

Sarah Anne Hamer

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Education

- Doctor of Veterinary Medicine**, Michigan State University, East Lansing, MI 2011
- Doctor of Philosophy**, Michigan State University, East Lansing, MI 2010
- Dual-degree: Fisheries and Wildlife & Ecology, Evolutionary Biology, and Behavior
- Fish and Wildlife Disease Ecology and Conservation Medicine Specialization
- Master of Science**, University of Illinois, Champaign/Urbana, IL 2003
-Department of Natural Resources and Environmental Sciences
-Wildlife Ecology Specialization
- Bachelor of Science**, University of Illinois, Champaign/Urbana, IL 2001
-Major: Natural Resources and Environmental Sciences

Professional Experience

- Assistant Professor, Texas A&M University** 1/2012 - present
Department of Veterinary Integrative Biosciences
College of Veterinary Medicine and Biomedical Sciences
Faculty in Ecology and Evolutionary Biology Program
Faculty in Vector Biology Group
- Adjunct Assistant Professor, Michigan State University** 11/2011 - present
Department of Fisheries and Wildlife

Veterinary Extern

- National Wildlife Health Center, Madison, WI** 9/2010-10/2010
Assisted in field and laboratory research to detect a novel mosquito-borne Flavivirus in Wisconsin. Experiences included development and validation of enzyme-linked immunosorbent assays, trapping and blood-sampling of mammals, and reporting research findings. *Mentor*: Dr. Erik Hofmeister
- International Crane Foundation, Baraboo, WI** 10/2010
Assisted in health checks of ten species of cranes. Duties included blood-sampling, clipping feathers, trimming bills, tube-feeding, post-surgical care, administering drugs, and data entry into MedArks program. Also assisted with hematology research. *Mentor*: Dr. Barry Hartup
- Urban Wildlife Institute, Lincoln Park Zoo, Chicago, IL** 6/2010-7/2010
Designed and implemented field research to assess the prevalence of wild bird-borne zoonotic pathogens along a gradient of urbanization in greater Chicago, IL. Duties included mist netting, collection of blood, ectoparasite, and fecal samples, and processing samples using diagnostic assays (PCR, ELISA, DNA sequencing). *Mentor*: Dr. Seth Magle

- Graduate Research Assistant**, Michigan State University 8/2003-5/2010
 Department of Fisheries and Wildlife
 Dissertation: Interactions among invading ticks, wildlife, and zoonotic pathogens
 Graduate Committee: Drs. Jean Tsao, Graham Hickling, Edward Walker, Kelly Millenbah, and Linda Mansfield
- Visiting Summer Researcher**, Kellogg Biological Station, Hickory Corners, MI 2004-2009
- Graduate Research Assistant**, University of Illinois 8/2001-5/2003
 Department of Natural Resources and Environmental Sciences
 Thesis: Impacts of West Nile virus on free-ranging American Crows
 Graduate Committee: Drs. Richard Warner, Robert Novak, Phil Mankin, Jeff Brawn
- Wildlife Intern**, Max McGraw Wildlife Foundation, West Dundee, IL 5/2001-8/2001
 Assisted in radio-telemetry, den searching, and processing of raccoons, skunks, and coyotes
Supervisor: Dr. Stan Gehrt
- Volunteer Wildlife Technician**, Illinois Natural History Survey, Champaign, IL 8/2000-8/2001
 Tracked radio-collared foxes, tracked urban deer, and night-censused deer
Supervisors: Drs. Richard Warner, Tim VanDeelen
- Undergraduate Research Scholar**, University of Illinois 8/2000-8/2001
 Department of Natural Resources and Environmental Sciences, Soil Fertility Laboratory. Jonathan Baldwin Turner Program. Research on soil cation-exchange capacity with awarded funding.
Supervisors: Drs. Richard Mulvaney, Saeed Khan
- Undergraduate Research Assistant**, University of Illinois 8/1999-5/2000
 Department of Natural Resources and Environmental Sciences, Soil Mineralogy Laboratory. Conducted soil analyses to determine soil erosion patterns *Supervisor*: Dr. Bob Jones
- Undergraduate Lab Assistant**, University of Illinois 1/1999-5/1999
 Department of Cell Biology. Laboratory maintenance and experimental preparation.
Supervisors: Drs. David Clayton, Wendy Woods

Research Support

Grants Awarded:

