

Curriculum Vitae
Holly Ernest MS, DVM, PhD
Professor of Wildlife Genomics and Disease Ecology
Wyoming Excellence Chair in Disease Ecology
Fulbright Scholar Alumnus (2021)
Certified Senior Ecologist, Ecological Society of America
University of Wyoming, Laramie

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- **Researching** population ecology, genetics, and genomics for comparative disease ecology and conservation biology
 - **Providing data and translating complex science** in an understandable way for improved wildlife management, conservation, and population health
 - **Educating and mentoring** students, scientists, and wildlife health & conservation practitioners for futures in landscape-level research and action to benefit natural system conservation

ADDRESS

Wildlife Genomics & Disease Ecology Lab
University of Wyoming (UWyo)
6012 and 6017 AgC Building
Laramie, WY 82070
Holly.Ernest@uwyo.edu

<http://www.WildlifeGeneticHealth.org/>

Holly Ernest is a wildlife biologist, disease ecologist, research veterinarian, and professor who employs research tools of genomics, pathogen biology, and ecological sciences to answer questions of wildlife conservation and management importance. Dr. Ernest's focus is applied research on questions and problems for wildlife health in North America with special focus on the Rocky Mountain West.

She leads a program and lab that has included undergraduate, graduate, and post-doctoral training, mentoring and education, as well as service and outreach to the public. Holly joined University of Wyoming (UWyo) faculty in 2014 following a career first as a veterinarian in the practice she founded in a small town near Rochester, NY (1987-1993). Then she sold the veterinary practice to start an academic career in wildlife ecology, disease, genetics, and conservation with PhD training in the UC Davis Graduate Group in Ecology in starting 1993. After the PhD, she was recruited to UC Davis first as a wildlife research veterinarian, then research geneticist, then professor of Wildlife Genetics and Population Health at the University of California, Davis (2002-2014; earning Emeritus Professor distinction in 2014 at UC Davis). Her UWyo team has examined population health, diseases, ecology, and genomic diversity of species ranging from bighorn sheep, deer, elk, pronghorn, mountain lions, black bears, and otters to raptors and hummingbirds. Disease ecology studies have included studies of population effects by diseases caused by prions (Chronic Wasting Disease), viruses, bacteria, protozoa, and helminth (worm) pathogens.

Dr. Ernest's team collaborates with many people from a range of university, agency, and stakeholder groups who aim to further research and improve wildlife population health in the Rocky Mountain West, Wyoming, California, and beyond. Dr. Ernest also consults for state, federal, and international agencies; serves on the US federal National Institute of Standards and Technology panel for wildlife forensic genetics; is a member of the multi-agency Southern Sea Otter Reintroduction Science Working Group; has recently been approved by the Canadian federal government to serve on the Canada BioGenomes Project as part of the international Earth BioGenome Project.

EDUCATION and TRAINING

Ph.D. in Ecology, specialization, wildlife health, population ecology, & genetics: University of California, Davis Graduate Group in Ecology. 2001.

Doctor of Veterinary Medicine, cum laude, Ohio State University, 1986.

M.S. Veterinary Physiology and Pharmacology, Ohio State University, 1982.

B.S., Biology, Cornell University, 1980.

Recent Training and Workshops in the Future of Teaching (1-semester Fall 2021), The Wildlife Society Nov 2021 Workshop on active teaching for wildlife courses, online and hybrid teaching ECTL workshops (2019-2021); **Conservation Genomics** (ConsGen2020 through Univ. of Montana), **Geospatial Analysis in R** (2020), Google Earth Engine (2020),

Fulbright Programs and Discussion Panels (2020-2021) topics including Diversity, Inclusion, Social Welfare; issues and actions for groups including Indigenous and First Nations, Black, People of Color,

Recent continuing education: Conferences (virtual due to pandemic): Wildlife Disease Association (2020, 2021), American Ornithological Society (2020), Ecological Society of America (2020), Southern Sea Otter Alliance (January 2021), Sea Otter Research and Conservation Symposium (April 2021), Genomics of Animals and Plants 2021 Conference.

CERTIFICATIONS and HONORS

- **Fulbright Scholarship awarded for 2021**, Wildlife Health, Genomics, and Disease Ecology at the Canada/USA interface. University of British Columbia.
- **Sabbatical and Visiting Professor Status Awarded for Aug 2020-July 2021.** Wildlife Health, Genomics, and Disease Ecology at the Canada/USA interface. University of British Columbia. 2021
- **Certified Senior Ecologist, Ecological Society of America.** June 2019-present.
- **Federally USGS permitted hummingbird bander.** 2009-present. Hummingbird capture, sampling, and banding in Arizona, Colorado, and California. Awarded Master Bander certificate by USGS (Bird Banding Lab, US Geological Survey) in 2011; valid through 2023.

POSITIONS

2014 Sep-
to present **Professor and Wyoming Excellence (endowed) Chair in Disease Ecology Lead Investigator, Wildlife Genomics and Disease Ecology Lab**, Department of Veterinary Sciences and Program in Ecology, University of Wyoming, Laramie Faculty Affiliate in the Haub School of the Environment and Natural Resources. Lab member group of undergraduate interns, graduate students, postdoctoral researchers, and research scientist/lab manager.

2014 Sep-
to present **Professor Emeritus**, Wildlife Genetics, Genomics, and Population Health, Dept. of Population Health and Reproduction, Wildlife Health Center, and Veterinary Genetics Laboratory, UC Davis School of Veterinary Medicine.

