

## **CURRICULUM VITAE — 2 June 2011**

**Scott C. Pedersen: Department of Biology & Microbiology**  
**South Dakota State University, Brookings SD 57007**  
**TEL 605-688-5529 (W), 605-696-0108 (H)**  
[Scott.Pedersen@sdstate.edu](mailto:Scott.Pedersen@sdstate.edu) [Bathead.com](http://Bathead.com)

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.  
2003+ Associate Professor (Tenure granted 2003), Department of Bio-Microbiology, South Dakota State University.  
Courses taught: Gross Anatomy, Anatomy Internship, Developmental Biology, Evolution, Field Experience.  
1999+ Curator, Division of Mammals, South Dakota State University.  
1993+ Research Associate, Division of Zoology, University of Nebraska State Museum - Lincoln.  
1999-03 Assistant Professor, Department of Biology and Microbiology, South Dakota State University.  
1997-99 Research Associate, Division of Mammals, University of Washington Burke Museum - Seattle.  
1997-99 Research Associate (NIH), Department of Orthodontics, University of Washington - Seattle:  
Biomechanics and functional morphology of the growing skull. Sponsor: Dr. S. Herring.  
1994-97 NRSA Post-Doctoral Fellow (NIH), Department of Orthodontics, University of Washington - Seattle:  
Growth and function of the hyoid apparatus in pigs. Sponsor: Dr. S. Herring.  
1993-94 Assistant Professor, American University of the Caribbean - School of Medicine, Montserrat W.I.:  
Courses (team) taught: Gross Anatomy, Histology Laboratory  
1991-93 Instructor, Nebraska Scholars Institute, University of Nebraska - Lincoln:  
Extension courses for advanced High school students: Courses taught: Gross Anatomy, Mammalogy  
1990-93 Coordinator - Gross Anatomy, University of Nebraska - Lincoln, School of Biological Sciences:  
Coordinated Undergraduate Gross Anatomy Laboratory  
1989-93 Technical Advisor, Totten Center for Biosystematic Technology:  
University of Nebraska State Museum Morphometrics Lab  
1988-93 Graduate Teaching Assistant, University of Nebraska - Lincoln, School of Biological Sciences:  
Labs taught: Human Anatomy, Mammalogy, Introductory Biology  
1986-88 Graduate Teaching Assistant, University of Colorado - Boulder, Department of EPO-Biology:  
Labs taught: Human Anatomy, Comparative Anatomy, Developmental Biology  
1985-86 Graduate Curatorial Assistant, Division of Mammals, University of Colorado Museum-Zoological Collections

### **SPECIALIZED TEACHING AND EXPERTISE**

Gross Anatomy, Comparative Vertebrate Anatomy, Embryology, Evolution, & Mammalogy

### **PROFESSIONAL MEMBERSHIPS**

1999+ South Dakota Bat Working Group - South Dakota (Vice-Chair & East-river research coordinator)  
1987+ North American Society for Bat Research  
1984+ Society for Integrative and Comparative Biology  
1984+ American Society of Mammalogists  
'98-02 Washington State Bat Working Group - (Steering Committee)  
'97-04 Bats Northwest (Research Advisory Committee)  
'93-98 Society for the Study of Mammalian Evolution  
'91-04 Society for the Study of Evolution