- Formula Animal Health Fund, \$20,000** 3/2012 - 9/2012
 College of Veterinary Medicine and Biomedical Sciences, Texas A&M University
 Elucidating tick-borne disease transmission systems using stable isotopes to identify tick-host interactions
 Role: Principal Investigator
 Co Investigator: Gabriel L. Hamer
- United States Fish and Wildlife Service, \$120,099** 10/2012 - 9/2012
 Avian Health and Disease Monitoring and Support Program
 Disease risks to whooping cranes determined by non-invasive sampling and analysis of sandhill cranes as surrogates
 Role: Principal Investigator
 Co-Investigator: Gabriel L. Hamer

Previous Funding:

Doctoral Dissertation Improvement Grant

2009 - 2010

National Science Foundation, \$10,000

Co-Investigators: S. Hamer and J. Tsao

Elucidating an invasion of the blacklegged tick and the Lyme disease pathogen

Summer Support Fellowships

2009

College of Agriculture and Natural Resources, \$6000

Ecology, Evolutionary Biology, and Behavior, \$1800

2009

Kellogg Biological Station Research Grants

G. H. Lauff Research Award, \$4500

2004, 2005, 2008

Porter Award for invertebrate research, \$2500

2006-2008

Companion Animal Fund

2005 - 2006

Center for Veterinary Medicine, Michigan State University, \$25,000

Principal Investigators: S. Yaremych-Hamer, G. Hickling, E. Walker, J. Tsao, and L. Mansfield

Surveillance for spatial spread of canine Lyme borreliosis in Lower Michigan through engaging veterinary clinicians in research.

Travel Grants

- EDEN: Emerging Diseases in a Changing European Environment in Montpellier, France, 2010: Funding from MSU College of Veterinary Medicine Graduate Training Program (\$1200)
- Wildlife Disease Association Conference in Blaine, WA, 2009: Funding from Dept. Fisheries and Wildlife Graduate Student Organization Travel Grant (\$200)
- The Wildlife Society Conference in Miami, FL, 2008: Funding from MSU College of Veterinary Medicine Class of 1957 (\$800); Harold and Phyllis Duchan Student Enrichment Award (\$1000)
- XI International Conference on Lyme Borreliosis and Other Tick-borne diseases in Irvine, CA, 2008: Funding from University of California Regents (\$350)
- Ticks and Tick-borne Pathogens Conference in Argentina, 2008: Funding from MSU Graduate School (\$350), International Studies and Programs (\$300), College of Agriculture and Natural Resources (\$400), Dept. Fisheries and Wildlife (\$200); College of Veterinary Medicine International Experience Fellowship (\$1000)
- Midwest Fish and Wildlife Conference in Madison, WI, 2007: Funding from Department of Fisheries and Wildlife Graduate Student Organization Travel Grant (\$175)
- Ecology & Evolution of Infectious Disease Conference and Workshop in Ft. Collins, CO, 2005: Funding from NSF-IGERT PRIMES travel support (\$900)
- Ticks and Tick-borne Pathogens Conference in Switzerland, 2005: Funding from Graduate Student Organization (\$400), Graduate School (\$400), International Studies and Programs (\$250), College of Agriculture and Natural Resources (\$250), and Ecology, Evolutionary Biology, and Behavior Program Travel Fellowship (\$100)

Awards and Honors

- Veterinary Student Research Award, Michigan State University, 2010 (\$500)
- Wildlife Disease Association Graduate Student Scholarship, 2010 (\$2000)
- Tracy Anne Hammer Memorial Fellowship for Dual-Degree DVM Students, 2010 (\$4000)
- Dissertation Completion Fellowship, College of Ag and Natural Resources, 2010 (\$6000)
- Rainbow Feathers Bird Club avian medicine scholarship, 2009 (\$1000)

