SCOTT C. PEDERSEN

2766 SE Bybee Blvd.
PDX OR 94202
TEL 503-593-9485
| Scott.Pedersen@BatHead.com |
| Bathead.com |

Department of Biology & Microbiology
South Dakota State University
Campus Box 2104A, BKX SD 57007
TEL 605-688-6142
|Scott.Pedersen@sdstate.edu |

EDUCATION

1993 Ph.D., University of Nebraska - Lincoln, School of Biological Sciences
1988 M.A., University of Colorado - Boulder, Department of EPO-Biology
1984 B.A., University of Colorado - Boulder, Department of EPO-Biology

PROFESSIONAL EXPERIENCE

2007+ Research Associate, Division of Zoology, Museum of Texas Tech University – Lubbock
1993+ Research Associate, Division of Zoology, University of Nebraska State Museum - Lincoln

2022 Professor Emeritus, Dept. of Biology & Microbiology, South Dakota State University
2014 Professor, Dept. of Biology & Microbiology & Adjunct, Dept. of Natural Resource Management
2004 Associate Professor, Department of Biology & Microbiology, South Dakota State University
1999 Assistant Professor, Department of Biology & Microbiology, South Dakota State University
1997 NIH Research Associate, Department of Orthodontics, University of Washington – Seattle
1994 NIDR Post-Doctoral Fellow, Department of Orthodontics, University of Washington - Seattle
1993 Assistant Professor, American University of the Caribbean - School of Medicine, Montserrat W.I.

'99-16 Curator, Division of Mammals, South Dakota State University
'97-99 Research Associate, Division of Mammals, University of Washington Burke Museum - Seattle
'85-86 Curatorial Assistant, Division of Mammals, University of Colorado Museum

'91-93 Instructor, Nebraska Scholars Institute: AP courses for HS students in Anatomy & Mammalogy
'89-93 Technical Advisor: Totten Center for Biosystematic Technology, UNSM Morphometrics Lab
'88-93 Graduate Teaching Assistant: UNL, Human anatomy & General biology
'86-88 Graduate Teaching Assistant: CU-Boulder, Human anatomy

SPECIALIZED TEACHING & EXPERTISE

Gross anatomy, Vertebrate evolution, & Vertebrate embryology

PROFESSIONAL MEMBERSHIPS

1987+ North American Society for Bat Research
1984+ American Society of Mammalogists

'11-20 Human Anatomy and Physiology Society
'99-22 Bat Working Group - South Dakota (Vice-Chair)
'98-02 Washington State Bat Working Group (Steering Committee)
'95-98 Bats Northwest (Research Advisory Committee)
'93-98 Society for the Study of Mammalian Evolution
'91-04 Society for the Study of Evolution
'84-20 Society for Integrative & Comparative Biology

PEER-REVIEWED PAPERS (n = 35)