## **PUBLICATIONS** (n = 42) - BOOK CHAPTERS IN BOLD

- 2011 **Pedersen & Timm, Cephalometry and evolutionary constraint in bats.** in: Evolutionary History of Bats: Fossils, Molecules and Morphology. Cambridge Univ. Press. (eds) G. Gunnell and N. Simmons (in press 3.2011).
- 2011 **Fear and loafing on Montserrat. Chapter: Reflections by Moonlight (in press 9.2011)**
- 2011 Larsen P et al. A new species of *Micronycteris* from St. Vincent, Lesser Antilles (mambio.2011.01.006).
- 2010 **Pedersen et al., Population fluctuation in response to hurricanes & volcanoes,** pp. 302-340 In: Fleming (ed.) Island bats: Ecology, Evolution & Conservation. University of Chicago Press, Chicago. 549 pp.
- 2010 Lindsay et al., First record of *Ardops nichollsi* from Antigua, Lesser Antilles. *Mammalia* 74:93-95.
- 2010 Genoways et al., Bats of the Grenadines, West Indies and the placement of Koppman's line. *Chiropterol. Neotrop.* 16:501-521.
- 2009 **Morton & Pedersen. Mammals of Montserrat.** pp. 116-130 In: Holliday (ed.) Montserrat: Guide to the Centre Hills. West Indies Publ.
- 2008 **Pedersen et al., Bats of the Centre Hills and Montserrat.** In: A Biodiversity Assessment of the Centre Hills, Montserrat. Durrell Conservation Monograph #1 (ed. R. Young). p. 130-138. Durrell Wildlife Conservation Trust.
- 2007 Pedersen et al., Bats of Barbuda, Northern Lesser Antilles. *Occ. Papers, Museum of Texas Tech University*, 271:1-20.
- 2007 Larsen R. et al., Mist netting bias, species accumulation curves, & rediscovery of two bats on MNI. *A. Chiropterol.* 9:423-435.
- 2007 Larsen P. et al., Phylogenetics and phylogeography of *A. jamaicensis* based on cyt-b DNA sequences. *J. Mamm.*, 88:712-727.
- 2007 Genoways et al., Bats of St. Martin, French West Indies/St. Maarten, Netherlands Antilles. *Mast. Neotrop.* 14(2):169-188.
- 2007 Genoways et al., Bats of Saba, Northern Lesser Antilles. *Acta Chiropterologica*, 9:91-114.
- 2007 Genoways et al., Bats from Anguilla, Northern Lesser Antilles. *Occ. Papers, Museum of Texas Tech University*, 270:1-12.
- 2006 Pedersen et al., Bats of Antigua, Northern Lesser Antilles *Occ. Papers, Museum of Texas Tech University*, 249:1-18.
- 2006 Larsen P. et al., New Records of Bats from Saint Barthélemy (St. Barts), French West Indies. *Mammalia* 70:321-325.
- 2006 **Herring, S. & S. Pedersen, Bone strain in infant mammals and the orientation of bone growth.** In *Biol. Mechanisms of Tooth Eruption, Resorption & Movement*, ed. Davidovitch et al., Harvard Soc. Adv. Orthod., Boston, pp. 91-98.
- 2005 Pedersen et al., Bats from St. Kitts, Northern Lesser Antilles. *Carib. J. Sci.* 41:4:744-760.
- 2005 Herring S., et al., Ontogeny of bone strain: the zygomatic arch in pigs. *J. Exp. Biol.* 208:4509-4521.
- 2004 Pedersen et al., Living with bats. *SD Conservation Digest* 71:1:10-15.
- 2004 Carstens et al., Exploring population genetic structure in three species of Lesser Antillean bats. *Mol. Ecology*, 13:2557-2566.
- 2003 Phelps B., et al., The dead say the darndest things. *Skeptic Report*: <http://skepticreport.com/psychics/jeomaha.htm>.
- 2003 Phelps B., et al., Dead Silence. *Skeptic*, 10:2:15-16.
- 2003 Pedersen et al., Bats of Nevis, Northern Lesser Antilles. *Acta Chiropterologica*, 5:251-267.
- 2003 Pedersen & Morton, Field Guide: Bats of the Northern Lesser Antilles. ([biomicro.sdstate.edu/pederses/guide.html](http://biomicro.sdstate.edu/pederses/guide.html))
- 2003 Earth Wind, and Fire, the Story of the Fruitbats of Montserrat. *Natural History* 112:20-24.
- 2003 Adams, et al., Calcium as a limiting resource to insectivorous bats: can water holes provide a supplemental mineral source? *Journal of Zoology, London*, 260:189-194.
- 2000 **Pedersen, Skull growth: developmental constraints and the acoustical axis of the head.** in: *Ontogeny, Functional Ecology and Evolution of bats*, Cambridge Univ. Press. (eds) R. Adams and S. Pedersen.
- 2000 **Adams, R., and S. Pedersen, Integrating ontogeny into ecological and evolutionary investigations.** in: *Ontogeny, Functional Ecology and Evolution of bats*, Cambridge Univ. Press. (eds) R. Adams and S. Pedersen.
- 2000 Adams and Pedersen. *Ontogeny, Functional Ecology and Evolution of bats*. Cambridge Univ. Press. (re-Released 2008)
- 1998 Pedersen, S., and S. Anton, Biconoral synostosis in a child from historic Omaha cemetery 25DK10. *AJPA.*, 105:369-376.
- 1998 Pedersen, Morphometric analysis of the chiropteran skull with regard to mode of echolocation. *J. Mamm.*, 79:91-103.
- 1998 Pedersen & Glover. Bats in City Parks. *Washington Park Arboretum Bulletin*, 60:10-12
- 1998 Bats in military service: USAF, RAF and Commonwealth Air Forces. *Bat Research*, 38:59-68.
- 1997 Pedersen & Glover. *Technical Report: Biodiversity analysis: Bats in the Washington Park Arboretum*, Seattle.
- 1996 Pedersen, Skull growth and the presence of auxiliary fontanels in rhinolophid bats. *Zoomorphology*, 116:205-212.
- 1996 Pedersen, et al., Notes on a collection of bats from Montserrat (Lesser Antilles) with comments concerning the affects of Hurricane Hugo. *Carib. J. Sci.*, 32:206-213.
- 1996 Pedersen & Siegfried, Bats in military service: United States Naval and USMC aviation. *Bat Research*, 37:42-48.
- 1995 Pedersen, Cephalometric correlates of echolocation in the Chiroptera II: Fetal development. *J. Morph.*, 225:107-123.
- 1994 Adams, R., & S., Pedersen, Development on the wing. *Natural History* 103:1:49-54.
- 1993 Pedersen, Skull Growth in cannibalistic Tiger salamanders, *Ambystoma tigrinum*. *SW. Nat.*, 38:316-324.
- 1993 Pedersen, Cephalometric correlates of echolocation in the Chiroptera. *J. Morph.*, 218:85-98.
- 1993 Fenton, M., et al., Activity patterns and roost selection by *Noctilio albigentris* in Costa Rica. *J. Mamm.*, 74:607-613.
- 1991 Pedersen, Dental morphology of the cannibal morph in the tiger salamander, *A. tigrinum*. *Amphibia-Reptilia*, 12:1-14.