- Graduate Research Recognition Award, Wildlife Disease Association: keynote student speaker at annual conference in Blaine, WA, 2009
- American Veterinary Medical Foundation Student Scholarship, 2009 (\$1000)
- Best Student Oral Presentation Award, The Wildlife Society conference, Miami, FL, 2008
- Safari Clubs International, Michigan Involvement Committee Scholarship, 2007-2009 (\$7500)
- Graduate Retention Fellowship, College of Agriculture and Natural Resources, 2008 (\$1000)
- Rocky Mountain Goat Fellowship, 2008 (\$2500)
- College of Agriculture and Natural Resources Alumni Graduate Fellowship, 2008 (\$2500)
- Janice Fenske Memorial Award Finalist for student studying Fisheries or Wildlife, 2007
- Best Student Presentation Competition Award at the Michigan Mosquito Control Association Annual Meeting: William Lechel Memorial Scholarship, 2007 (\$1000)
- Graduate Fellowship Award, Kellogg Biological Station, 2006-2007 (\$2500)
- Best Student Poster Award, Fisheries and Wildlife Grad Student Symposium, 2006 (\$200)
- G. H. Wallace Ornithological Scholarship, MSU Dept. Zoology, 2006 (\$1000)
- G. R. Hartsough Endowed Scholarship in Fur Animal Studies, 2005-2006 (\$4000)
- Best Student Oral Presentation Award, The Wildlife Society conference, Madison, WI, 2005
- Best Student Poster Award at the MSU Invasive Species Conference, 2005 (\$150)
- American Ornithologists' Union Student Membership Award 2005 - 2007
- Ecology, Evolutionary Biology, and Behavior Program Fellowship, 2004 (\$100)
- Fisheries and Wildlife Department Entrance Fellowship, 2003
- Department of Natural Resources and Env. Sciences Merit-Based Graduate Fellow, 2001 - 2003
- Best Student Research Award at the American Mosquito Control Association Annual Conference: Gerald Hollandsworth Award, 2003 (\$500)
- Bronze Tablet University Honors for top 3% of graduating class, University of Illinois, 2001
- Placed 2nd in Agriculture, Consumer, and Environmental Science Undergraduate Research Forum, 2001
- University of Illinois Book Dedication Award (dedicate a book of choice to high school library for students earning 4.0 GPA in first semester of college)
- James Scholar (College of Liberal Arts and Sciences Honors Program), 1998-2001
- Jonathan Baldwin Turner Undergraduate Research Scholarship, 2000-2001

Publications

Refereed Journal Articles (21)

2012 Margos G, Tsao J, Castillo-Ramírez S, Girard Y, **Hamer S**, Hoen A, Lane R, Raper S, Ogden N. 2012. Two boundaries separate *Borrelia burgdorferi* populations in North America. *Appl Environ Microbiol. In press*, 6/2012.

Hamer SA, Amuzie CJ, Williams KJ, Smedley RC. 2012. Infectious laryngotracheitis virus in organic laying chickens, Michigan. *J Am Vet Med Assoc. In press*, 11/2011.

Hamer SA, EW Lehrer, Magle SB. 2012. Wild birds as sentinels for multiple zoonotic pathogens along an urban to rural gradient in greater Chicago, Illinois. *Zoonoses Public Hlth. Early View*, DOI: 10.1111/j.1863-2378.2012.01462.x.

Pepin KM, Eisen RJ, Mead PS, Piesman J, Fish D, Hoen AG, Barbour A, **Hamer SA**, Diuk-Wasser MA. 2012. Geographic variation in the relationship between human Lyme disease incidence and the density of infected host-seeking *Ixodes scapularis* nymphs in the US. *Am J Trop Med Hyg* 86:1062=1071.

Hamer SA, Hickling GJ, Sidge JL, Walker ED, Tsao JI. 2012. Synchronous phenology of juvenile *Ixodes scapularis*, vertebrate host associations, and patterns of *Borrelia burgdorferi* ribotypes in the midwestern United States. *Ticks Tick Borne Dis.* 3:65-74.

Diuk-Wasser, MA, Hoen AG, Cislo P, Brinkerhoff R, **Hamer SA**, Rowland M, Cortinas R, Vourc'h G, Melton F, Hickling GJ, Tsao JI, Bunikis J, Barbour AG, Kitron U, Piesman J, Fish D. 2012. Human risk of infection with *Borrelia burgdorferi*, the Lyme disease agent, in eastern United States. *Am J Trop Med Hyg.* 86:320-327.

2011 Rydzewski J, Mateus-Pinilla N, Warner R, **Hamer S**, Weng H-Y, Haramis L. 2011. *Ixodes scapularis* and *Borrelia burgdorferi* among diverse habitats within a natural area in east-central Illinois. *Vector-borne Zoonot* 11:1351-1358.

Hamer SA, Hickling GJ, Sidge JL, Rosen ME, Walker ED, Tsao JI. 2011. Diverse *Borrelia burgdorferi* strains in a bird-tick cryptic cycle. *Appl Environ Microbiol* 77:1999-2007.

2010 Scott C, Rosen M, **Hamer S**, Baker E, Edwards H, Crowder C, Tsao J, Hickling G. 2010. High-prevalence *Borrelia miyamotoi* infection among Wild Turkeys (*Meleagris gallopavo*) in Tennessee. *J Med Ent.* 47:1238-42.