2014 Jul-Sep **Professor in Residence**, Wildlife Genetics, Genomics, and Population Health, Dept. of Population Health and Reproduction, UC Davis School of Veterinary Medicine

2010-2014 **Associate Professor in Residence**, Wildlife Genetics, Genomics, and Population

- Health, Dept. of Population Health and Reproduction, UC Davis School of Veterinary Medicine
- 2005-2010 **Assistant Professor in Residence**, Wildlife Genetics and Population Health Dept. of Population Health and Reproduction, UC Davis School of Veterinary Medicine
- 2002-present **Laboratory Senior Investigator**, Wildlife Ecology Unit, Veterinary Genetics Laboratory (VGL), UC Davis. Founded the unit.
- 2002-2005 Associate Veterinarian, then **Assistant Research Geneticist** (title allowed major professor status for graduate students), VGL; founded Wildlife Ecology Unit 2002. Wildlife Genetics, Genomics, and Population Health lab has enjoyed productive research, teaching, and service success for over 10 years.
- 2002-2003 **Director of Forensics Unit**, VGL. Following 2003 directed 100% effort to Wildlife & Ecology Unit by my choice.
- 1999-2001 **Associate Wildlife Veterinarian**, Wildlife Health Center, UC Davis School of Veterinary Medicine.
- 1997-1999 **Academic Fellow & Adjunct Instructor**, UC Davis Department of Veterinary Pathology, Microbiology, and Immunology. Work with UCD first and second year vet students and courses in bacteriology, virology, immunology, parasitology courses, as well as UC Davis Wildlife Health Center courses in wildlife health and restraint.
- 1997-1999 **PhD student in Ecology with fellowships in Wildlife Health and Ecology**
- 1993 Started PhD training at UC Davis Graduate Group in Ecology to transition career focus to Wildlife Ecology and Population Health. Special focus on wildlife population genetics.
- 1987-1993 **Clinical Veterinarian and Veterinary Hospital Owner/Manager**. Founded new veterinary hospital in 1987 and managed through 1993. Sold veterinary practice to start new career in wildlife biology & population genetics through Ecology PhD at UCD.
- 1986-1987 Employed Veterinarian, Medicine and Surgery, Internship. Oradell Animal Hospital, NJ.
- Pre-1986 Undergrad, MS, and DVM student.

RESEARCH

Wildlife Genomics and Disease Ecology at large landscape scales: Answering questions about interactions of animals, rapidly changing landscapes, genetic diversity, and disease dynamics. *Wyoming's ungulates (pronghorn, mule deer, bighorn sheep, elk), Chronic Wasting Disease research in deer and elk; sea otter genetics for relatedness and genetic diversity, disease ecology, and genomics; Hummingbird field ecology, blood parasite disease ecology, and population genomics; Great Gray Owl population genomics; Mountain lion population genomics; black bear non-invasive molecular mark-recapture; Bioinformatics; Disease gene sequencing.*

PUBLICATIONS

Peer-reviewed journals include: *Biology Letters, Molecular Ecology, Biological Journal of the Linnaean Society, Evolutionary Applications, Ecological Applications, Current Biology, BMC*

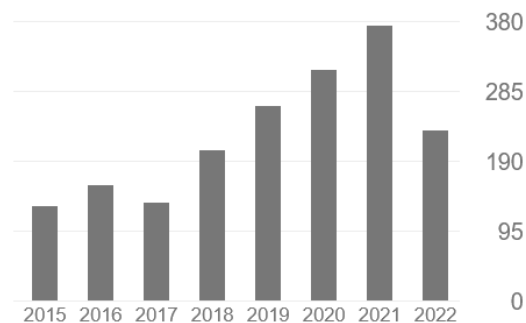
Holly Ernest

Evolutionary Biology, Molecular Phylogenetics and Evolution, Conservation Genetics, Landscape Ecology, PlosOne, Journal of Mammalogy, The Auk, Journal of Ornithology, Condor, Journal of Wildlife Diseases, Ecology and Evolution, Parasitological Research, Journal of Parasitology, Royal Society Open Science, Ecography, Nature Communication Biology, and others.

Updated publication list with links: <http://www.wildlifegenetichealth.org/publications/>

[Google Scholar](#) –citation trend graph July 2022

Cited by	VIEW ALL	
	All	Since 2017
Citations	2907	1526
h-index	30	22
i10-index	53	39



In Prep

Invited review genomics and disease ecology paper for 2023 edition of *Annual Review of Animal Biosciences*. H Ernest, lead/first author. et al.

Elk CWD PRNP genetics: Jennifer Malmberg, Bruce Hoar, WGFD, NPS and USDA collaborators.

Various student-coauthored papers

In journal review/revision:

Using Whole-Genome Data to Characterize Population And Adaptive Divergence In The Swainson's Hawk (*Buteo swainsoni*). In internal review, 2022. Abernathy et al. plan to submit to *Molecular Ecology* summer 2022.

The Prevalence of Avian Pox in Hummingbirds Galvin, A.; et al. *Journal of Animal Ecology*

Other wildlife genetics and disease ecology papers we are coauthoring with other researchers are in review

PrePrints: Published as publicly available online pre-print on BioRxiv, Research Square:

***Denotes my role as senior author/primary mentor of first author and as senior and corresponding author**

*Kyle D. Gustafson, Roderick B. Gagne, Michael R. Buchalski, T. Winston Vickers, Seth P.D. Riley, Jeff Sikich, Jaime L. Rudd, Justin A. Dellinger, Melanie E.F. LaCava, **Holly B. Ernest**. 2021.

Broad-scale puma connectivity could restore genomic diversity to fine-scale coastal populations. <https://doi.org/10.1101/2021.10.08.463677> first published online as pre-print here then accepted and published in *Evolutionary Applications* 2022-listed below.