## **MANUSCRIPTS SUBMITTED, ACCEPTED, IN PREP**

- Larsen R et al., Evolutionary History of Caribbean *Myotis* and evidence of a third Lesser Antillean endemic (Submitted 2011)
- Pedersen et al., Biodiversity, Biogeography & Conservation of bats (Invited chapter DIREN; Submitted 2010)
- Genoways et al., Bats of Barbados, Lesser Antilles (Submitted 2011)
- Pedersen et al., Pathology in phyllostomid fruit bats associated with volcanic ash fall on Montserrat (Submitted 2011)
- Pedersen, They fell from the sky: Story of the Pelican/Bat Missile Projects of World War II (in prep.)
- Pedersen et al., Bats of St. Eustatius, Northern Lesser Antilles (in prep.)
- Kwiecinski et al., Bats of St. Vincent, Lesser Antilles (in prep.)
- Kwiecinski et al., Bats of St. Lucia, Lesser Antilles (in prep.)

## ABSTRACTS & PRESENTATIONS (n = 59)

- 2010 Pedersen et al., Reconstruction of the rhinolophid Vocal Tract II, SICB – 1/ 2010
- 2010 Larsen R et al., Genetic variation and phenotypic evolution in the Lesser Antillean Tree Bat. Texas Soc. Mamm. 2/2010
- 2009 Pedersen et al. Reconstruction of the rhinolophid Vocal Tract I, NASBR – BRN 50:131A
- 2009 Larsen R et al. Speciation and diversification of *Myotis* of the Lesser Antilles. Texas Soc. Mammalogy, TTU. TBA
- 2008 Patchy distribution of bats. Poster presentation at 88<sup>th</sup> Ann. Meeting ASM – Brookings SD
- 2008 Larsen et al., Biogeography of southern Lesser Antillean bats. 88<sup>th</sup> Ann. Meeting ASM – Brookings SD
- 2007 Cephalometry and evolutionary constraint with respect to the mode of echolocation in bats. J. Vert. Paleo. 27(3):128A
- 2006 Larsen R. et al. Montserrat: Mist-Net Bias and Accumulation Curves. BRN-47-TBA
- 2006 Bales B. et al. Determining Minimum Sampling Effort for Surveys in Eastern and Central South Dakota. BRN-47-TBA
- 2005 Larsen R., et al., Mist netting bias on Montserrat. BRN 46:4:191
- 2005 Kwiecinski et al., Histopathologies form prolonged volcanic ash exposure in bats from Montserrat. BRN 46:4:191
- 2004 Pedersen et al., Population fluctuation in response to hurricanes & volcanoes: 1979-2004. ATBC-Symposium
- 2004 Larsen P. et al., Biogeography of *Artibeus jamaicensis* in the Caribbean: Texas Soc. Mammalogy, Texas Tech Univ. TBA
- 2004 Carstens, et al., Using coalescent theory to investigate population structure in Caribbean bats. BRN-TBA
- 2004 BAT and other forgotten 'Birds of Prey' of the US Navy during World War II. BRN-45:4:251
- 2003 South, B., & S. Pedersen. Bat biodiversity on Montserrat, St. Maarten, Saba, & Statia. Proc. SDAS 82:265A
- 2003 Pedersen, et al., Biogeography of the NLA—Comments on the Lesser Antillean Faunal Core. BRN: 44(4):162.
- 2003 Kiesow et al., South Dakota Bat Management Plan - SD-GFP & SD-BWG
- 2003 Hollenbeck, J., & S. Pedersen, Distribution of Big Brown Bats in Sioux Falls, SD. Proc. SDAS 82:266A
- 2002 Larsen P. & Pedersen, Capture Rates of four species of Fruitbats on Montserrat BRN: 43(4):162
- 2002 Kwiecinski & Pedersen, Montserrat Redux: Role of reproduction in plant-visiting bats. BRN: 43(4):159
- 2002 Pedersen & Kwiecinski, Montserrat Redux—Recovery After a Seven-year Itch? BRN: 43(4):175
- 2001 The impact of volcanic eruptions on the bat populations of Montserrat, BWI. Amer. Zool., 40(6): 1167A.
- 2001 Swier, V., et al. Census of bats in Brookings County including Oaklake Field Station, SD Wildlife Society 3/5.
- 2001 Swier, V., et al. A hurricane plus a volcano: Recipe for disaster for bat species on the island of MNI. Proc. SDAS, 80:439A
- 2001 Pedersen, S. C., et al. Biogeography of bats: Census activity on Montserrat, Antigua, Nevis, and St. Kitts. BRN: 42:4:173
- 2001 Pedersen, S. C., et al. Bat survey of Brookings County, South Dakota. Report to SD-GFP.
- 2001 Fruitbats of Montserrat: Sublethal pathology associated with the ingestion of volcanic ash. Proc. SD Acad. Sci., 80:437A
- 2000 The impact of volcanic eruptions on the bat populations of Montserrat, BWI. BRN 41:4:141
- 2000 Swier, V., et al., A tale of two bats: *Ardops* and *Artibeus* on Montserrat. BRN 41:4:134
- 2000 Sub-Lethal pathology correlated with volcanic eruptions on Montserrat, BWI. Amer. Zool., 39:5:A
- 2000 Appino, J., et al., Bats of Antigua, West Indies. BRN 41:4:106
- 1999 Rafferty, K, et al., Cranial suture morphology and corresponding *in vivo* suture strains in minipigs. Amer. Zool., 38:5:202A.
- 1999 Pedersen, S., et al., Patterns of bone strain in the zygomatic arch of baby pigs. SICB. Amer. Zool., 38:5:65A.
- 1999 Pedersen et al., Bone strains during chewing in the zygomatic arch of baby pigs. ASM meetings – Seattle WA.
- 1999 Liu et al., Bone strains and internal bony pressures during masticatory muscle contraction. J. Dent. Res. TBA.
- 1999 Adams & Pedersen, Effects of Natural Disasters on Bat Populations on Montserrat, BWI. Amer. Zool, 38:5:52A.
- 1998 Pedersen, S, and R. Adams, Bats of Montserrat BWI: Twenty years in the Belham Valley. BRN
- 1998 Blown in, Blown off, and Blown up; the Bats of Montserrat BWI. Amer. Zool., 37:17A.
- 1997 Recent volcanic activity and the Bats of Montserrat BWI. BRN, 38:4:122A.
- 1997 Adams & Pedersen, The functional matrix and evolutionary innovations in bats. Evolution Meetings – Boulder CO.
- 1996 Wallen, B., and S.C. Pedersen, Skull growth in miniature pigs. Amer. Zool., 36:5:114A.
- 1996 Skull growth and the presence of auxiliary fontanels in rhinolophid bats. BRN 37:A.
- 1996 Pedersen, Kinematic analysis and histology of the hyoid apparatus in miniature pigs. Amer. Zool., 36:5:114A.
- 1995 Pedersen, et al., Movement of the epiglottis in miniature pigs. Amer. Zool., 35:5:123A.
- 1995 Adams & Pedersen, Cruising for a Bruising: Volant juveniles face a steep learning curve. BRN, 36:4:42A.
- 1994 Craniofacial development and the evolution of echolocation in bats. J. Morph., 220:3:380A.
- 1993 Craniofacial development in leaf-nosed bats. Amer. Zool., 33:5:521A.
- 1992 The fundamental form of the chiropteran skull, III. Amer. Zool., 32:5:149A.
- 1992 The fundamental form of the chiropteran skull, II. BRN, 33:4:68A.
- 1991 Ontogeny of head posture and the evolution of nasal emission (echolocation) in Chiroptera. ASM Meeting - Kansas
- 1991 Echolocation and the ontogeny of head posture in Microchiroptera, III. Amer. Zool., 31:5:53A.
- 1991 Echolocation and the ontogeny of head posture in Chiroptera, II. BRN, 32:4:83A.
- 1990 Fundamental skull shape in bats, I. BRN, 31:4:90A.
- 1989 Comparative skull development in *Artibeus jamaicensis* and *Eptesicus fuscus*. BRN, 30:4:75A.
- 1989 Adams, R., and S., Pedersen, Comparative development of the forelimb of three bats. Amer. Zool., 29:4:181A.
- 1987 Cranial Osteology of the cannibal morph in Tiger salamanders, *Ambystoma tigrinum*. Amer. Zool., 27:4:21A.
- 1987 Comparative skeletogenesis in the Vespertilionidae. North American Symposium on Bat Research - BRN
- 1986 Morphological variation in the *Thomomys talpoides* complex of Colorado. Amer. Zool., 26:4:95A.