Hamer SA, Tsao JI, Walker ED, Hickling GJ. 2010. Invasion of the Lyme disease vector *Ixodes scapularis*: implications for *Borrelia burgdorferi* endemicity. *EcoHealth* 7:47-63.

Diuk-Wasser MA, Vourc'h G, Cislo P, Gatewood AG, Melton F, **Hamer SA**, Rowland M, Cortinas MR, Hickling GJ, Tsao JI, Kitron U, Piesman J, Fish D. 2010. Field and climate-based model for predicting the density of the Lyme disease vector *Ixodes scapularis* in the United States. *Global Ecol Biogeogr* 19:504-514.

2009 Gatewood AG, Liebman KA, Vourc'h G, Bunikis J, **Hamer SA**, Cortinas R, Melton F, Cislo P, Kitron U, Tsao J, Barbour AG, Fish D, Diuk-Wasser MA. 2009. Climate and tick seasonality are predictors of *Borrelia burgdorferi* genotype distribution. *Appl Environ Microb.* 75:2476-2483.

Hamer SA, Tsao JI, Walker ED, Mansfield LS, Foster ES, Hickling GJ. 2009. Canines as sentinels for emerging *Ixodes scapularis*-borne zoonoses risk. *Am J Vet Res.* 70:49-56.

2007 **Hamer SA**, Hickling GJ, Roy P, Walker ED, Foster ES, Barber CC, and Tsao JI. 2007. Zoonotic pathogens in *Ixodes scapularis*, Michigan. *Emerg Infect Dis.* 7:1131-1133.

2006 Ward MP, Raim A, **Yaremych-Hamer S**, Lampman R, and Novak R. 2006. Does the roosting behavior of birds affect the transmission dynamics of West Nile virus? *Am J Trop Med Hyg* 75:350-355.

Diuk-Wasser M, Gatewood A, Cortinas R, **Yaremych-Hamer S**, Tsao J, Kitron U, Hickling G, Walker E, Brownstein J, Piesman J, and Fish D. 2006. Spatial and temporal patterns of nymphal host-seeking *I. scapularis* in the United States. *J Med Ent* 43:166-176.

2004 **Yaremych SA**, Novak RJ, Raim AJ, Mankin PC, and Warner RE. 2004. Home range and habitat use by American Crows in east-central Illinois. *Wilson Bull.* 116:232-239.

Yaremych SA, Levensgood JM, Novak RJ, Mankin PC, and Warner RE. 2004. Gender determination and sex-specific West Nile virus mortality of American Crows. *Wildl Soc Bull* 32:893-899.

Yaremych SA, Warner RE, Mankin PC, Brawn JD, Raim AJ, and Novak RJ. 2004. West Nile virus causes high mortality in a free-ranging population of American Crows. *Emerg Infect Dis.* 10:709-711.

Mulvaney RL, Yaremych SA, Khan SA, Swiader JM, and Horgan BP. 2004. Use of diffusion to determine soil cation-exchange capacity by ammonium saturation. *Comm Soil Sci Plant Anal.* 35:51-67.

2003 Yaremych SA, Warner RE, Van de Wyngaerde MT, Ringia AM, Lampman RL, and Novak RJ. 2003. West Nile virus detection in American Crows. *Emerg Infect Dis.* 9:1319-1321.

Book Chapters (2)

Hamer, SA, Cooley TM, Hamer GL. 2011. Avian Diseases. Second Michigan Breeding Bird Atlas. Available at: <http://www.mibirdatlas.org/MichiganBreedingBirdAtlasII.aspx>.

Yaremych SA, Warner RE, Mankin PC, Brawn JD, Raim AJ, and Novak RJ. 2005. West Nile virus causes high mortality in a free-ranging population of American Crows [reprint]. *In Wildlife Diseases: Landscape Epidemiology, Spatial Distribution and Utilization of Remote Sensing Technology.* S.K. Majumdar, J. Huffman, F.J. Brenner, and A.I. Panah, editors. Pennsylvania Academy of Sciences. Pages 200-204.