Michael Buchalski, Benjamin Sacks, Kristen Ahrens, Kyle Gustafson, Jaime Rudd, **Holly Ernest**, Justin Dellinger. 2021. **Development of a 95 SNP Panel to Individually Genotype Mountain Lions (Puma Concolor) For Microfluidic and Other Genotyping Platforms.** <https://assets.researchsquare.com/files/rs-891750/v1/7bb0e4f7-0071-4b07-acac-0dee2b914c50.pdf?c=1634573642> Later, this paper was accepted 2022 listed below

Published, accepted, or in-press:

***Denotes my role as senior author/primary mentor of first author and as senior and corresponding author**

2021-July 2022 to date

- * Adrienne Mackenzie (co-first author), *Megan Dudenhoefter (co-first author), Berit Bangoura, Ravinder N. M. Sehgal, Lisa A. Tell, Braden L. Godwin, **Holly B. Ernest**. 2022. **Prevalence and Diversity of Hemoparasites in a High-elevation Hummingbird.** *Parasitology Research* <https://link.springer.com/article/10.1007%2Fs00436-021-07407-1>
- *KD Gustafson, RB Gagne, MR Buchalski, TW Vickers, SPD Riley, J Sikich, JL Rudd, JA Dellinger, MEF LaCava, **HB Ernest**. 2022. **Multi-population puma connectivity could restore genomic diversity to at-risk coastal populations in California.** *Evolutionary Applications*. (Gustafson, conducted research while postdoc in my lab, new assistant professor, is corresponding author) <https://onlinelibrary.wiley.com/doi/10.1111/eva.13341>
- *Nicole H. Carter, Melissa A. Miller, Megan E. Moriarty, M. Tim Tinker, Roderick B. Gagne, Christine K. Johnson, Michael J. Murray, Michelle M. Staedler, Berit Bangoura, Shawn Larson, **Holly B. Ernest**. 2022. **Investigating Associations Among Relatedness, Genetic Diversity, and Causes of Mortality in Southern Sea Otters (*Enhydra lutris nereis*).** *Journal of Wildlife Diseases*.
- Aoife Nora Galvin, Pranav Pandit, Simon G English, Rachel C Quock, Ruta Rajiv Bandivadekar, Rita R Colwell, Barbara W Robinson, **Holly B. Ernest**, Mollie H Brown, Ravinder Sehgal, Lisa Ann Tell. *In press* 2022. **Evaluation of Minimally Invasive Sampling Methods for Detecting Avipoxvirus: Hummingbirds as a Case Example.** *Frontiers Veterinary Science*. *Holly contributed years of data from hummingbird field ecology, disease results, and banding data as part of a consortium of bird banders.*
- M Buchalski, B Sacks, K Ahrens, K Gustafson, J Rudd, **H Ernest**. 2022. **Development of a 95 SNP Panel to Individually Genotype Mountain Lions (Puma Concolor) For Microfluidic and Other Genotyping Platforms.** *Conservation Genetics Research*.
- Simon G. English, Rita R. Colwell, Barbara W. Robinson, **Holly B. Ernest**, Christine A. Bishop, Ruta Bandivadekar, and Lisa A. Tell. 2021. **Demography of two species and one genus of hummingbirds with contrasting population trends in California, USA.** *J. Field Ornithology*.
- * Melanie E. F. LaCava, Jennifer L. Malmberg, William H. Edwards, Laura N. L. Johnson, Samantha E. Allen and **Holly B. Ernest**. **Spatio-temporal analyses reveal infectious disease-driven selection in a free-ranging ungulate.** 2021. Royal Society Open Science. <https://doi.org/10.1098/rsos.210802>
- A. N. Galvin, A. C. Bradshaw, B. M. Myers, L. A. Tell, **H. B. Ernest**, and R. N. M. Sehgal. 2021, Low

[Prevalence of Haemosporidians in Blood and Tissue Samples from California Hummingbirds](#). *Journal of Parasitology*. 107(5), 794-798.

- *Melanie E F LaCava, Roderick B Gagne, Kyle D Gustafson, Sara Oyler-McCance, Kevin L. Monteith, Hall Sawyer, Matthew J. Kauffman, Daniel J. Thiele, **Holly B Ernest**. 2021. **Functional connectivity in a continuously distributed, migratory species as revealed by landscape genomics**. *Ecography*. <https://doi.org/10.1111/ecog.05600>
- Shawn Larson, Jim Bodkin, Katherine Ralls, Roderick B. Gagne, Lizabeth Bowen, Raphael Leblois, Tim Tinker, and **Holly Ernest**. **Translocations maintain genetic diversity and increase connectivity in sea otters, *Enhydra lutris***. 2021. *Marine Mammal Science*. <https://onlinelibrary.wiley.com/doi/10.1111/mms.12841>
- Nicholas M. Fountain-Jones, Simona Kraberger, Roderick Gagne, Daryl R. Trumbo, Patricia Salerno, W. Chris Funk, Kevin Crooks, Roman Biek, Mathew Alldredge, Ken Logan, Guy Baele, Simon Dellicour, **Holly B Ernest**, Sue VandeWoude, Scott Carver, Meggan E. Craft. 2021. **Host relatedness and landscape connectivity shape pathogen spread in a large secretive carnivore**. *Nature Communications Biology*.
Earlier version on bioRxiv 816009; doi: <https://doi.org/10.1101/816009>

2020

- *Melanie E F LaCava, Roderick B Gagne, Sierra M Love Stowell, Kyle D Gustafson, C Alex Buerkle, Lee Knox, **Holly B Ernest**. 2020. **Pronghorn population genomics show connectivity in the core of their range**. *Journal of Mammalogy*. Wyoming-wide Pronghorn landscape genomics and ecology. Broad collaboration among institutions and agencies including University of Wyoming including the Wyoming State Veterinary Laboratory, Wyoming Department of Game and Fish, Colorado State University, Wyoming Cooperative Fish and Wildlife Research Unit, University of California Davis, and others; with funding from University of Wyoming, the Y Cross Ranch endowments, the IDEa fund, and Excellence Chair funds.
- *Braden Godwin, Melanie LaCava, Beth Mendelsohn, Roderick B. Gagne, Kyle D. Gustafson, Sierra M. Love Stowell, Andrew Engilis Jr., Lisa A. Tell, Holly B. Ernest. 2020. **Novel hybrid finds a peri-urban niche: Allen's Hummingbirds in southern California**. *Conservation Genetics*. Hummingbird population genomics at multiple landscape scales; field ecology and bird banding studies that involved high school, undergraduate and graduate bird field ecology and banding trainees. Collaboration with UC Davis, Colorado State University, University of Wyoming, and others.
- Dellinger, Justin; Gustafson, Kyle; Gammons, Daniel; **Ernest, Holly**; Torres, Steven, **"Minimum habitat thresholds required for umbrella species genetic diversity**. 2020. *Ecology and Evolution*. Mountain lion landscape ecology and conservation genetics. Collaboration among California Department of Fish and Wildlife, University of Wyoming, and Arkansas State University. <https://doi.org/10.1002/ece3.6723>
- *Love Stowell SM, RB Gagne, Doug McWhirter, William Edwards, **HB Ernest**. 2020, **J. Wildlife Management. Bighorn sheep genetic structure in Wyoming reflects geography and management**. Broad collaboration among institutions and agencies including University of Wyoming including the Wyoming State Veterinary Laboratory, Wyoming Department of Game and Fish, Wyoming Wild Sheep Foundation, the national Wild Sheep Foundation,