## **EXTERNAL GRANTS & AWARDS**

- 2010 URIEL Wind Inc. - Affect of wind farm development on bat migration Eastern SD.
- 2010 USFWS - Occupancy & Artificial Roost Selection in South Dakota (*research support to S. Lewis*)
- 2009 Travel award: National NSF of China (*Project 10774092: via PI Rolf Mueller*)
- 2009 Research award: Ministry of Education, P.R. China (*Projects 985 & 211: via PI Rolf Mueller*)
- 2009 NSF-PIRE (Co-PI) - Multi-physics Biosystems in Engineering Research & Education (*rejected*)
- 2005 Durrell Wildlife - Centre Hills Biodiversity Project – Montserrat BWI
- 2002 SD Non-Game Wildlife Conservation Program - Bats (*research support to B. Bales*)
- 2002 National Geographic Committee for Research and Exploration (*rejected*)
- 2001 SD GF&P - Collections Support Program (*rejected*)
- 2001 SD GF&P - Wildlife Diversity Grants Program (*research support to V. Swier*)
- 2000 SD GF&P - Wildlife Diversity Grants Program (*research support to V. Swier*)
- 1995 Individual National Research Service Award (*NIDR Post-Doctoral Fellowship*)
- 1991 Best Oral Presentation (*Student*), N. A. Symposium on Bat Research, Austin, TX
- 1990 American Museum of Natural History, Travel Award
- 1987 Kodak - First Place Award: SEM Photography. Tech Bits, Fall 1987:2.