2022 Martín-Regalado N, Pedersen SC, & Lavariega MC. Alopecia in bats. Accepted 4.2022 - Acta Chiropterologica.
2018 Pedersen SC, Larsen PA, Westra SA, van Norren E, Overman W, Kwiecinksi GG. & Genoways HH. Bats of Sint Eustatius, Caribbean Netherlands. Occ. Papers, Museum of Texas Tech University, 353:1-24.
2018 Pedersen SC, Kwiecinski GG, Genoways HH, Larsen RJ, Larsen PA, Phillips CJ, & Baker RJ. Bats of St. Lucia, Lesser Antilles. Special Publications, Museum of Texas Tech University, 69:1-61.
2018 Kwiecinski GG, Pedersen SC, Genoways HH, Larsen PA, Larsen RJ, Hoffman JD, Springer F. Phillips CJ, & Baker RJ. Bats of St. Vincent, Lesser Antilles. Special Publications, Museum of Texas Tech University, 68:1-68.
2017 Romero V and Pedersen SC. A new abnormality record in bats: a teratological condition or skull trauma due to tooth avulsion in *Noctilio leporinus*? Mammalia, 82:494-499.
2017 Larsen RJ, Larsen PA, Phillips C, Genoways H, Kwiecinski G, Pedersen S, Phillips C, & Baker R. Patterns of morphological and molecular evolution in the Antillean tree bat, *Ardops nichollsi* (Chiroptera: Phyllostomidae). Occ. Papers, Museum of Texas Tech University, 345:1-28.
2015 He W, Pedersen S, Gupta A, Simmons J, & Müller R. Lancet dynamics in greater horseshoe bats, *Rhinolophus ferrumequinum*. PLoS One. 2015;10(4):e0121700
2012 Pedersen SC, Popowics TE, Kwiecinski GG, & Knudsen DEB. Sublethal pathology in bats associated with stress and volcanic activity on Montserrat, West Indies. J. Mamm. 93:1380-1392.
2012 Larsen RJ, Larsen PA, Genoways HH, Catzeflis FM, Geluso K, Kwiecinski GG, Pedersen SC, Simal F, & Baker RJ. Evolutionary history of Caribbean Myotis: with evidence of a 3rd L-A endemic. Mamm. Biol. 77:124-134.
2011 Larsen PA, Siles L, Pedersen SC, & Kwiecinski GG. A new species of *Micronycteris* from St. Vincent, Lesser Antilles. Mamm. Biol., 76:267-700.
2011 Genoways HH, Larsen RJ, Pedersen SC, Kwiecinski GG, & Larsen PA. (2012) Bats of Barbados. Chiroptera Neotropical 17:963-988.
2010 Lindsay KC, Kwiecinski GG, Pedersen SC, Bacle J-P, & Genoways HH. First record of *Ardops nichollsi* from Antigua, Lesser Antilles. Mammalia 74:93-95.
2010 Genoways HH, Kwiecinski GG, Larsen PA, Pedersen SC, Larsen RJ, Hoffman JD, de Silva M, Phillips CJ, & Baker RJ. Bats of the Grenadines, West Indies & placement of Koopman's line. Chirop. Neotrop, 16:501-521.
2007 Pedersen SC, Larsen PA, Genoways HH, Morton MN, Lindsay KC, & Cindric J. Bats of Barbuda, Northern Lesser Antilles. Occ. Papers, Museum of Texas Tech University, 271:1-20.
2007 Larsen RJ, Boegler KA, Genoways HH, Masefield WP, Kirsch RA, & Pedersen SC. Mist netting bias, species accumulation curves, & rediscovery of two bats on Montserrat. Acta Chirop., 9:423-435.
2007 Larsen PA, Hoofer SR, Bozeman MC, Pedersen SC, Genoways HH, Phillips CJ, Pumo DE, & Baker RJ. Phylogenetics & phylogeography of *A. jamaicensis* based on cyt-b DNA sequences. J. Mamm., 88:712-727.
2007 Genoways HH, Pedersen SC, Phillips CJ, & Gordon LK. Bats from Anguilla, Northern Lesser Antilles. Occ. Papers, Museum of Texas Tech University, 270:1-12.
2007 Genoways HH, Pedersen SC, Larsen PA, Kwiecinski GG, & Huebschman JJ. Bats of St. Martin, French West Indies/St. Maarten, Netherlands Antilles. Mast. Neotrop. 14(2):169-188.
2007 Genoways HH, Larsen PA, Pedersen SC, & Huebschman JJ. Bats of Saba, Northern Lesser Antilles. Acta Chiropterologica, 9:91-114.
2006 Pedersen SC, Genoways GG, Morton MN, Swier VJ, Larsen PA, Lindsay KC, Adams RA, & Appino JD. Bats of Antigua, Northern Lesser Antilles Occ. Papers, Museum of Texas Tech University, 249:1-18.
2006 Larsen PA, Genoways HH, & Pedersen SC. New Records of Bats from Saint Barthélemy (St. Barts), French West Indies. Mammalia 70:321-325.
2005 Pedersen SC, Genoways HH, Morton MN, Kwiecinski GG, & Courts SE. Bats from St. Kitts, Northern Lesser Antilles. Carib. J. Sci. 41:4:744-760.
2005 Herring SW, Pedersen SC, & Huang X. Ontogeny of bone strain: the zygomatic arch in pigs. J. Exp. Biol. 208:4509-4521.
2004 Carstens BC, Sullivan J, Davalos LM, Larsen PA, & Pedersen SC. Exploring population genetic structure in three species of Lesser Antillean bats. Mol. Ecology, 13:2557-2566.
2003 Pedersen SC, Genoways HH, Morton MN, Johnson JW, & Courts SE. Bats of Nevis, Northern Lesser Antilles. Acta Chiropterologica, 5:251-267.
2003 Adams RA. Pedersen SC, Thibault KM, Jadin J, & Petru B. Calcium as a limiting resource to insectivorous bats? Journal of Zoology, London, 260:189-194.
1998 Pedersen SC. Morphometric analysis of the chiropteran skull with regard to mode of echolocation. J. Mamm., 79:91-103.
1998 Pedersen SC & Anton SC. Bicoronal synostosis in a child from historic Omaha cemetery 25DK10. AJPA, 105:369-376.
1996 Pedersen SC. Skull growth & the presence of auxiliary fontanels in rhinolophid bats. Zoomorphology, 116:205-212.
1996 Pedersen SC, Genoways HH, & Freeman PW. Bats from Montserrat with comments concerning the effects of Hurricane Hugo. Carib. J. Sci., 32:206-213.
1995 Pedersen SC. Cephalometric correlates of echolocation in the Chiroptera II: Fetal development. J. Morph., 225:107-123.
1993 Pedersen SC. Skull Growth in cannibalistic Tiger salamanders, *Ambystoma tigrinum*. SW. Nat., 38:316-324.
1993 Pedersen SC. Cephalometric correlates of echolocation in the Chiroptera. J. Morph., 218:85-98.
1993 Fenton MB, Audet D, Dunning DC, Long J, Merriman CB, Pearl D, Syme DM, Adkins B, Pedersen SC, & Wohlgenant T. Activity patterns & roost selection by *Noctilio albiventris* in Costa Rica. J. Mamm., 74:607-613.
1991 Pedersen SC. Dental morphology of the cannibal morph in the Tiger salamander, *A. tigrinum.* Amphibia-Reptilia,12:1-14.

