Cratogeomys castanops* species group) of the Mexican Altiplano. **Journal of Mammalogy**, 89:190-208.
- 2007 Eastman*, J. M., T. A. Spradling, H. Hadow, and J. W. Demastes. Conservation genetic assessment of the blue-spotted salamander in Iowa. **American Midland Naturalist**, 158:233-239. (*UNI M.S. student)
- 2007 Demastes, J. W., J. M. Eastman*, J. S. East*, and C. Spolsky. Phylogeography of the bluespotted salamander, *Ambystoma laterale* (Caudata: Ambystomatidae). **Am. Mid. Nat.**, 157:149-161. (*UNI M.S. student)
- 2005 Hafner, M. S., J. E. Light, D. J. Hafner, S. V. Brant, T. A. Spradling, and J. W. Demastes. Cryptic species in the Mexican pocket gopher *Cratogeomys merriami*. **Journal of Mammalogy**, 86:1095-1108.
- 2003 Demastes, J. W., A. L. Butt*, M. S. Hafner and J. L. Light. Systematics of a rare species of pocket gopher, *Pappogeomys alcorni*. **Journal of Mammalogy**, 84:753-761. (*UNI undergraduate student)
- 2003 Sinatra, Gale, Sherry S. Southerland, Frances McConaughy, and James W. Demastes. Intentions and beliefs in students' understanding and acceptance of biological evolution. **Journal of Research in Science Teaching**, 40:510-528.
- 2003 Demastes, J. W., T. A. Spradling, and M. S. Hafner. Effects of spatial and temporal scale on cospeciation. Pp. 221-239 in "Tangled trees: Phylogeny, Cospeciation, and Coevolution". (R. D. M. Page, ed.). **The University of Chicago Press, Chicago**.

- 2003 Hafner, M. S., J. W. Demastes, T. A. Spradling, and D. L. Reed. Cophylogeny in pocket gophers and chewing lice. Pp. 195-220 in "Tangled trees: Phylogeny, Cospeciation, and Coevolution". (R. D. M. Page, ed.). **The University of Chicago Press, Chicago.**
- 2002 Demastes, J. W., T. A. Spradling, M. S. Hafner, D. J. Hafner, and D. L. Reed. Systematics and phylogeography of pocket gophers in the genera *Cratogeomys* and *Pappogeomys*. **Molecular Phylogenetics and Evolution**, 22:144-154.
- 2001 Spradling, T. A., M. S. Hafner, and J. W. Demastes. Differences in rate of molecular evolution in rodents. **Journal of Mammalogy**, 82:65-80.
- 2000 Monterrubio, T., J. W. Demastes, L. Leon, and M. S. Hafner. Systematic relationships of the endangered Queretero pocket gopher (*Cratogeomys neglectus*). **The Southwestern Naturalist**, 45:249-252.
- 2000 Hafner, M. S., J. W. Demastes, and T. A. Spradling. Coevolution. In "Life Underground: The Biology of Subterranean Rodents." (G. N. Cameron, E. Lacey, and J. L. Patton eds.). **The University of Chicago Press.**
- 1998 Pocket gophers and their chewing lice: a test of the maternal transmission hypothesis. Demastes, J. W., M. S. Hafner, D. J. Hafner, and T. A. Spradling. **Molecular Ecology**, 7:1065-9.
- 1998 M. S. Hafner, J. W. Demastes, D. J. Hafner, T. A. Spradling, P. D. Sudman and S. A. Nadler. Age and movement of a hybrid zone: Implications for dispersal distance in pocket gophers and their chewing lice. **Evolution**, 52:278-282.
- 1996 Demastes, J. W., M. S. Hafner, and D. J. Hafner. Phylogeographic variation in two Central American pocket gophers (*Orthogeomys*). **Journal of Mammalogy**, 77:917-927.
- 1994 Demastes, J. W. and J. V. Remsen. The genus *Caryothraustes* (Cardinalinae) is not monophyletic. **Wilson Bulletin**, 106:733-738.
- 1994 Hafner, M. S., P. D. Sudman, F. X. Villablanca, T. A. Spradling, J. W. Demastes, and S. A. Nadler. Disparate rates of molecular evolution in cospeciating hosts and parasites. **Science**, 265:1087-1090.
- 1994 Demastes J. W. Systematics and zoogeography of the Mer Rouge pocket gopher (*Geomys breviceps breviceps*) based on mtDNA cytochrome *b* sequence data. **The Southwestern Naturalist**, 39:276-280.
- 1993 Demastes, J. W. and M. S. Hafner. Cospeciation in pocket gophers (*Geomys*) and their chewing lice (*Geomydoecus*). **Journal of Mammalogy**, 74:521-530.
- 1993 Tamplin, J. W., J. W. Demastes, and J. V. Remsen. A biochemical and morphometric study of the subfamily Cardinalinae. **Wilson Bulletin**, 105:93-113.
- 1992 Demastes, J. W. Student preparation for evolution education, pp. 93-95. In R. G. Good et al. (eds.), Proceedings of the 1992 Evolution Education Research Conference. Louisiana State University, Baton Rouge, LA.*
- 1990 Rossman, D. A., and J. W. Demastes. An inventory of the reptiles, amphibians, and mammals of Jean Lafitte National Park. Report to U. S. Department of National Parks.