## **INTERNAL GRANTS & AWARDS**

- 2009 Sabbatical – Spring Semester
- 2008 New Ideas Fund (USU - Presentation Boards)
- 2007 Griffiths Trust - Research Support Fund
- 2006 Research Support Fund
- 2006 Bentley Trust - Research Support Fund
- 2005 New Ideas Fund (Research tools)
- 2004 Research Support Fund (Rejected)
- 2002 New Ideas Fund (Research tools)
- 2001 New Ideas Fund (Anatomy)
- 2002 New Ideas Fund (Anatomy)
- 1999 New Ideas Fund (Anatomy)
  
- 2010 Golden Key – Honorary member
- 2010 Certificate of Recognition - Students Choice Award (TRiO – Advising at SDSU)
- 2009 Nominated for F.O. Butler Teaching Award
- 2005 Teaching Award by the Phi-Kappa-Phi Honor Society
- 2004 Nominated for Teacher of the Year by the Phi-Kappa-Phi Honor Society
- 2004 Alpha Lambda Delta – Honorary member
- 2004 Nominated for Teacher of the Year by the Alpha Zeta Honor Society
- 2002 Nominated for Berg Faculty Award
- 2000 Nominated for Teacher of the Year by the Phi-Kappa-Phi Honor Society

## **INVITED LECTURES & TALKS**

- 2010 Pedersen et al. Biodiversity, Biogeography & Conservation of bats. DIREN & UAG, Martinique
- 2010 *Bats in the Military* — 265th RRC (Army Airborne), Cedar Rapids, IA
- 2009 *Cephalometry and packaging of the head in bats* – Dept. Mech. Engineering, Shandong University, China
- 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 Symposium 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 Seminar.
- 2005 *Fruit bats of MNI-Population fluctuation in response to hurricanes & volcanoes*. Phi-Kappa-Phi Society
- 2004 *Fruit bats of MNI-Population fluctuation in response to hurricanes & volcanoes*: ATBC, Miami, FL
- 2003 *Current status of fruit bat populations on EUX* - Environmental awareness group - St. Eustatius, WI
- 2003 *Blown in, Blown off, and Blown up - the bats of Montserrat* - SDSU 2003 Hansen Lecture Series
- 2003 *Biogeographic patterns in the Lesser Antilles* - Environmental awareness group - Antigua, WI
- 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.
- 1997 *Skull growth and the acoustical axis of the head in bats* - Dept. Anatomy, NEO College of Medicine.
- 1997 *Pharynx and Larynx* - Guest Lecture Series, Dept. Orthodontics, University of Washington.

## **FIELD EXPERIENCE**

2010 South Dakota, Bat censuses of Moody County  
2009 Phong Nha, Vietnam and Shandong Province, China: Collection and census of bats  
2009 Montserrat, St. Lucia, and St. Eustatius – West Indies: Collection and census of bats  
2008 Montserrat, St. Lucia, and Barbados – West Indies: Collection and census of bats  
2007 Montserrat, St. Lucia, and Barbados – West Indies: Collection and census of bats  
2006 Montserrat, St. Vincent, and the Grenadines – West Indies: Collection and census of bats  
2005 Montserrat and St. Vincent: Collection and census of bats  
2004 St. Maarten, St. Barths, St. Eustatius, Montserrat – West Indies: Collection and census of bats  
2003 Antigua, Barbuda, Saba, St. Eustatius, St. Maarten – West Indies: Collection and census of bats  
2002 Montserrat, Saba, St. Eustatius, St. Maarten – West Indies: Collection and census of bats  
2001 Montserrat, Nevis, St. Kitts – West Indies: Collection and census of bats  
2000 South Dakota, Bat censuses of Brookings County and the Oak Lake Field Station, SDSU.  
2000 Montserrat and Antigua – West Indies: Collection and census of bats  
1998 Montserrat, West Indies: Collection and census of bats.  
'97-99 Washington, Seattle: Bat censuses of Discovery, Arboretum, Greenlake, and Carkeek City Parks  
1997 Montserrat, West Indies: Collection and census of bats.  
1994 Montserrat, West Indies: Collection and census of bats.  
1993 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.

## **MANUSCRIPT EDITING – JOURNALS**

Acta Anatomica; Acta Chiropterologica; American Midland Naturalist; Australian J Zoology; Biological J Linn. Society; Caribbean J Science; Cells, Tissues, Organs; EcoScience; Great Basin Naturalist; J Mammalian Evolution; J Mammalogy; MastoZoologica; Northeast Naturalist; ScienceNow; Western American Naturalist; Zoologischer Anzeiger

## **MANUSCRIPT EDITING - BOOKS**

Editorial Board—McKinley Human Anatomy ('03-04)  
Book reviewed—Human Anatomy: An Exp. Approach ('00)  
Book reviewed—Stokes Beginner's Guide to Bats ('00)  
Book reviewed—Bats and other animals with amazing eyes ('00)  
Chapter reviewed—McKinley Human Anatomy; Van de Graaff's Anatomy; Vine's Anatomy ('01)  
Chapter reviewed—Fleming & Racey - Island Bats ('06)  
Chapter reviewed—Van de Graaff's Anatomy ('01)  
Chapter reviewed—Behavioral methods in the study of bats ('08)  
Chapter reviewed—Ecology Evolution and Conservations of Island bats ('08)  
Chapter reviewed—Ecology on Campus ('08)