CO-EDITED BOOKS (n = 2)

2013 Adams RA & Pedersen SC. Co-editors: Bat Evolution, Ecology, & Conservation. Springer Press. 547p
2000 Adams RA & Pedersen SC. Co-editors: Ontogeny, Functional Ecology & Evolution of Bats. Cambridge Univ. Press. 398p

BOOK CHAPTERS (n = 10)

2019 Hoffman JD, Kadlubar G, Pedersen SC, Larsen RJ, Larsen PA, Phillips CJ, Kwiecinski GG, and Genoways HH. Predictors of bat species richness within the Caribbean basin. Special Publications, Museum of Texas Tech University 71:337-377
2013 Pedersen SC & Müller R. Noseleaves & nasal emission. 72-91p. in: Bat Evolution, Ecology, & Conservation. Springer Press.
2012 Pedersen SC, Genoways HH, Kwiecinski GG, Larsen PA, & Larsen RJ. Biodiversity, biogeography, and conservation of bats in the Lesser Antilles. Pp. 62-73, 330, in Biodiversité insulaire: la flore, la faune et l'homme dans les Petites Antilles, eds. J.-L. Vernier and M. Burac. France: Schoelchers, Martinique, Direction de l'Environnement, de l'Aménagement et du Logement de Martinique et Université des Antilles et de la Guyane, 335 pp.
2012 Pedersen SC & Timm DW. Cephalometry & evolutionary constraint in bats. in: Evolutionary History of Bats: Fossils, Molecules & Morphology. (eds) G. Gunnell & N. Simmons, Cambridge Univ. Press, pp. 470-499.
2009 Pedersen SC, Kwiecinski GG, Larsen PA, Morton MN, Adams RA, Genoways HH, & Swier VJ. Bats of Montserrat - Population fluctuation in response to hurricanes & volcanoes, pp. 302-340 in: Island bats: Ecology, Evolution & Conservation. (eds) Fleming & Racey. University of Chicago Press, Chicago. 549 pp.
2009 Morton MM & Pedersen SC. Mammals of Montserrat. In: Field guide to the Centre Hills. (ed.) Holiday. West Indies Publ.
2008 Pedersen SC, Young RP, Morton MN, & Masefield WP. Bats of the Centre Hills & Montserrat. In: A Biodiversity Assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph #1 (ed.) Young. p. 130-138. Durrell Wildlife Conservation Trust.
2006 Herring SW & Pedersen SC. Bone strain in infant mammals & the orientation of bone growth. pp. 91-98. In: Biological Mechanisms of Tooth Eruption, Resorption & Movement, ed. Davidovitch Z, et al., Printing House, Bangkok, Thailand,
2000 Pedersen SC. Skull growth & the acoustical axis of the head in bats. pp.174-213. In: Ontogeny, Functional Ecology & Evolution of bats, Cambridge Univ. Press. (eds) Adams & Pedersen.
2000 Adams RA & Pedersen SP. Integrating ontogeny into ecological & evolutionary investigations. pp. 1-8.in: Ontogeny, Functional Ecology & Evolution of bats, Cambridge Univ. Press. (eds) Adams & Pedersen.

ARTICLES, BOOK CHAPTERS, & ARTWORK FOR THE GENERAL PUBLIC (n = 10)

2022 Fenton MB & Rydell J. The official insignia for the United States Navy Torpedo Squadron 27 (Original artwork: Figure 12.19). In: A miscellany of bats. Pelagic Publishing, Exeter, England.
2013 Pedersen SC. Volcanoes & Fruit Bats - Fear & loafing on Montserrat. Pp. 167-180. in: Into the Night: Tales of nocturnal wildlife expeditions (ed) R. Adams. University of Colorado Press, 206 pp.
2004 Pedersen SC, Tigner J, & Smith A. Living with bats. SD Conservation Digest, 71:10-15.
2003 Phelps BJ, Wogen EC, & Pedersen SC. Dead Silence. Skeptic, 10:2:15-16.
2003 Pedersen SC. Earth Wind, & Fire, the Story of the Fruit bats of Montserrat. Natural History 112:20-24.
2003 Pedersen SC & Morton MN. Field Guide: Bats of the Northern Lesser Antilles.
1998 Pedersen SC & Glover J. Bats in City Parks. Washington Park Arboretum Bulletin, 60:3:10-12
1998 Pedersen SC, Bats in military service: USAF, RAF & Commonwealth Air Forces. Bat Research 38:59-68.
1996 Pedersen SC & Siegfried D. Bats in military service: United States Naval & USMC aviation. Bat Research 37:42-48.
1994 Adams RA & Pedersen SC. Development on the wing. Natural History 103:1:49-54.

REPORTS

2015 Lindsay et al., Bat roosts of Antigua, Barbuda, and Redonda – their status and conservation. United Nations Environment Programme (UNEP) and the Global Environmental Facility (GEF).
2004 Kiesow et al., South Dakota Bat Management Plan - SD-GFP & SD-BWG
2001 Pedersen et al., Bat survey of Brookings County, South Dakota. Report to SD-GFP.
1997 Pedersen & Glover, Technical Report: Biodiversity analysis: Bats in the Washington Park Arboretum, Seattle.

MANUSCRIPTS IN PREPARATION

— Pedersen SC et al., Bats of Montserrat. Special Publications, Museum of Texas Tech University.
— Pedersen SC, ASM-N-2 Bat Missile - America's first '*smart-bomb*'. Schiffer Military History Publishers.