Colorado State University, Wyoming Cooperative Fish and Wildlife Research Unit, University of California Davis, and others.

- *Mendelsohn B, B Bedrosian, SM Love Stowell, RB Gagne, MEF LaCava, BL Godwin, JM Hull, **HB Ernest**. 2020. **Conservation Genetics. Distinct Population Genomic Differentiation of Great Gray Owls in the Intermountain West.** Broad collaboration among people, institutions and agencies including Alex Buerkle (UWyo), Teton Raptor Center, Wyoming Game and Fish Dept, Meg and Burt Raynes Wildlife Fund, Raptor Research Foundation Dean Amadon Grant and Raptor Research Foundation, Owl Research Institute, University of California Davis, University of Wyoming College of Agriculture, Colorado State University, and many others who were very important to this work.
- Julie Smith, Rebecca Lewison, Megan Jennings, Seth Riley, Laurel Serieys, Shaelynn Sleater-Squires, Erin Boydston, Kevin Crooks, **Holly B. Ernest**. 2020. **Carnivore population structure across an urbanization gradient: A regional genetic analysis of bobcats in southern California, *Landscape Ecology*.** <https://doi.org/10.1007/s10980-020-00971-4> Collaboration among US Forest Service, Sa Diego State University (SDSU), University of Wyoming, UC Davis, US Geological Survey, Colorado State University, National Park Service, and others. The initial work for this study occurred at the UC Davis Lab of Holly Ernest while Megan Jennings was working on her joint UC Davis/SDSU PhD. Later Megan involved her and Rebecca Lewison's SDSU MS student Julie Smith- so this involves a pedigree of 3 academic generations of investigators!
- Vernon C. Bleich, Becky M. Pierce, **Holly B. Ernest**, Jeffrey T. Villepique. 2020. **Hematology of mountain lions (*Puma concolor*) in the Sierra Nevada, California, USA: effect of sex, season, or location?** 2020. **California Fish and Wildlife.** Collaboration with one of Holly Ernest's original PhD dissertation committee members – Dr. Vernon Bleich - and with California Department of Fish and Wildlife and University of Wyoming.
- Benson, J. F., P. J. Mahoney, T. W. Vickers, J. A. Sikich, P. Beier, S. P. D. Riley, H. B. Ernest, and W. M. Boyce. 2020. **Conserving ecological roles of top predators in isolated mountains. Letter to the Editor (Response).** *Ecological Applications* 30 (1), e02029. <https://mywiley.in/ecological/pdf/2020/Vol30Issue1/e02029.pdf>
- 2019**
- Daryl R Trumbo, Patricia E Salerno, Ken A Logan, Mat Aldredge, Roderick B Gagne, Chris P Kozakiewicz, Simona Kraberger, Nick Fountain-Jones, Meggan E Craft, Scott Carver, **Holly B Ernest**, Kevin Crooks, Sue VandeWoude and W Chris Funk. 2019. **Urbanization impacts apex predator gene flow but not genetic diversity across an urban-rural divide.** *Molecular Ecology* <https://onlinelibrary.wiley.com/doi/full/10.1111/mec.15261> Broad collaboration among institutions and agencies, particularly investigators of an Ecology and Evolution of Infectious Disease (EEID) NSF grant led by Dr. Sue VandeWoude CSU, 2015-2020. University of Minnesota, Colorado State University, University of Tasmania, University of Wyoming, Colorado Division of Wildlife, and others.
- Benson JF, Mahoney PJ, Vickers TW, Sikich JA, Beier P, Riley SPD, **Ernest HB**, Boyce WM. 2019, **Extinction vortex dynamics of top predators isolated by urbanization.** *Ecological Applications*. Paper involves extinction modeling, population genetics, and collaborations among Univ. of Nebraska, National Park Service, UC Davis, and others.
- *Daphne A. Gille, Michael R. Buchalski, Dave Conrad, Esther S. Rubin, Amber Munig, Brian Wakeling, Clinton W. Epps, Tyler G. Creech, Rachel Crowhurst, Brandon Holton, Ryan