## **INTERNET AUTHORIZING**

Pedersen has written and maintains several web-pages (90+ .html files). Each serves as a teaching portal, recruiting tool, or research advertisement for SDSU Programs. SiteMeter.com reports a consistent average of 100+ site visits/week from non-SDSU sources. Below are the primary site-portals:

**Home-page**— <http://bathead.com>  
**Veteran/Military web sites** <http://bathead.com/insignia.html>  
**Brookings County Mammoth** <http://bathead.com/mammoth.html>  
**Bat Research web sites**  
SDSU Lab research— <http://bathead.com/skulllab.html>  
Montserrat surveys— <http://bathead.com/mnires.html>  
Caribbean surveys— <http://bathead.com/caribres.html>  
SD Bat Working Group— <http://sdbwg.org>

## **UNIVERSITY SERVICE**

- 2006+ Harding Lectureship Committee
- 2006+ Advisor to the Ultimate Frisbee Club at SDSU
- 2000+ Advisor to the Sigma Phi Epsilon fraternity
  
- 2009 *SD Thriving* magazine (AgBio) - Promotion of Pre-Pro Program (involvement with article/video)
- 2008 Co-Host Annual Meeting of the American Society of Mammalogists
- 2007 Host Committee for the SDAS meetings
- '05-08 Advisor to the Pre-Professional Club at SDSU
- '03-05 Science Fair Judge – Zoology
- '01-07 Scholarship Committee
- '01-07 Graduate Committee (Chair '01-02)
- '00-05 Visitation program for High School science students to the SDSU Human Anatomy lab
- '99-01 Assessment Committee

## **COMMUNITY SERVICE**

- 2000+ Co-Establish/Co-Chair the South Dakota Bat Working Group NPO
- 1999+ Provided text & educational materials to the Sioux Falls SD, Washington Pavilion – “*Spooky Science Night*”.
- 1990+ Public Relations visits to private residences (nuisance bat extractions)
  
- 2010 *Bats 101*. Science at the Pub & Science Visions Institute – Brookings, SD
- 2009 University Center: Osher Lifelong Learning Institute (OLLI) presentation
- 2009 SDPB – SDPB Dakota Midday Interview & Science Café presentation – SD Bats (Aberdeen)
- '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 *Bat Biology and Behavior* – Nebraska Humane Society – Omaha NE.
- 2004 (+2006-07, 2009) *Bat Biology and Behavior* – SD Pest Control (PCO) Recertification Course – Brookings SD
- 2002 *Bat Biology and Behavior* – Nebraska Humane Society – Omaha NE.
- 2001 *Sublethal pathology in Montserrats bats*- Rotary Club of Montserrat, BWI
- 1998 *Bats of Montserrat BWI: 20 years in the Belham Valley*. Environmental Lecture Series - REI-Coop, Seattle.
- 1998 *Bat Biology and Behavior* - Washington State DOH - Rabies Prevention and Control Workshop.
- '97-99 Seattle - Bat-education slide-shows/lectures for K-12
- '97-99 Seattle - Night nature-walks and lectures in the Seattle City Parks, weekly throughout the summer.

## **CONSULTING - TECHNICAL ADVISOR**

- 2010+ Uriel Wind Inc., & Batworks LLC
- 2005+ Durrell Conservation Trust (UK)
- 2005+ Darwin Project – Centre Hills Biodiversity Survey – Montserrat
- 1997+ Montserrat National Trust
  
- 2010 Applied Ecological Solutions, Inc., Lawrence KS.
- 2008 3M Manufacturing (*Brookings*)
- 2004 FREDON – Martinique
- 2004 BBC Natural History Unit
- 1999 Technical Advisor to Herrera Consulting Firm, Tacoma, WA.
- '97-02 Bats Northwest NPO

## PERSONAL STATEMENT REGARDING RESEARCH & TEACHING

**RESEARCH INTERESTS:** My graduate work focused on craniofacial morphogenesis in vertebrates. Of particular interest are the histological and 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 salamander larvae when skull mechanics are altered by cannibalistic behavior (*MA – J. Hanken – CU-Boulder*), and described 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 (now at 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 feel that we stimulated renewed debate on the role of morphogenesis and post-partum growth patterns that drive the evolutionary and ecological diversity in vertebrates, with bats as our model system.

**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 made the difficult decision to leave my faculty position at AUC in 1994 and pursue post-doctoral training with Dr. Susan Herring. In 1995, 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 have strayed significantly from craniofacial evolution to focus rather on a study that literally fell in my lap — a natural experiment in island biogeography and biodiversity on the small Lesser Antillean island of Montserrat. Over the last 25 years, Montserrat has been severely damaged by two hurricanes and a series of volcanic eruptions. Variation in the local fruit bat population has accurately reflected the environmental damage caused by each natural disaster, indeed, I have documented the gain/loss of several species of fruit bat. I have sampled 13 neighboring islands which serve as natural controls. These small Caribbean islands are unique in that they exhibit high levels of endemism and have a taxonomic composition that is characteristic of more isolated oceanic islands. The effects of major natural disturbances such as hurricanes and volcanoes are so intense that exposed biota are reconfigured for many years. Using bats as a model system, the series of natural disasters experienced by Montserrat provide an extraordinary opportunity to observe how the synergistic effects of two types of natural disasters and the associated loss of habitats affect island biodiversity.