INVITED SYMPOSIUM TALKS & INVITED LECTURES

2014 Non-linear model of the nasopharynx in rhinolophid bats. School of Physics, Shandong University, Jinan
2010 Biodiversity, Biogeography & Conservation of bats. DIREN & UAG, Martinique, Lesser Antilles
2009 Morphological constraints on the evolution of rhinolophid skulls. School of Physics, Shandong University, Jinan
2009 Bats of MNI-Biodiversity issues in the Centre Hills Montserrat. Durrell Conservation (UK) MALHE, MNI
2007 Cephalometry and packaging of the head in bats – SVP Evolution History of Bats, Austin TX.
2007 Bat survey efforts in the Lesser Antilles. University of the West Indies – Barbados.
2007 Bat biodiversity in the Lesser Antilles. TTU – Departmental Evolution Seminar.

2004 Fruit bats of MNI-Population fluctuation in response to hurricanes & volcanoes: ATBC, Miami, FL
2004 Bat Biology & Behavior – SD Pest Control (PCO) Recertification Courses (04, 06-07, 09) – Brookings SD
2003 Current status of fruit bat populations on EUX - Environmental awareness group - St. Eustatius, WI
2003 Biogeographic patterns in the Lesser Antilles - Environmental awareness group - Antigua, WI
2002 Blown in, blown off, and blown up - the bats of Montserrat - SDSU 2002 Hansen Lecture Series
2002 Biogeographic patterns in the Lesser Antilles - Environmental awareness group - St. Eustatius, WI
1999 Craniofacial growth and the acoustic axis of the head in bats. Dept. Biology, University of Cincinnati.
1998 Bat Biology and Behavior - Washington State DOH - Rabies Prevention and Control Workshop.
1997 Skull growth and the acoustical axis of the head in bats - Dept. Anatomy, NEO College of Medicine.

EXTERNAL GRANTS & AWARDS

2019 National Geographic NGS-58300T. "Exploration of the nocturnal behavior of migratory animals aloft" (PI J Krauel)
2017 Project development: Bat Conservation education on SKB via Community Participation and Research, United Nations Development Programme (UNDP) and the Caribbean Youth Environment Network (CYEN).
2016 Research & Travel award III: National NSF-China & School of Physics, Shandong University, Jinan (PI Rolf Mueller)
2014 Research & Travel award II: National NSF-China & School of Physics, Shandong University, Jinan (PI Rolf Mueller)
2013 Educational Fellow in the Life Sciences 2013. National Academies NorthStar Institute (HHMI)
2010 URIEL Wind Inc. - Effect of wind farm development on bat migration Eastern SD.
2010 2010-2014: USFWS - Occupancy & Artificial Roost Selection in South Dakota (Support to S. Lewis)
2009 Travel award: National NSF-China (Project 10774092: via PI Rolf Mueller)
2009 Research & Travel award I: Ministry of Education, P.R. China (Projects 985 & 211: PI Rolf Mueller)
2005 Durrell Wildlife - Centre Hills Biodiversity Project – Montserrat BWI
2002 SD Non-Game Wildlife Conservation Program - Bats (Support to B. Bales)
2000 2000-2001: SD GF&P - Wildlife Diversity Grants Program II (Support to V. Swier)
1995 Individual National Research Service Award (NIDR Post-Doctoral Fellowship)

INTERNAL AWARDS & GRANTS

'13-22 Honors College Medallion acknowledgements (33):
2013 (7), 2014 (4), 2015 (3), 2016 (5), 2017 (2), 2018 (2), 2019 (5), 2020 (4), 2021 (2), and 2022 (2).
2020 Honors College - Teacher of the Year Award (awarded prev. in 2014)
2015 Outstanding Teacher Award – Alpha-Lambda-Delta Honor Society (awarded prev. in 2012)
2014 Honors College - Teacher of the Year Award
2013 F. O. Butler Teaching Award - Highest honor for teaching at SDSU
2012 Outstanding Teacher Award – Alpha-Lambda-Delta Honor Society
2011 TRiO Teaching Award (Title IV HEA, 1965) – Wintrode Success Center
'10-22 Honorary member – Golden Key Honor Society
2008 New Ideas Fund in support of hosting the annual meeting of the American Society of Mammalogists
2007 Griffiths Trust - Research Support Fund
2006 Nelson Research Support Fund
2006 Bentley Trust - Research Support Fund
2005 Webster Excellence in Teaching Award - Phi-Kappa-Phi Honor Society
2005 New Ideas Fund (Research tools, awarded prev. in 1999, 2001, 2002)
'04-22 Honorary member – Alpha-Lambda-Delta Honor Society

CONSULTING - TECHNICAL ADVISOR

1997+ Montserrat National Trust, Montserrat, BWI
1997+ Ministry of Agriculture, Department of Forestry, Montserrat, BWI

2019 SD Utilities Commission, Wind power siting guidelines and migratory animals in South Dakota.
2019 Invasive Species Specialist Group, Dept of Forestry, Government of St. Lucia
2013 Coral Caye Conservation – Surrey (UK)
'13-15 Bat Conservation Trust
'10-22 Batworks LLC
'10-12 Uriel Wind Inc.
2010 Applied Ecological Solutions, Inc., Lawrence KS.
2008 3M Manufacturing - Brookings
'05-09 Durrell Conservation Trust (UK)
'05-09 Darwin Project – Centre Hills Biodiversity Survey – Montserrat
2004 FREDON – Martinique
2004 BBC Natural History Unit
'00-22 Co-Chair of the South Dakota Bat Working Group
1999 Technical Advisor to Herrera Consulting Firm - Tacoma, WA.
'97-02 Bats Northwest NPO – Seattle WA