- Monello, Walter Boyce, Cecilia Penedo, and **Holly B. Ernest**. 2019. *Journal of Wildlife Management*. **Genetic outcomes of translocation of Bighorn sheep (*Ovis canadensis*) in Arizona**. Collaboration with Arizona Dept of Game and Fish, Calif. Dept of Fish and Wildlife, UC Davis, University of Oregon, National Park Service, and others.
- *Kyle D. Gustafson, T. Winston Vickers, Walter M. Boyce, Chris Wilmers, Seth Riley, **Holly B. Ernest**. 2019. **Genetic source-sink dynamics among naturally structured and anthropogenically fragmented puma populations**. *Conservation Genetics*. Collaboration with UC Santa Cruz, the National Park Service (Santa Monica Natl Park), UC Davis Wildlife Health Center and Dept of Pathology, Microbiology, and Immunology. CA & NV State-wide 1000-Mtn lion landscape-level population genetics and GIS multi-decade study.
- Emily E. Graves, Karen A. Jelks, Janet E. Foley, Michael S. Filigenzi, Robert H. Poppenga, **Holly B. Ernest**, Richard Melnicoe, Lisa A. Tell. 2019. **Analysis of insecticide exposure in California hummingbirds using liquid chromatography-mass spectrometry**. *Environmental Science and Pollution Research*. Collaboration with UC Davis and others.
- *Amelia Vazquez, Kyle Gustafson, Ben Harmeling, **Holly Ernest**. 2019. **Genetic diversity of Yellow-billed Magpies before and after a West Nile virus epidemic**. *J. Wildlife Diseases*. Collaboration with California Dept. of Public Health, Calif. Dept of Fish and Wildlife, UC Davis.
- Vernon C. Bleich, Becky M. Pierce, Jeffrey T. Villepique, and **Holly B. Ernest**. 2019. **Serum chemistry of wild, free-ranging mountain lions (*Puma concolor*) in the eastern Sierra Nevada, California, USA**. *California Fish and Game* 105(2):72-86.
- 2018**
- * Roderick B Gagne, M. Timothy Tinker, Katherine Ralls, L. Max Tarjan, Melissa A. Miller, Shawn Larson, **Holly B. Ernest**. 2018. **Demographic and genetic data redefine measures of population recovery for a keystone species, Southern Sea Otter**. *Evolutionary Applications*. Collaboration with the USGS, Calif. Dept of Fish and Wildlife Marine Wildlife Care and Research Center, UC Santa Cruz, Monterey Bay Aquarium, and the Seattle Aquarium.
- Kozakiewicz CP, Burrige CP, Funk WC, VandeWoude S, Craft ME, Crooks KR, **Ernest HB**, Fountain-Jones NM, Carver S. 2018. Pathogens in space: **Advancing understanding of pathogen dynamics and disease ecology through landscape genetics**. *Evolutionary Applications*. 2018; 11:1763-1778. <https://doi.org/10.1111/eva.12678>. Collaboration among NSF-EEID pathogen spillover research group – CSU, Univ. of Tasmania, Univ of Minnesota, others.
- *Love Stowell SM, Bentley EG, Gagne RB, Gustafson KD, Rutledge LY, **Ernest HB**. 2018. **Optimizing DNA extraction methods from field-sampled mammalian blood on preservation paper for genetic and genomic analysis**. Involved Bighorn sheep samples. *Journal for Nature Conservation*. Collaboration with WY Game and Fish, Trent University (coauthor was formerly at Yale University), and others.
- KA Zeller, MK Jennings, TW Vickers, **HB Ernest**, SA Cushman, WM Boyce. 2018. **Are all data types and connectivity models created equal? Validating common connectivity approaches with dispersal data**. *Diversity & Distributions*. Collaboration with University of Massachusetts, San Diego State University, US Forest Service Rocky Mountain Research Station, UC Davis, and others.
- *Kyle D. Gustafson, Michelle G. Hawkins, Tracy L. Drazenovich, Robert Church, Susan A. Brown,

and **Holly B. Ernest**. 2018. **Founder events, isolation, and inbreeding: Intercontinental genetic structure of the domestic ferret.** *Evolutionary Applications*. Collaboration with the UC Davis Center for Companion Animal Health and Dept of Veterinary Medicine and Epidemiology.

Noa Safra, Mary Christopher, **Holly Ernest**, Ruta Bandivadekar, and Lisa Tell. 2018. **Leukocyte reference intervals for free-ranging hummingbirds in northern California.** *J. Wildlife Diseases*. Collaboration with UC Davis School of Veterinary Medicine; my role: started project, conceived approach project with Tell, conducted field work, coordinated some of lab work.

2017

*Michael A. Tabak, Antoinette J. Piaggio, Ryan S. Miller, Richard A. Sweitzer, **Holly B. Ernest**. **Anthropogenic factors predict movement of an invasive species.** 2017. *Ecosphere*. Collaboration with USDA-Fort Collins and Great Basin Institute in Nevada, on state-wide California feral pig genetics and management implications.

*Kyle D. Gustafson, T. Winston Vickers, Walter M. Boyce, **Holly B. Ernest**. **A single migrant enhances the genetic diversity of an inbred puma population.** 2017. *Royal Society Open Science*. Collaboration with the UC Davis Wildlife Health Center and Dept of Pathology, Microbiology, and Immunology.

Bradshaw A, Tell LA, **Ernest HB**, Bahan S, Carlson J, Sehgal RNM. 2017. **Detection and prevalence of *Haemoproteus archilochus* (Haemosporida, Haemoproteidae) in California Hummingbirds.** *Parasitology Research*. Collaboration with San Francisco State University, UC Davis Dept of Veterinary Medicine and Epidemiology

Katherine Ralls, Nancy Rotzel McInerney, Roderick Bashore Gagne, **Holly B. Ernest**, M. Tim Tinker, Jessica Fujii, Jesus Maldonado. **Mitogenomes and relatedness do not predict frequency of tool use by sea otters.** 2017. *Biology Letters*. Collaboration with the Smithsonian Institution, USGS, Dept of Fish and Wildlife Marine Wildlife Care and Research Center, Monterey Bay Aquarium, and UC Santa Cruz.

Zeller, K.A., T.W. Vickers, **H.B. Ernest**, W.M. Boyce. 2017. **Multi-level, multi-scale resource selection functions and resistance surfaces for conservation planning: pumas as a case study.** PLoS ONE 12(6): e0179570. <https://doi.org/10.1371/journal.pone.0179570>.

Fusaro J, MM Conner, MR Conover, TJ Taylor, MW Kenyon, Jr., JR Sherman, **HB Ernest**. 2017. **Comparing urban and wildland bear densities with a DNA-based capture-mark-recapture approach.** *Human-Wildlife Interactions*.

2016

Benson, John; Mahoney, Peter; Sikich, Jeff; Serieys, Laurel; Pollinger, John; **Ernest, Holly**; Riley, Seth. 2016. **Demographic, genetic and landscape interactions increase extinction probability in a small population of large carnivores in a major metropolitan area.** *Proceedings of the Royal Society B: Biological Sciences*.