I have thoroughly enjoyed the strong teacher/scholar program at SDSU and have 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) makes it easy to incorporate a wide variety of student interests into my lab. I do my best to de-program my students from thinking about graduate studies as being a paid job with a rubber-stamp-diploma. Rather, I emphasize a love for learning and expanding the boundaries of what we know. Whether the work is esoteric or applied, I firmly believe that education is about the journey and not about the destination.

Therein, I have conducted several (2000-08) 5-8 week field-courses throughout the northern Lesser Antilles with my students. These efforts provide ample opportunities to become sensitive to other cultures, and to become actively involved in an ongoing research program. Students engage 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 several publications that bear their names and four of those students have gone on to pursue doctoral degrees at other Universities.

**FUTURE RESEARCH PLANS**—Ultimately, I would like to 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. 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 rostrae 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. Among the many extraordinary features of this system is a kinetic premaxillary segment that is unique among mammals. Of note, my colleagues Drs. Bhatnagar and Wible have produced some intriguing evidence concerning a reinforced vomeronasal complex within the rhinolophoid nasal septum, possibly a sequelae of the kinetic premaxilla. 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 we 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 will be working with several colleagues Summer 2009 to carry out an in-depth engineering analysis of a 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 will target 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 include: irregular geometries, small structural size (relative to the involved wavelengths), non-linearities, and non-trivial multiphysics coupling within the pharynx.

**TEACHING**—It seems that I have spent my entire adult life talking. I have taught in a Medical School, at several Universities, and I have conducted educational outreach talks/programs for the general public for 23+ years. At all levels, I have tried to guide my audiences to think critically - to question the difference between correlation and causation - an absolutely necessary tool in today's avalanche of sound bites and pulp journalism.

Typically the goal of my teaching, regardless of the course, is 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. However, it's grossly apparent that not all students are created equal, nor that all students are equally motivated, and it is equally clear that keeping anatomical material (fetal or adult) interesting and relevant to everyone is a most difficult task. Regardless, it is critical to keep students focused on their true goal - knowledge of living, breathing anatomy—the patient.

Therefore, I make every effort to demonstrate my enthusiasm for the clinical/anatomical sciences by presenting interesting and engaging materials in both lecture and laboratory. I integrate different fields of study and emphasize the importance of the morphogenesis and evolutionary history of each structure, and often draw in news worthy research items where they apply. I coordinate my lectures with our Physiology and Embryology courses in order to reinforce the student's appreciation of function and anatomical variation, be it the result of predictable morphological variation during organogenesis, or the pathological result of a focal disease state. Such fine clinical details may be of less importance at the undergraduate level, however, an integrative approach remains absolutely critical.

I am also well known for my antics in the classroom. Whether it's jumping up onto the podium to initiate a game of "Simon-Says" in order to get 300+ students actively involved with learning anatomical planes and naming various body movements, or it's a frank discussion about penis size in whales, or even demonstrating the cost-saving benefits of being bald, I achieve my goal of driving important points home with enthusiastic demonstrations, humor, and vivid (often unforgettable) imagery.

## Teaching Evaluations The IDEA Student Ratings System: 5.0 pt scale

<b>Human Gross Anatomy 200-level Lecture</b>										
	Course	Objectives		Teacher		Course		Summary		Enrolled
		Raw	Adj	Raw	Adj	Raw	Adj	Raw	Adj	
S10	Biol-221	4.6	5.0	4.8	5.0	4.7	4.9	4.7	5.0	329
F09	Biol-221	4.4	4.9	4.6	4.9	4.6	4.8	4.5	4.9	360
S09	Sabbatical									n/a
S08	Biol-221	4.7	4.7	4.7	4.8	4.7	4.8	4.7	4.8	292
F07	Biol-221	4.6	4.6	4.6	4.7	4.6	4.6	4.6	4.7	280
F06	Biol-221	4.6	4.6	4.6	4.7	4.6	4.7	4.6	4.7	250
S06	Biol-221	4.6	4.6	4.7	4.8	4.6	4.7	4.7	4.7	242
F05	Biol-221	4.5	4.8	4.7	5.0	4.6	4.9	4.6	4.9	320
<b>Human Gross Anatomy 200-level laboratory</b>										
	Course	Objectives		Teacher		Course		Summary		Enrolled
		Raw	Adj	Raw	Adj	Raw	Adj	Raw	Adj	
S08	Biol-221 Lab	4.3	3.9	4.6	4.4	4.6	4.2	4.4	4.1	50
<b>Team taught/evaluated Developmental Biology Lecture</b>										
	Course	Objectives		Teacher		Course		Summary		Enrolled
		Raw	Adj	Raw	Adj	Raw	Adj	Raw	Adj	
F09	Zool-483	3.7	3.3	4.3	4.3	3.8	3.6	3.9	3.7	19
F09	Zool-483L	3.4	3.1	4.1	4.2	3.6	3.4	3.6	3.5	19
F07	Zool-483+L									<10
S07	Zool-483+L									<10

## **CURATORIAL EXPERIENCE – RESEARCH ASSOCIATE POSITIONS**

### **2007+ Museum of Texas Tech University Research Associate, Division of Zoology**

Research Associate status was kindly granted to me, and reflects my years of interactions with the staff/students at TTU. I deposit all of my (2000+) voucher specimens and genetic samples with my colleagues at TTU, several of whom are my ex-students (V. Swier, P. Larsen, R. Larsen). We are/will be publishing many of our island surveys through the Museum of Texas Tech University – Special Publications/Occasional Papers.