MANUSCRIPT REVIEWING – JOURNALS

Acta Anatomica, Acta Chiropterologica, American Midland Naturalist, Australian J Zoology, Biological J Linn. Society, BioScience, Caribbean J Science, Cells Tissues Organs, Check-list, EcoScience, Great Basin Naturalist, J Mammalian Evolution, J Mammalogy, J Morphology, J Anatomy, Mammalia, Mastozoologica, Northeast Naturalist, Quaternary Science Reviews, ScienceNow, Scientific Reports, Western American Naturalist, and the Zoologisher Anzeiger

UNIVERSITY SERVICE

'18-22 Academic Affairs Committee - Faculty Awards
2018 Cameo appearance in a promotional video - SDSU
'17-19 Higher Learning Commission Re-Accreditation Committee
2017 Cameo appearance in a promotional video - SDSU
'15-22 2015-2022: Campus Planning & Design Committee (Chair F18-S19)
2015 Cameo appearance in a promotional video - SDSU
'15-16 Academic Affairs Committee - University Internship/Learning Experience Committee
'13-17 Academic Affairs Committee
'12-14 Faculty Senate – Task force on Classroom Design
'12-14 Faculty Senate – Task force on Academic Quality & Rigor
'11-17 Faculty Senate – Ag-Bio College Senator
2009 SD Thriving magazine (Ag-Bio) - Promotion of Pre-Pro Program (article/video)
2008 Co-Host Annual Meeting of the American Society of Mammalogists
2007 Host Committee for the SDAS meetings
'06-10 Advisor to the Ultimate Frisbee Club at SDSU
'06-15 Harding Lectureship Committee
'05-08 Advisor to the Pre-Professional Club at SDSU
'01-14 Departmental Scholarship Committee
'01-18 Departmental Graduate Committee (Chair F01-S02)
'00-09 Advisor to the Sigma Phi Epsilon fraternity
'99-01 Departmental Assessment Committee

COMMUNITY SERVICE & PRESENTATIONS FOR THE GENERAL PUBLIC (Audiences 20+)

2021 COVID-19: Bats on Trial. Science at the Pub & Science Visions Institute – Brookings, SD
2019 Bats in the SDSU arboretum. – Brookings, SD
2010 Bats in the Military — Invited lecture - 265th RRC (Army Airborne), Cedar Rapids, IA
2010 Bats 101. Science at the Pub & Science Visions Institute – Brookings, SD
2009 SDPB Dakota Midday Interview – SD Bats
2009 SDPB Science Café presentation – SD Bats (Aberdeen)
2009 University Center: Osher Lifelong Learning Institute (OLLI) presentation (Sioux Falls SD)
'07-09 Brookings Bats and their Behavior – Science Visions Institute – Brookings, SD
2006 Bats of Montserrat BWI: 20 years in the Belham Valley. Downtown Kiwanis Club, Brookings SD
2006 Bats of Montserrat and SDSU students in the Caribbean. Golden K Kiwanis Club, Brookings SD
2005 Fruit bats of MNI-Population fluctuation in response to hurricanes & volcanoes. Phi-Kappa-Phi Society
2005 Bat Biology & Behavior – Nebraska Humane Society – Omaha NE.
2002 Bat Biology & Behavior – Nebraska Humane Society – Omaha NE.
2001 Sublethal pathology in Montserrat's bats- Rotary Club of Montserrat, BWI
'99-22 Public relations & nuisance bat extractions from private residences (Brookings SD)
'99-06 Public relations re: bats at the Washington Pavilion – "Spooky Science Night", Sioux Falls SD
1998 Bats of Montserrat BWI: 20 years in the Belham Valley. Environmental Lecture Series - REI-Coop, Seattle.
'97-99 Seattle – Weekly night nature-walks & ad hoc lectures in the Seattle City Parks, Bat-education slide-shows for K-12
'88-99 Public relations & nuisance bat extractions from private residences (Lincoln NE & Seattle WA)

FIELD EXPERIENCE

2021 Texas, Development of bat monitoring technology re: National Geographic NGS-58300T
2019 Montserrat, West Indies: Collection & census of bats
2016 Shandong Province, China: Collection of bats
2014 Shandong Province, China: Collection of bats
2013 Belize: Collection & census of bats
2011 Montserrat, West Indies: Collection & census of bats
2010 South Dakota, Bat censuses of Moody County
2009 Phong Nha, Vietnam, & Shandong Province, China: Collection of bats
2009 Montserrat, St. Lucia, & St. Eustatius – West Indies: Collection & census of bats
'07-08 Montserrat, St. Lucia, & Barbados – West Indies: Collection & census of bats