Buchalski M; BN Sacks; DA Gille; MCT Penedo; **HB Ernest**; SA Morrison; WM Boyce. 2016. **Phylogeographic and population genetic structure of bighorn sheep (*Ovis canadensis*) in North American deserts.** *Journal of Mammalogy*. doi: 10.1093/jmammal/gyw011.

*Lam L, RB Gagne, **HB Ernest**. 2016. 1. Sea otter genetic markers developed. *Conservation Genetics Resources*. 8:43–81. **Development of 24 polymorphic microsatellite loci for the threatened Southern (California) sea otter (*Enhydra lutris nereis*)**

Freund D, SS Wheeler, AK. Townsend, WM Boyce, **HB Ernest**, C Cicero, RNM Sehgal. 2016. **Genetic sequence data reveals widespread sharing of Leucocytozoon lineages in corvids.** *Parasitology Research*.

*Hagadorn KA, Tell LA, Drazenovich TL, **HB Ernest**. 2016. **Molecular Sex Identification Markers for Five North American Hummingbird Species.** Conservation Genetics Resources.

Ernest HB. 2016. Mountain lion research. Magazine article in UWyo College of Agriculture and Natural Resources *Reflections Magazine*.

<http://www.uwyo.edu/uwexpstn/publications/reflections/reflections-2016-interactive.pdf>

2015 and prior

Vickers TW; JN Sanchez; CK Johnson; SA Morrison; R Botta; T Smith; BS Cohen; PR Huber; **HB Ernest**; WM Boyce. 2015. **Survival and Mortality of Pumas (*Puma concolor*) in a Fragmented, Urbanizing Landscape.** 2015. *PLOS ONE*.

*Buchalski M; A Navarro, WM Boyce, TW Vickers, M Tobler, L Nordstrom, J Alaníz García, DA Gille, MCT Penedo, O Ryder, **HB Ernest**. 2015. **Genetic population structure of Peninsular bighorn sheep (*Ovis canadensis nelsoni*) indicates substantial gene flow across US-Mexico border.** *Biological Conservation*. 184:218 International collaboration among Ernest lab members; Veterinary Genetics Lab, San Diego Zoo; and biologists and veterinarians in Mexico. dx.doi.org/10.1016/j.biocon.2015.01.006

Ernest HB, T. Winston Vickers, Scott A. Morrison, Michael R. Buchalski, Walter M. Boyce. 2014. **Fractured genetic connectivity threatens a southern California puma (*Puma concolor*) population.** 2014, PlosOne. 9(10): e107985.

<http://www.plosone.org/article/info%3Adoi/10.1371/journal.pone.0107985>.

Seth P. D. Riley, John P. Pollinger, Laurel K. Serieys, Jeffrey A. Sikich, Lisa Dalbeck, Robert K. Wayne, and **HB Ernest**. 2014. **Individual behavior dominates the dynamics of a mountain lion population in a highly fragmented urban landscape.** *Current Biology*. 24: 1989–1994. <http://dx.doi.org/10.1016/j.cub.2014.07.029>

*Crosbie S, L. Souza, **H. Ernest**. 2014. **Abundance and distribution of the Yellow-billed Magpie.** *Western Birds*, The Quarterly Journal of Western Field Ornithologists. 45(2). <http://www.westernfieldornithologists.org/journal45-2a.php>

J. Hull, A Engilis, J. Medley, E. Jepsen, J. Duncan, **H. Ernest**, J. Keane. 2014. **A new subspecies of Great Gray Owl (*Strix nebulosa*) in the Sierra Nevada of California, USA.** *Journal of Raptor Research*. 48(1):68-77. *Broad collaboration among biologists with USDA Forest Service, US Fish and Wildlife Service, and field ecologists, following up on the conservation genetics findings of a postdoctoral researcher (J. Hull) in my lab.*

<http://dx.doi.org/10.3356/JRR-13-35.1>

*Godoy LA, Tell LA, **Ernest HB**. 2014. **Hummingbird Health: Pathogens and disease conditions in the family Trochilidae.** *Journal of Ornithology*. 155:1-12.

<http://link.springer.com/article/10.1007/s10336-013-0990-z>

*Godoy LA, Dalbeck LS, Tell LA, Woods LW, Colwell RR, Robinson B, Wethington SM, Moresco A, Woolcock PR, **Ernest HB**. 2013. **Characterization of avian poxvirus in Anna's Hummingbird (*Calypte anna*) in California.** *Journal of Wildlife Diseases*.