Manuscripts Submitted and In Preparation (4)

Rosen ME, Hamer SA, Gerhardt RR, Jones CJ, Muller LI, Scott MC, Hickling GJ. Absence of *Borrelia burgdorferi* in widespread *Ixodes scapularis* (Acari: Ixodidae) collected from white-tailed deer (*Odocoileus virginianus*) in Tennessee. *In review 11/2011.*

Hamer SA, Goldberg TK, Kitron UD, Brawn JD, Anderson TK, Tsao JI, Walker ED, Hamer GL. Wild birds in the urban ecology of ticks and tick-borne pathogens in Chicago, Illinois. *In review, 4/2012.*

Hamer SA, Hickling GJ, Sidge JL, Walker ED, Tsao JI. Wild birds and their ticks circulate *Borrelia andersonii* and *Borrelia miyamotoi*. *In prep.*

Hamer SA, Hickling GJ, Sidge JL, Walker ED, Tsao JI. Inter- and intraspecific diversity of tick-borne zoonotic pathogens: a test of the center of origin concept. *In prep.*

Outreach publications (4)

SA Hamer, JI Tsao, GJ Hickling. 2011. A hidden cycle of Lyme disease bacteria in Michigan's forests. Newsletter for the Michigan Lyme Disease Association.

Hamer SA. 2007. Tracking emerging tick-borne disease in Michigan. The Vector: The Newsletter of The Wildlife Society Wildlife Disease Working Group.

Yaremych-Hamer SA. 2005. Disease detectives: on the hunt for ticks and Lyme disease in Lower Michigan. The Spotlight: A Publication of Michigan State University's Department of Fisheries and Wildlife and Wildlife Graduate Students. Feature Article.

Yaremych SA, Brawn JD. 2003. Intelligence, behavior, life history of crows. *Illinois Steward* 12:6-10.

Scientific Presentations

Invited Professional Presentations (9)

2010 Symposium in wildlife as reservoirs of human disease agents. American College of Veterinary Pathologists. Baltimore, MD

Evolution Seminar Series, University of Wisconsin, Madison, WI

2009 Wildlife Disease Association Annual Conference, Blaine, WA

Keynote student oral presentation

2007 Midwest Fish and Wildlife Conference. Madison, WI

The Center for Wildlife Health Seminar Series, University of Tennessee, Knoxville, TN

2006 Michigan Department of Agriculture Meeting, DeWitt, MI

Society of Vector Ecology, Anchorage, AK

2004 36th Annual Society for Vector Ecology Conference, MA

2003 American Ornithologists' Union, Champaign-Urbana, IL

Contributed Talks and Poster Presentations (37)

- 2012 Ecology and Evolution of Infectious Diseases, Ann Arbor, MI
- 2011 Phi Zeta Research Day, MSU College of Veterinary Medicine, East Lansing, MI (co-author)
- 2010 National Wildlife Health Center, Madison, MI, presentation of internship research project
Disease Eco-Lunch Discussion Group, MSU
International Conference of Lyme borreliosis and other tick-borne disease, Ljubljana, Slovenia (co-author)
Phi Zeta Research Day, MSU College of Veterinary Medicine, East Lansing, MI (co-author)
EDEN: Emerging Diseases in a Changing European Environment. Montpellier, France
- 2009 Phi Zeta Research Day, MSU College of Veterinary Medicine, East Lansing, MI (primary author on one presentation and co-author on 3 presentations)
University Undergraduate Research and Arts Forum, East Lansing, MI (co-author)
- 2008 The Wildlife Society Conference, Miami, FL
Best student presentation award winner
XI International Conference of Lyme Borreliosis and other Tick-borne Pathogens. Irvine, CA
Phi Zeta Research Day, MSU College of Veterinary Medicine, East Lansing, MI
VI International Conference on Ticks and Tick-borne Pathogens. Buenos Aires, Argentina
National Veterinary Scholars Symposium. East Lansing, MI
Invasive Species Symposium, Michigan State University, East Lansing, MI
Michigan Epidemiology Conference, East Lansing, MI (co-author)
- 2007 Conference of Research Workers in Animal Disease, Chicago, IL (co-author)
Society for Vector Ecology, Springfield, IL (co-author)
Michigan Mosquito Control Association Annual Meeting, Traverse City, MI
Best student presentation award
- 2006 Phi Zeta Research Day at MSU College of Veterinary Medicine, East Lansing, MI. (co-author)
Invasive Species Symposium, Michigan State University, East Lansing, MI (co-author)
Entomological Society of America- North Central Branch, Bloomington, IL
Graduate Student Symposium, Michigan State University, East Lansing, MI
Best student poster award
Conference for Veterinary and Medical Professionals on Lyme Disease in Michigan, Augusta, MI
- 2005 Ohio Mosquito Control Association, Toledo, OH
Joint meeting of the Inland Bird Banding Association and Michigan Field Ornithologists and Bird Banders, Hickory Corners, MI
Wildlife Society Conference, Madison, WI
Best student presentation award
Ticks and Tick-borne Pathogen V Conference, Neuchatel, Switzerland. (2 presentations)
Invasive Species Initiative Conference, MI, East Lansing, MI
Best student presentation award
Ecology and Evolution of Infectious Disease Conference, CO
Midwest Fish and Wildlife Conference, IN
Entomological Society of America Annual Meeting. UT (co-author)
- 2004 Michigan Field Ornithologists and Bird Banders Annual Meeting, MI
Phi Zeta Research Day, College of Veterinary Medicine, Michigan State University, East Lansing, MI (co-author)
36th Annual Society for Vector Ecology Conference, MA (co-author)
Emerging Zoonotic Diseases: Patterns and Processes Symposium, Microbial Pathogenesis Conference, IL
Michigan Mosquito Control Association, MI
- 2003 American Mosquito Control Association, Minneapolis, MN
Best student presentation award
The Wildlife Society IL, IA, WI Joint Chapter Meeting, IA
- 2002 Illinois Mosquito and Vector Control Association, IL