2006 Montserrat, St. Vincent, & the Grenadines – West Indies: Collection & census of bats
2005 Montserrat and St. Vincent: Collection & census of bats
2004 Montserrat, St. Maarten, St. Barts, & St. Eustatius – West Indies: Collection & census of bats
2003 Antigua, Barbuda, Saba, St. Eustatius, & St. Maarten – West Indies: Collection & census of bats
2002 Montserrat, Saba, St. Eustatius, & St. Maarten – West Indies: Collection & census of bats
2001 Montserrat, Nevis, & St. Kitts – West Indies: Collection & census of bats
2000 South Dakota, Bat censuses of Brookings County & the Oak Lake Field Station, SDSU.
2000 Montserrat & Antigua – West Indies: Collection & census of bats
1998 Montserrat, West Indies: Collection and census of bats.
'97-99 Washington, Seattle: Bat censuses of Discovery, Arboretum, Greenlake, & Carkeek City Parks
1997 Montserrat, West Indies: Collection and census of bats.
'93-94 Montserrat, West Indies: Collection and census of bats.
1992 Costa Rica, Guanacaste: Collection of bats with M. B. Fenton, York University, Ontario.
1992 Colorado, Div. Wildlife: Inactive mine project. Bat census with R. Adams, UW-Whitewater.
1989 Trinidad, Grenada, St. Vincent – West Indies: Collection of bats with C. Phillips, Hofstra University, NY.
'88-92 Wyoming, Fort Laramie Nat. Hist. site: Bat census with R. Adams, UC-Boulder.
1988 Colorado, Orient mine: Bat census with R. Adams, UC-Boulder.
1985 Germany and Austria: Collection of small mammals with R. Sage, UC-Berkeley.

CURATORIAL EXPERIENCE – RESEARCH ASSOCIATE POSITIONS

2007 Continuing — Research Associate, Museum of Texas Tech University, Division of Zoology.
I am grateful for my many years of interaction with the staff/students at TTU. I have deposited my 2500+ voucher specimens and genetic samples with my colleagues at TTU (V. Swier, P. Larsen, & R. Larsen). My team has published several of our faunal survey projects under the auspices of the Museum of Texas Tech University – via their Special Publications and Occasional Papers.

1993 Continuing — Research Associate, University of Nebraska State Museum, Division of Zoology.
I prepared and deposited my 1988-1999 voucher material in the UNSM mammal collections. I retain close ties with Dr. Hugh Genoways, Tom Labedz, and Dr. Brett Ratcliffe at that facility. I made extensive use of these mammal collections during my doctoral work in the Museum. In 2003, when UNL made great efforts to close that Museum, I rallied several State Senators to confront the Board of Regents on this issue and was very much involved in a letter-writing campaign to save the Museum.

1999-2016 Curator, South Dakota State University, Division of Mammals.
The Natural History Collection at SDSU is the largest resource center for biodiversity and natural history information for South Dakota and the northern Great Plains. However, what I inherited in 1999 was an un-curated, over-sized teaching collection, housed in crude wooden cabinets and over-crowded Lane mammal cabinets stored in a hallway without climate control. Valuable species records and distributional information were being lost and/or damaged because vouchers are forced to serve both synoptic and research functions. Species of concern were slowly being destroyed through insect damage, student mishandling, and voucher abuse wherein tags were often removed from specimens to facilitate lab exams in the Mammalogy class. During the period 2004-2010, I invested considerable effort to 1) replace all wooden cabinets with new metal cabinets, 2) compile an electronic catalogue, 3) separate a synoptic collection from the research collections to limit the damage due to overuse/abuse during teaching labs, and 4) I moved the collection into a newly remodeled, climate-controlled room in 2010. I trained two undergraduate assistants in some basic curatorial skills so that we could put this small regional collection back on its feet – through these efforts, our collection was registered with the American Society of Mammalogists.

1997-99 University of Washington Burke Museum Research Associate, Division of Mammals.
In return for research space and access, I identified approximately 200+ unidentified bat skulls that needed curation/catalogue correction. I generated a large database of radiographic data that catalogued all chiropteran material in the Burke collections.

1985-86 University of Colorado Museum Graduate Curatorial Assistant, Zoological Collections
I invested two years re-organizing the mammal collections at Boulder. This required the rearrangement and re-packaging of 24 Lane cabinets. The greatest efforts were expended on the rodent collection where all osteological materials were stabilized, re-labeled as pragmatic, and recurated in shell-vials.

PERSONAL STATEMENT REGARDING RESEARCH & TEACHING

RESEARCH INTERESTS: My graduate work focused on craniofacial morphogenesis in vertebrates. Of particular interest are the gross anatomical shifts imposed on facial development by the effects of spatial constraint among the various subcomponents of the skull. I have studied changes in skull shape in cannibalistic salamander larvae (MA – J. Hanken, CU-Boulder) and the perinatal development of the skull in bats (Ph.D. – P. Freeman, UNL).