<http://www.jwildlifedis.org/doi/abs/10.7589/2012-09-230?>

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- Microsatellite Markers in the Domestic Ferret (*Mustela putorius furo*).** *International Journal of Molecular Sciences*. 13: 16592. Open Access.
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- *Hull JM, Mindell DP, Talbot SL, Kay EH, Hoekstra HE, Ernest HB. 2010. **Population structure and plumage polymorphism: The intraspecific evolutionary relationships of a polymorphic raptor, *Buteo jamaicensis harlani*.** *BMC Evolutionary Biology*.
- *Hull JM, Keane JJ, Savage WK, Godwin SA, Shafer JA, Jepsen EP, Gerhardt R, Stermer C, Ernest HB. 2010. **Range-wide genetic differentiation among North American great gray owls (*Strix nebulosa*) reveals a distinct lineage restricted to the Sierra Nevada Mountains.** *Molecular Phylogenetics and Evolution*. 56: 212-221.
- Ernest HB, Woods LW, Hoar BR. 2010. **Pathology associated with West Nile Virus infections in the Yellow-billed Magpie (*Pica nuttalli*): a California endemic bird.** *Journal of Wildlife Diseases*. 46: 401-408.
- Ernest HB, Hoar BR, Well, JA, O'Rourke K. 2010. **Molecular genealogy tools for white-tailed deer with Chronic Wasting Disease.** *Canadian Journal of Veterinary Research*.
- *Hull JM, Keane JJ, Tell LA, Ernest HB. 2010. **West Nile virus antibody surveillance in three Sierra Nevada raptors of conservation concern.** *The Condor*.
- *Brown SB, Hull JM, Updike D, Fain S, Ernest HB. 2009. **Black Bear Population Genetics in California: Signatures of Population Structure, Competitive Release and Historical Translocation.** *Journal of Mammalogy*. 90: 1066-1074.
- *Hull JM, Ernest HB, Harley JA, Fish AM, Hull AC. 2009. **Differential Migration between Discrete Populations of Juvenile Red-tailed Hawks (*Buteo jamaicensis*).** *The Auk- Journal of the American Ornithologists' Union*. 126:389-396.
- Ernest HB, Well JA, and J. Kurushima. 2008. **Development of nine microsatellite loci for Yellow-billed Magpie (*Pica nuttalli*) and corvid ecology and West Nile virus studies.** *Molecular Ecology Resources*. 8:196 - 198.
- *Hull JM, Savage WK, Bollmer JL, Kimball RT, Parker PG, Whiteman NK, Ernest HB. 2008. **On the origin the Galápagos hawk: An examination of phenotypic differentiation and mitochondrial paraphyly.** *Biological Journal of the Linnean Society*. 95:779 - 789.
- *Crosbie SP, Koenig WD, Reisen WK, Kramer VL, Marcus L, Carney R, Pandolfino E, Bolen GM, Crosbie LR, Bell DA, Ernest HB. 2008. **Early Impact of West Nile virus on the Yellow-billed Magpie (*Pica nuttalli*).** *The Auk- Journal of the American Ornithologists' Union*. 125: 542-550.

- *Hull JM, BN Strobel, CW Boal, AC Hull, CR Dykstra, AM Irish, AM Fish, **HB Ernest**, 2008. **Comparative phylogeography and population genetics within *Buteo lineatus* reveals evidence of distinct evolutionary lineages.** *Molecular Phylogenetics and Evolution*. 49:988-996.
- *Hull J, Keane J, Tell L, **Ernest HB**. 2008. **Development of 37 microsatellite loci for Great Gray Owls (*Strix nebulosa*) with cross amplification in Spotted Owls (*Strix occidentalis*) and Barred Owls (*Strix varia*).** *Conservation Genetics* 9: 1357-1361.
- *Hull JM, Anderson R, Bradbury M, Estep J, **Ernest HB**. 2008. **Population structure and genetic diversity in Swainson's Hawks (*Buteo swainsoni*), implications for conservation.** *Conservation Genetics* 9:305-316.
- *Pitzer S, Hull J, **Ernest H**, Hull A. 2008. **Sex determination of three raptor species using morphology and molecular techniques.** *Journal of Field Ornithology*. 79(1):71-79.
- *Hull JM, Hull AC, Sacks BN, Smith JP, **Ernest HB**. 2008. **Landscape characteristics influence morphological and genetic differentiation in a widespread raptor (*Buteo jamaicensis*).** *Molecular Ecology*. 17: 810 - 824.
- *Sacks BN, Bannasch DL, Chomel BB, **Ernest HB**. 2008. **Coyotes Demonstrate How Habitat Specialization by Individuals of a Generalist Species Can Diversify Populations in a Heterogeneous Ecoregion.** *Molecular Biology and Evolution* 2008 25(7):1384-1394
- *Hull JM, Savage W, Smith JP, Murphy N, Cullen L, Hutchins AD, **Ernest HB**. 2007. **Hybridization among Buteos: Swainson's Hawks (*Buteo swainsoni*) × Red-tailed Hawks (*Buteo jamaicensis*).** *The Wilson Journal of Ornithology*. 119(4):579-584.
- *Hull JM, Tufts D, Topinka JR, May BP, **Ernest HB**. 2007. **Development of 19 microsatellite loci for Swainson's Hawks (*Buteo swainsoni*) and other Buteos.** *Molecular Ecology Notes* 7 (2), 346-349.
- Meredith EP, Rodzen JA, Banks JD, Schaefer R, **Ernest HB**, Famula TR, May BP. 2007. **Microsatellite analysis of three Elk (*Cervus elaphus*) subspecies in California.** *Journal of Mammalogy*. 88: 801-808
- *Kurushima J, Well J, Collins J, **Ernest HB**. 2006. **Development of 21 microsatellite loci for puma (*Puma concolor*) ecology and forensics.** *Molecular Ecology Notes* 6 (4), 1260-1262.
- *Hull JM, Hull A, **Ernest HB**. 2006. **West Nile Virus Antibody Prevalence in Free-ranging California Raptors.** *Condor*. 108:435-439.
- *Sacks BN, **Ernest HB**, Boydston EE. 2006. **San Francisco's Golden Gate: a bridge between historically distinct coyote (*Canis latrans*) populations?** *Western North American Naturalist*. 66:263-264.
- *Sacks BN, Mitchell BR, Williams CL, **Ernest HB**. 2005. **Movements and social structure along a cryptic population genetic subdivision in the coyote.** *Molecular Ecology* 14:1241-1249.
- *Sacks BN, Brown S, **Ernest HB**. 2004. **Population structure of California coyotes corresponds to habitat-specific breaks and illuminates species history.** *Molecular Ecology*. 13:1265-1275.
- Ernest HB**, Bleich VC, May BP, Stiver S, Torres S, Boyce WM. 2003. **Population Genetic Structure of Mountain Lions in California.** *Conservation Genetics*. 4(3): 353-366.
- Ernest HB**, Rubin ES, Boyce WM. 2002. **Fecal DNA analysis and risk assessment of mountain lion predation of bighorn sheep.** *Journal of Wildlife Management* 66(1) 75-85.

Ernest HB, Penedo MCT, May BP, Syvanen M, Boyce WM. 2000. **Molecular tracking of mountain lions in the Yosemite Valley region in California: genetic analysis using microsatellites and fecal DNA.** *Molecular Ecology* 9:433-441.