### **1999+ 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 a un-curated, over-sized teaching collection, housed in crude wooden cabinets dating from the 1950's and a small number of over-crowded Lane mammal cabinets stored in a hallway without climate controls. 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. In short, it was a curatorial disaster. We have made great strides in the last 4 years to 1) replace all wooden cabinets with new metal cabinets, 2) construct an electronic catalogue (phase 1: EXCEL; phase 2: SPECIFY 4.6), 3) split teaching/research collections, and 4) to move the collection into a newly remodeled room (lockable/heat/air-conditioning/computers) this December 2006. We are currently trying to get the Administration to issue a small budget for our new facility, and I have trained two undergraduate assistants in some basic curatorial skills so that we can continue putting this small regional collection back on its feet.

### **1993+ University of Nebraska State Museum Research Associate, Division of Zoology**

I prepared and deposited all of my own 1988-1999 voucher material in the UNSM mammal collections and retain close ties with Dr. Hugh Genoways, Tom Labedz, and Dr. Brett Ratcliffe at that facility. I made extensive use of the mammal collections when I taught Mammalogy labs in that collection. All of my doctoral work was performed in the Museum, in many cases employing the collections themselves. 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.

### **'97-99 University of Washington Burke Museum Research Associate, Division of Mammals**

I generated a large database of radiographic material (mostly skull x-rays) of all chiropteran taxa in the Burke collections. In return for research space and access, I identified approximately 200 unknown bat skulls that were in need of curation/catalogue correction.

### **'85-86 University of Colorado Museum Graduate Curatorial Assistant, Zoological Collections**

I spent over 3 semesters re-organizing the mammal collections at Boulder when they were housed in the old Hunter building. This required the rearrangement and re-packaging of every cabinet. The greatest efforts were expended on the rodent collection as they were the worst off at that point in time. Styrene vials, film canisters, taped-cardboard boxes were all replaced with 20/40 dram shell-vials.

## HOBBIES & SIDE-PROJECTS

**ASM-N-2: Bat Missile**—I have performed historical research (out-of-pocket) at the United States National Archives II in Washington DC, 2000-2003, and during the Summer of 2003 made visits to the 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, National Archives II, and to the archives at the San Diego Aerospace Museum to gather archival documentation. These efforts include access to previously classified “Top-Secret” 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). These research efforts and resulting expository material has been shared with other authors in this field: Jeff Coultice and Joe Ponda, and Jane Coulihan of Forbes magazine. This research at the Archives and at the National Institute of Standards and Technology (posted to my web-pages - see below) brought the **History Channel** to me to request a television appearance on a program they were producing (8/2002) concerning bats (*Air Date 10/27-29/2003*). I also maintain contact with several Veterans and maintain an odd assortment of web-pages concerning the rather odd historical place taken by bats in Aviation History. Due to my reputation with several government agencies, their archivists have encouraged Veterans and other researchers to contact me with respect to my own interests in early missile technology. As such, I spend 3-4 hours each month collating material and performing on-line searches for Veterans who need assistance.

Rebuilding vintage military trucks—<http://bathead.com/vogon.html>



Construction of 1/48 scale model aircraft—<http://bathead.com/modelaircraft.html>



Collection of military insignia that depict bats—<http://bathead.com/Insignia.html>



## REFERENCES

**Mike Hildreth, Ph.D.**

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

**Donald Auger, Ph.D.**

Dept. of Biology & Microbiology  
South Dakota State University  
Brookings, SD 57007  
TEL 605-688-6385  
Donald.Auger@sdstate.edu

**Susan Gibson, Ph.D.**

Dept. of Biology & Microbiology  
South Dakota State University  
Brookings, SD 57007  
TEL 605-688-4805  
Susan.Gibson@sdstate.edu

**Nels Troelstrup, Ph.D.**

Dept. of Biology & Microbiology  
South Dakota State University  
Brookings, SD 57007  
TEL 605-688-5503  
Nels.Troelstrup@sdstate.edu

**Hugh H. Genoways, Ph.D.**

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  
212 Loyola Hall  
University of Scranton  
Scranton, PA 18510  
570-941-6387  
ggk301@scranton.edu

**Rick Adams, Ph.D**

School of Biological Sciences  
University of Northern Colorado  
501 20th Street, Greeley, CO 80639  
970-351-2057  
rick.adams@unco.edu

**Robert Baker, Ph.D.**

Museum of Texas Tech University  
3301 4<sup>th</sup> St. Box 43191  
Lubbock, Texas 79409  
806-742-2702  
robert.baker@ttu.edu