DISSERTATION RESEARCH: Many chiropteran taxa have rebuilt the basic mammalian skull around a highly modified rostrum that functions as a tuned resonator (acoustical horn) during the emission of the echolocative call. Accordingly, the developmental path of these nasal "resonators" has been canalized into a new evolutionary trajectory that is quite different from all other mammals. In nasal-emitting taxa, differential growth of the brain and the pharynx eventually distorts the skull to align the nasal cavity and nasopharynx with the axis of the body in flight. Conversely, oral-emitting taxa construct the skull around an axis aligned with the oral cavity. Structural changes in the pharynx cascade throughout the other functional spaces in the head (otic, optic, nasal, and oral) and leave the remainder of cranial development to accommodate these newly imposed spatial requirements through the redistribution of all musculoskeletal elements associated with the soft palate and larynx. These patterns of skull growth are taxonomically distinct and form the basis for the current re-evaluation of chiropteran systematics. Initial post-doctoral publication efforts focused upon the rostrum of Old World leaf-nosed bats (Rhinolophidae) which are characterized by expansive nasal cavities and a short hard palate. Mechanically, this organization of the skull is not optimized for robust masticatory function, instead, it is intimately related to the presence of elaborate resonance chambers within the rostrum and the use of the nasal cavities as an acoustical horn. Stemming from these efforts, my friend and colleague Dr. Rick Adams (UNC – Greeley) and I co-edited a book with nine contributing authors: *Ontogeny, Evolution, and Functional Ecology in the Chiroptera* (Cambridge University Press - 2000). We reestablished the importance of ontogenetic studies and perinatal bat biology in studies of the ecology and evolution of bats. We stimulated renewed debate on the role of morphogenesis and post-partum growth patterns that drive the evolutionary and ecological diversity in vertebrates.

In 2012, Dr. Rick Adams and I embarked on a second co-edited book project with Springer Press – *Bat Evolution, Ecology, and Conservation.* Pursuant to our previous effort (Ontogeny, Evolution, and Functional Ecology in the Chiroptera - Cambridge University Press - 2000), we recruited 56 authors to write 25 chapters, each covering the 'state of the art' in a wide diversity of research programs associated with bats – these ranging from global migration to island conservation, and genomics to the genetic analysis of plant/animal remains in bat feces to ascertain dietary preferences. That project was published in late 2013.

POST-DOCTORAL TRAINING—Because I anticipated that my research interests were moving in a direction that required a significant re-tooling of my technical skills, I left my faculty position at AUC in 1994 to pursue post-doctoral training with Dr. Susan Herring. There, I received an Individual National Research Service Award (NIDR Post-Doc Fellowship) to evaluate developmental changes in the histology/kinematics of the hyoid apparatus during swallowing, mastication and vocalization using miniature pigs as an animal model. During this project, I was trained in EMG, strain-gage, and motion analyses. This work was performed in the Department of Orthodontics, University of Washington - Seattle.

SDSU RESEARCH—While at SDSU, my research efforts strayed temporarily from craniofacial evolution to those associated with island biogeography/biodiversity in the Lesser Antilles. In 1995, the island of Montserrat entered a period during which it was severely damaged by hurricanes and volcanic eruptions. As I had lived on this island, I took advantage of a rather extraordinary opportunity to observe how bats survived these disasters. Therein, I have been documenting how they have evolved in such disturbance-mediated environments and how natural disasters have effected such high levels of endemism in this archipelago.

I thoroughly enjoyed the strong teacher/scholar program at SDSU and included both graduate and undergraduate students in my research. I believe that teaching students how to do research is an important part of a professor's duty and is a critical part of a student's training, because it promotes independent, critical thinking and gives them first-hand knowledge of the process of science. The broad nature of my interests and training (evolution, anatomy, development, acoustics, ecology, systematics) made it easy to incorporate a wide variety of student interests into my lab. I did my best to de-program my students from thinking about graduate studies as being a paid job with a rubber-stamp-diploma. Rather, I emphasized a love for learning and expanding the boundaries of what we know. Whether the work is esoteric or applied, education is about the journey and not about the destination.

Therein, I conducted several (2000-08) 5-8 week field-courses throughout the northern Lesser Antilles with my students. Those efforts provided ample opportunities to become sensitive to other cultures, and to become actively

involved in an ongoing research program. Students engaged fully in the scientific process, from conceiving an idea, implementing an investigation, to analyzing and presenting their results cogently. To date, their efforts have resulted in 17 publications that bear their names and four of those students went on to pursue doctoral degrees at other Universities.

RESEARCH PLANS UPON RETIREMENT—I will return to my investigations into the evolution and systematics of the extraordinary acoustic system in bats, where it appears that mastication and echolocation have worked at cross-purposes during the evolution of the chiropteran skull. During the summers of 2009, 2014, and 2016, I and my colleagues in China collected a tremendous amount of data, whose breadth and depth promises a series of publications in this field in the next few years.

I will also continue working with my wife in her research regarding high altitude migration patterns in both insect and bats. Her work is well published and has been supported recently by the National Geographic Society.

Background: [and see above] The crania of bats exhibit a stunning range of morphological diversity that reflects their diverse dietary specializations. However, my work has shown that this diversity in masticatory function is subordinate to, and constrained by, the biomechanical demands of vocalization (echolocation). For example, extreme forms, such as Old World leaf-nosed bats (Rhinolophidae), exhibit rostra that are characterized by expansive nasal cavities and short hard-palates. Mechanically, this organization of the skull is not optimized for robust masticatory function, instead, it is intimately related to the presence of elaborate resonance chambers within the rostrum and the use of the nasal cavities as an acoustical horn. A variety of models have emerged as useful tools in predicting/interpreting the reaction of the rostrum to forces produced by mastication, and since my post-doc, technology has dramatically changed so that I now have the technical ability to explore the interface between evolution, adaptation, and the biomechanics of the chiropteran skull within an experimental framework. Towards this end, I have worked with several colleagues in China during the Summers of 2009, 2014, and 2016 to carry out an in-depth engineering analysis of this multiphysics system - one of the most highly evolved sound production systems in nature, i.e., that found in the Old-World Rhinolophoid bats. Our research targeted the physical principles of ultrasound production in these animals and how they are integrated to achieve a superior system-level performance. Significant challenges to be dealt with included: irregular geometries, small structural size (relative to the involved wavelengths), non-linearities, and non-trivial multiphysics coupling within the pharynx.