Peer-Reviewer

African Journal of Agricultural Research
Comparative Immunology, Microbiology & Infectious Diseases
EcoHealth (2)

Journal of Medical Microbiology
Journal of Wildlife Diseases
Proceedings of the Royal Society B

Emerging Infectious Diseases (3)
Journal of the American Veterinary Medical Association
Journal of Infectious Diseases
Journal of Medical Entomology

Ticks and Tick-borne Diseases (2)
Vector-borne and Zoonotic Diseases
Veterinary Parasitology
Wilson Journal of Ornithology

Teaching Experience

Instructor, Michigan State University (MSU) 2008

FW 238: Introductory Fisheries and Wildlife Field Experience. Summer field course in fisheries and wildlife techniques, including mammal trapping, mist netting, orienteering, herp surveys fish trapping, deer survey using distance sampling.

Teaching Assistant

ZOL 490: Study Abroad: From Apes to Aves: Forest Biodiversity in Uganda, MSU 2008
Inaugural program to five national parks to study avian and primate behavior. Gave lectures on disease ecology. Led labs in mist netting. Collected samples for Uganda Virus Research Institute.

LCS 610w: Wildlife Disease Ecology and Management, MSU 2005-2008
Veterinary Clerkship: Taught field, laboratory, and GIS labs to group of veterinary students.
Professors: Drs. Jean Tsao and Graham Hickling

PRO 101: Freshman Seminars on Wildlife Disease, MSU 2003
Aided in course development, assignment preparation, and guest lectured. Professors: Drs. Amanda Fine, Graham Hickling

NRES 104: Introduction to Environmental Science, University of Illinois 2001, 2002
Led weekly discussion sections (8-13 students) and guest lectured. Test writing and administration, creating assignments, grading, course website development. Professor: Dr. Mark David.

NRES 101: Introduction to Soil Science, University of Illinois 2002
Instructed weekly wet laboratory sections (15 students). Professor: Dr. Robert Darmody.

Guest Lectures and Labs

VSCS 948-302: Applied Conservation Medicine, Texas A&M University 2012
Topic: Ecological drivers of vector-borne disease, Professors: Drs. J. Heatley, D. Brightsmith

VIBS 681-611: Food-borne Pathogen Epidemiology Seminar, Texas A&M University 2012
Topic: *Toxoplasma gondii*, Professor: Dr. Kevin Cummings

VIBS 608: Epidemiology Methods I, Texas A&M University 2012
Topic: Cross-sectional studies. Professor: Dr. Renata Ivaneck

CompMed 84Q: Globally Emerging Zoonotic Diseases, Stanford University 2011
Topic: Emerging tick-borne disease ecology. Professor: Dr. Stephen Felt

FW 238: Introductory Fisheries and Wildlife Field Experience, MSU 2009
Topic: Field techniques in mist-netting, bird-banding, mammal trapping, and chemical immobilization of wildlife. Professor: Dr. Dan Hayes

FW/MC 481L Global issues in Fisheries and Wildlife Resources, MSU 2007-2010
Topic: Globalization and disease. Professor: Dr. William Taylor

FW 419: Geographic Information Systems, MSU 2006-2008
Topic: Wildlife Disease Spatial Risk Models. Professor: Dr. K. Millenbah

ZOL 365: Biology of Mammals, MSU- Kellogg Biological Station 2006, 2008
Topic: Small mammal trapping. Instructor: Lisa Korte

ZOL 491: Current Topics in Conservation Biology, MSU- Kellogg Biological Station 2005, 2008
Topics: Conservation medicine and wildlife disease. Anesthesiology and raccoon processing demonstration. Professors: Drs. K. Gross and D. Schemske

ZOL 360: Biology of Birds 2004-2009
Lecture and lab: Avian field research methodology and standard surveys.