Papers Presented:

2005. Phylogeography of the blue-spotted salamander. Iowa Academy of Sciences.
2002. Systematics of a rare species of pocket gopher (*Pappogeomys alcorni*). American Society of Mammalogists, McNeese State University.
- 2000 Phylogeographic variation in the pocket gopher genus *Cratogeomys*. Southwestern Association of Naturalists.
- 1997 Coevolution in Subterranean Rodents. Symposium paper at The Seventh International Theriological Congress.

- 1996 Pocket gopher demography and parasite transmission on a microspatial scale. American Society of Mammalogists.
- 1993 Biogeography, systematics, and endangered species status of the Mer Rouge pocket gopher (*Geomys breviceps breviceps*) and its chewing louse (*Geomydoecus ewingi*). 1991 Mammal ectoparasites: A molecular test of the maternal transmission hypothesis. Southwestern Association of Naturalists (Wilks Award).
- 1990 Systematics and biogeography of pocket gophers (*Geomys*) and their chewing lice (*Geomydoecus*) from Texas and Louisiana. American Society of Mammalogists. 1992 Zoogeography of two Middle American geomyids (*Orthogeomys cherriei* and *O. underwoodi*) based on analysis of mtDNA. American Society of Mammalogists.

Invited Presentations:

- 2014 Biogeography of the chewing lice of the Trans-Mexican Volcanic Belt and solving the mystery of *Geomydoecus pricei*. 5th International Conference of Phthiraptera, Park City, Utah.
- 2014 Peter Rabbit, Symbiosis and the Meaning of Life. UNI Darwin Week.
- 2008 Molecular studies of cospeciation and biogeography in small mammals. Cornell College, Mt. Vernon, IA
- 2004 Fire and Ice: Coevolution across the Trans-Mexican Volcanic Range. Clarke College, Dubuque, IA
- 2001 Coevolution and subterranean rodents. Iowa Natural History Association.
- 2000 Coevolution and subterranean rodents. Department of Animal Ecology, Iowa State University.
- 1999 The effects of spatial and temporal scale on cospeciation. Department of Biology, University of Iowa.
- 1998 The ups and downs of pocket gopher biogeography: The Mexican Transverse Volcanic Range and the lowlands of Costa Rica. Department of Biology, Centenary College.
- 1996 Cospeciation: Effects of evolutionary and spatial scale. Department of Biology, Wake Forest University.
- 1994 Host-parasite interactions at mammal hybrid zones. American Society of Mammalogists.
- 1994 Host-parasite interactions and mammal hybrid zones: testing hypotheses of parasite transmission and hybrid zone origins. Department of Biology Seminar Series, Southeastern Louisiana University.

Graduate Students (* coauthor, peer reviewed publication)

- Jaqueline Chimni, MA, Coevolution in Avian/Parasite Assemblages, currently RN in California
- Rebecca Richtsmeier*, Genetic Diversity in Ornate Box Turtles, thesis published, currently instructor at Mt. Mercy College.
- Jade East*, Phylogeography of Blue-spotted Salamanders, thesis published, currently lab manager in Genetics of Ophthalmic Diseases Lab at University of Iowa.

Undergraduate Research Students (*coauthor, peer reviewed publication; ¹senior thesis)

- Cory Hammit, 1999,
 - Annette Leslie, 1999
 - Erik Westin, 2001
 - Lori Goebel, 2001
 - Mike Strohbeen, 2001
 - Andrea Butt*, 2001
 - Chad Drury, 2002
 - Cody Thompson, 2003-2004
 - Abby Luensman, 2004-2005
 - Bonnie Stransky, 2004-2005
 - Abby Waychoff, 2004
 - Gretchen Spies*, 2004-2006
 - Ann Schwemm, 2005
 - Renee Pasker, 2005
 - Ryan Lahr, 2007
 - Andy Smith, 2008-2010
 - Jordan Prihoda, 2010
 - Alex Poppinga^{1*} 2011-2014
 - Elizabeth Rasing 2011-2013
 - Paige Milbach* 2011-2013
 - Sarah Huebner 2013-2016
 - Addison Miller, 2013
 - MacKenzie Stueck, 2013
 - Lucas Pietan^{1*} 2014-2016
 - Brian Ross, 2014-2016
 - Courtney Massey¹ 2016-2017
 - Lauren Billings 2017-2018
 - Tanner Storbeck 2018
 - Drew Engerbretson 2018
 - Clarissa Bruns¹ 2018
 - Madi Banyas 2019
 - Ashley Campbell* 2019-2021
 - Dino Bolic 2020
 - McKenna Dempster 2021-2021
 - Skye Frankin^{1*} 2021-2022
 - John Lehmkuhl^{1*} 2022-2024
 - Grace Mraz^{1*} 2022-2024
 - Jordan Rubner* 2023-2024
 - Jaylie Hicklin^{1*} 2023-2024
 - Aubree Blanco^{1*} 2023-2025
 - Morgan Mescher^{1*} 2023-2025
 - Payton Harle* 2024-2025
 - Jessica Lopez* 2025
- (2022-25 students are coauthors of a manuscript in prep)