TEACHING—I have taught in a wide variety of venues, including Medical School and four-year Universities, and I have conducted educational outreach programs for the public for 30+ years. Regardless of the course, my goal has been to bring the study of biological structure alive, tying developmental mechanisms smoothly into the final adult structure. This evolutionary continuum is the dynamic and fundamental cornerstone of all subsequent allied health education - a unifying construct that cross-references all other allied-health fields. Therein, I have tried to guide my audiences to think critically - to question the difference between correlation and causation - a critical tool in both clinical science and in today's avalanche of sound bites, social media, and pulp journalism.

In the classroom, it’s grossly apparent that not all students are created equal, nor that all students are equally motivated. Clearly, keeping anatomical material interesting and relevant in a large course was a most difficult task. Therefore, I made every effort to demonstrate my enthusiasm for the clinical/anatomical sciences by presenting interesting and engaging materials in both lecture and laboratory. To keep the students engaged, I became well known for my antics in the classroom. Whether it was jumping up onto the podium in a +350 seat auditorium to initiate a game of “Simon-Says” that actively engaged the audience in naming body parts and movements or by having frank discussions about the hemodynamics and penis size in mammals, I achieved my goal of driving important points home with enthusiastic demonstrations, humor, and vivid (often unforgettable) imagery.

STUDENT ADVISING UPON RETIREMENT—During my career at SDSU (1999-2022), I have mentored and facilitated student's applications to professional schools. Therein, I have written 2100+ letters in support of 800+ students, 690 of which were teaching assistants in my anatomy lab - 40% of those went on to matriculate in a Professional school. There is a predictable two-year time-lag between when most student interns are in my lab and when they request letters of recommendation for me. At the present rate, I will be writing 50-60 novel letters each year through Spring 2024.

SDSU REFERENCES

Radhey Kaushik, Ph.D.
Department Head - current
Dept. of Biology & Microbiology
South Dakota State University
Brookings, SD 57007
605-688-6144
Radhey.Kaushik@sdstate.edu

Volker Brözel, Ph.D.
Department Head - past
Dept. of Biology & Microbiology
South Dakota State University
Brookings, SD 57007
605-688-614
Volker.Brozel@sdstate.edu

Mike Hildreth, Ph.D. - retired
Dept. of Biology & Microbiology
South Dakota State University
Brookings, SD 57007
605-688-4562
Mike.Hildreth@sdstate.edu

OUTSIDE REFERENCES

David Woodman, Ph.D.
School of Biological Sciences
308 Manter Hall
Lincoln, NE 68588-0118
402-431-2309, dwoodman1@unl.edu

Hugh H. Genoways, Ph.D. - retired
University of Nebraska State Museum
W436 Nebraska Hall
Lincoln, NE 68588-0514
402-472-2012, hgenoways1@unl.edu

Gary Kwiecinski, Ph.D.
Department of Biology
University of Scranton
Scranton, PA 18510
570-941-6387, ggk301@scranton.edu

Rick Adams, Ph.D. - retired
School of Biological Sciences
University of Northern Colorado
Greeley, CO 80639
970-351-2057, rick.adams@unco.edu

HOBBIES & SIDE-PROJECTS

ASM-N-2: BAT MISSILE—I have performed historical research at the United States National Archives II in Washington DC, NAS Pt. Mugu Missile Test Range, NAS China Lake Naval Air Weapons Test Facility, Planes of Fame Museum, Smithsonian Institution, Naval Yard, Naval Aviation Archives, National Institute of Standards and Technology, and the archives at the San Diego Aerospace Museum. These efforts included access to previously classified military documents concerning weapons-development during World War II. These archival materials and extensive photo-documentation are the basis of a book (in progress) concerning the first operational guided weapons to be used by the US Navy in combat (ASM-N-2: Bat Missile). In 2002, the History Channel approached me and requested my participation in one of their programs concerning bats (Air Date 10/27-29/2003: Cat. AAE43872). I maintain contact with several Veterans and maintain an odd assortment of webpages concerning the rather odd historical place taken by bats in Aviation History.

INTERNET AUTHORING

Home page	http://bathead.com/
Skull research	http://bathead.com/skulllab.html
Caribbean bat surveys	http://bathead.com/caribres.html
SD Bat Working Group	http://sdbwg.org/

REBUILDING HISTORICAL MILITARY VEHICLES—http://bathead.com/vogon.html


CONSTRUCTION OF 1/48 SCALE MODEL AIRCRAFT— http://bathead.com/modelaircraft.html
Two of mine are on permanent loan to the USS LEXINGTON (CV-16) Museum – Corpus Christi TX

Collection of Military insignia that depict bats— http://bathead.com/Insignia.html