Professor: Dr. P. Rasmussen.

Teaching Awards

- 'Incomplete List of Teachers Ranked as Outstanding' by their students at University of Illinois, Fall 2001, Spring 2002, Fall 2003
- Graduate Teaching Certificate, Division of Instructional Resources, University of Illinois, 2002
- Finalist for Louis Logeman Graduate Teaching Award, University of Illinois, 2002

Mentoring of Undergraduates and Veterinary Students

(17 students that I advised in field or laboratory-based investigations 2004-present)

Adrian Castellanos (summer researcher supported by TAMU Program for Integrated Undergraduate Research Experiences in Biological and Mathematical Sciences)

Jennifer Sidge (undergraduate independent researcher; veterinary student researcher; pursuing DVM and MS at MSU; won student poster award at Undergraduate Research and Arts Forum; co-author on two papers)

Michelle Haring (McNair Research Scholar, earned BS University of Wisconsin- River Falls)

Jennifer Stowe (summer veterinary student researcher, pursuing DVM at MSU)

Aubrey Rankin (summer veterinary student researcher, pursuing DVM at MSU)

Aditi Upadhye (high school intern; volunteered in laboratory)

Michelle Rosen (field and lab technician; earned MS in tick-borne disease ecology at Univ. Tennessee; co-author on two papers)

Natalie Ochmanek (field and laboratory technician; earned BS from MSU)

Katherine Boatman (laboratory technician; earned DVM from MSU)

Emily Koppel (undergraduate independent researcher; MS in parasite-host ecology at Minnesota State University)

Todd Lickfett (field technician; earned MS in disease ecology at Central MI University)

Aaron Rydecki (field technician; earned BS at Grand Valley State University)

Christopher Niebuhr (field technician; now pursuing MS in tick ecology at Tarleton State University)

Mandy Kauffman (undergraduate independent researcher; now pursuing PhD in wildlife disease at University of Wyoming)

Christina Barber (summer veterinary student researcher, co-author on paper resulting from her work; earned DVM at MSU)

Megan Schiable (summer veterinary student researcher; earned DVM at MSU)

Dana Galbreath (Professorial Assistantship (PA) in Honors College, earned BS at MSU)

Outreach Activities

- Instructor for Wildlife Disease Workshop at the TX Chapter of The Wildlife Society Meeting, Ft. Worth, TX. Lectures on wildlife diseases and field necropsy demonstrations for wildlife biologists and students. February 2012.
- Invited Speaker for Pfizer 'Lunch and Learn'. 'Ticks, Trails, and Hummingbird Tales', March 2011.
- Guest speaker at Safari Clubs International Novi Chapter 'Big Buck Night'. Topic: Emerging tick-borne diseases and risk to hunters, May 2010.
- Invited speaker at Michigan Lyme Disease Association annual Conference, August 2009
- Created a booth on wildlife field research for 'Vet-a-visit', the open house for MSU College of Vet Med, 2008
- Presentations to park staff and visitors at Sleeping Bear Dunes National Lakeshore on ticks and disease risk in summers 2008 and 2009
- Collaborate with Michigan Dept Community Health and Dept Natural Resources to share results of Lyme disease surveillance with state parks managers and public. Provided fact sheets. 2004-2009.

- Presentation as part of MSU Department of Fisheries and Wildlife weekly seminar series on biodiversity in Uganda after assisting with instruction of a study abroad, 2008.
- Once per semester organize hands-on wildlife fieldwork experiences (mist-netting) for the undergraduate Fisheries and Wildlife club, department, and veterinary students, 2004-2009.
- Presentation of research to undergraduate Fisheries and Wildlife Club, October 2007.
- Organized the ‘*Conference for Veterinary and Medical Professionals on Emerging Lyme disease in Michigan*’ at Brook Lodge, MI, November 2005. Attended by ~50 human and veterinary medical professionals; presented general disease information and research results

Professional development

- Center for Teaching Excellence, TAMU: Syllabus and Course Development Workshops, summer 2012
- Workshop on modeling and data analysis in conjunction with the Ecology and Evolution of Infectious Disease Conference, Ann Arbor, MI, May 2012
- Tools for Infectious-Disease Epidemiology: Infectious disease modeling, Cornell College of Veterinary Medicine, July 2011
- Summer Session in Epidemiology, University of Michigan, July 2005
- Ecology and Evolution of Infections Disease Workshop: Modeling of long-term data sets, CO, May 2005
- MSU Summer Institute on College Teaching and Learning: Cooperative Learning in the Classroom- 2 day workshop, August 2004. Selected by department for participation.
- Chemical Immobilization for Wildlife Handlers- 3 day workshop, MI, May 2004.
- Study Abroad, University of Pretoria, Center for Wildlife Management, South Africa. Field course in wildlife management and conservation issues in Kruger National Park. 2001.
- Study Abroad, College of Agriculture, Consumer, and Environmental Science International Study program, University of Illinois. Traveled to Puerto Rico and Jamaica with classes on short study trips to learn local issues in agriculture, wildlife, and environmental research. May 1999 and January 2001.

Professional service

- Judge for College of Veterinary Medicine and Biomedical Sciences Graduate and Postdoctoral Association Research Symposium, April 2012
- Selection Committee for High Impact Student Publication Awards, April 2012
- Wildlife Disease Working Group, The Wildlife Society, Elected Board Member (2007-2011) and Chair of Student Affairs Committee, 2007-present
- Lead conversations about research opportunities for veterinary students to families of students interviewing at Michigan State University and to the incoming veterinary class, 2008-2010
- Fisheries and Wildlife Graduate Student Organization, President 2008-2009, Vice-President 2007-2008, Treasurer 2006-2007
- Graduate Representative for the undergraduate Fisheries and Wildlife Club, 2004 - 2009
- Xi Sigma Pi Forestry and Natural Resources Honors Society, President 2001-2003

Communication of Science through the Media

- Interviewed in a video exhibit at the Michigan State University museum: "Avelution" Birds in the Development of Darwin's Theories on Evolution, 2010
- PhD research on Lyme disease featured in:

- Woods-N-Water News ‘MSU researchers collect ticks from harvested deer in Lyme disease study’ (January 2008)
- Hunters Exchange Television, 15-minute piece on wildlife field research, 2007
- Ludington Daily News ‘Tick that spreads Lyme disease moving north’ (6/26/07)
- Master of Science research on West Nile virus and crows featured in:
 - Chicago Wildlife News ‘Crows slowly making comeback in Illinois’ (3/8/10)
 - Chicago Wilderness ‘A Murder of Crows- Black Beauty Faces Hard Times’ (Winter 2004)
 - The News Gazette Champaign IL ‘This conference is for the birders’ (12/10/03)
 - Urban Programs Resource Network ‘West Nile virus is tough on bird population’ (5/28/03)
 - Chicago Tribune Magazine ‘West Nile virus- what went wrong?’ (5/11/03)
 - Outdoor Illinois ‘Crow Study Yields Eye-Opening Results’ (April 2003)
 - The News Gazette, Champaign IL ‘Research tracks spread of West Nile’ (7/28/02)
 - The Skokie Review ‘West Nile depleting bird populations’ (9/12/02)
 - Illinois Public Radio interview, 2003

Promotion of Women in Science

- ‘Vetward Bound’ Enrichment Summer Program: mentor for disadvantaged persons preparing for entrance into veterinary medical school, Michigan State University College of Veterinary Medicine, 2010-2011
- Featured with cover photo in ‘Women in the Outdoors’ segment of Outdoors Magazine, July 2009
- Organized lab participation in ‘Becoming an Outdoorswomen’ workshop by Michigan Department of Natural Resources (topic: shooting sports), 2008
- Mentored a minority female high school student in laboratory bench science, 2008
- Girls Math and Science Conference: created a wildlife-trapping workshop for 6th grade girls, 2006

Affiliations and Certifications

- Women’s Faculty Network, Texas A&M University, 2012-present
- Association of Field Ornithologists, 2012-present
- Master Bird Bander, 2012-present
- Veterinary Medical License, State of Michigan, 2011-present
- USDA National Veterinary Accreditation, 2011-present
- Associate Wildlife Biologist™, Certification of The Wildlife Society, 2009-present
- The Wildlife Society, 2005-present; Wildlife Disease Working Group, 2007-present; Texas Chapter 2012-present
- Wildlife Disease Association, 2009-present
- American Veterinary Medical Association, 2007-present
- Michigan Veterinary Medical Association, 2007-2011
- American Ornithologists’ Union, 2005-2008
- Society of Vector Ecology 2004-2007
- Michigan Field Ornithologists and Bird Banders, 2004-2008
- American Mosquito Control Association, 2003
- Illinois Mosquito and Vector Control Association, 2003
- Illinois Student Chapter of The Wildlife Society, 2000-2003