Swift PK, Wehausen JD, **Ernest HB**, Singer RS, Pauli AM, Kinde H, Rocke TE, Bleich VC. 2000. **Desert bighorn sheep mortality due to presumptive type C botulism.** *Journal of Wildlife Disease*. 36(1):184-189.

BOOK CHAPTERS

Culver, M, **H. Ernest**, R. Gagne, K. Gustafson. **Conservation Genetics as Relevant to Cougar Management.** *In press*. 2022. J.A. Jenks, Ed. *In Managing Cougars in North America*.

Larson S, K Ralls, **H Ernest**. **Sea Otter Conservation Genetics.** 2015. Chapter 5 in *Sea Otter Conservation*. Edited by Shawn Larson, James Bodkin, Glenn VanBlaricom. [Academic Press/Elsevier](#).

PUBLISHED CONFERENCE PROCEEDINGS PAPER

Ernest HB, W.M. Boyce. 2000. **DNA Identification of mountain lions involved in livestock predation and public safety incidents.** Proceedings of the 19th Vertebrate Pest Conference. T. P. Salmon and A. C. Crabb, Eds. Published at the University of California, Davis. 290-294.

OTHER PUBLICATIONS AND REPORTS (INTERNET AND MAGAZINE)

*Denotes role as primary mentor of first author

Ernest HB. 2015-2022/Present. Wildlife Genetic Health. Website. Ernest founded site 2015 and updated regularly through 2022. Over 30 informative pages.
<http://www.wildlifegenetichealth.org>

*Brown SK and **HB Ernest**. Mountain Lion Ecological Genetics. 2007, Wild Cat News.

Ernest HB. 2005. Contingency Captive Breeding Plan for Sierra Nevada Bighorn Sheep. Written under California Department of Fish and Game contract of 1999-2001. *First published online* for federal Sierra Nevada Bighorn sheep Recovery Plan in 2005. Web site:
http://www.vgl.ucdavis.edu/wildlife/sheep_plan.html

Ernest HB. 2002-2003. Lead forensic DNA scientist signing on forensic reports. Forensic genetic evidence case reports submitted to law enforcement agencies (25 cases) and private parties involved in civil law suits (20 cases). Casework presented from federal, state, and local law enforcement agencies as well as to the general public to the Forensic Unit of the Veterinary Genetics Laboratory.

Ernest HB. 2002. Population genetics of Nevada mountain lions. Nevada Division of Wildlife contract.

Ernest HB. 2001. Captive breeding Contingency plan: A Guide for Captive Breeding of Sierra Nevada Bighorn sheep. Report for Interagency Agreement # P9980059 between California Department of Fish and Game and Wildlife Health Center, School of Veterinary Medicine, University of California, Davis CA. 147 pages.

Ernest HB. DNA analysis for mountain lion conservation. Outdoor California. May-June. 61(3)16-19. Invited paper. 2000.

Ernest HB. DNA sampling and research techniques. Outdoor California. May-June. 61(3)20-21. Invited paper. 2000.

NCBI GENBANK AND DRYAD GENOMIC SEQUENCE ACCESSIONS

The National Institutes of Health genetic sequence database, an annotated collection of DNA sequences. NCBI = National Center for Biotechnology Information.

- 2022 Genbank. Hummingbird Haemoparasite sequences. **Mackenzie and Dudenhoeffer et al.**
- 2022 Open Science Framework. Mountain lion SNP genotype data. **Gustafson et al.**
<https://doi.org/10.17605/OSF.IO/HUF4K>
- 2021 DRYAD. Mule Deer SNPs/RADseq data. **LaCava et al.**
- 2020 DRYAD. Allen's Hummingbird SNPs/RADseq data. *Conservation Genetics*. **Godwin et al.**
- 2020 DRYAD. Pronghorn SNPs/RADseq data. *J. Mammalogy*. **LaCava et al.**
- 2020 DRYAD. Bighorn sheep nuclear genotypes, mtDNA seq. 2020. *JWM Love Stowell et al.*
- 2020 DRYAD. Mountain lion SNPs/RADseq data. Pending. In journal revision. **Gagne et al.**
- 2019 DRYAD. Great Gray Owl SNPs/RADseq data. 2020. *Cons Genetics*. **Mendelsohn et al.**
- 2018 DRYAD. Mountain lion genotypes. *Conservation Genetics*. **Gustafson et al.**
- 2017 DRYAD. Domestic Ferret genotypes. *Evolutionary Applications*. **Gustafson et al.**
- 2018-2021 DRYAD. Several accessions, deer, hummingbird, code, DNA data. Several lab members.
- 2017 DRYAD. Puma genotypes. *Royal Soc Open Sci* **Gustafson et al.**
- 2015 Sea otter genomic sequences. Genbank. **Ernest HB.**
- 2014 DRYAD. Puma genotypes. PlosOne 2014. **Ernest HB.** et al.
- 2013 Avian pox virus genomic sequences. L Godoy (PhD student), **Ernest HB.**
- 2012 Ferret genomic sequences. JX469575- JX469596. **Ernest HB,** MG Hawkins.
- 2008 11 Yellow-billed Magpie microsatellite-containing sequences. EF580121- EF580131.
Ernest HB
- 2008 19 White-tailed deer mitochondrial control region DNA sequences. **Ernest HB.**
EF644627-EF644645
- 2008 58 Swainson's Hawk DNA sequences. Hull JM and **Ernest, HB.** DQ988163, DQ985707-
DQ985730 microsatellite-containing sequences EF568742-EF568773 mitochondrial DNA
sequences.
- 2008 36 Great Gray Owl. DNA microsatellite-containing sequences. Hull JM and **Ernest, HB.**
EU348568-EU348603.
- 2008 14 Red-shouldered Hawk mitochondrial control region DNA sequences. FJ376542-
FJ376555
- 2008 3 Ferruginous Hawk mitochondrial control región DNA sequences. Hull JM and **Ernest,**
HB. EF568749-EF568751.
- 2006 21 Puma DNA microsatellite-containing sequences. Kurushima and Ernest, HB.
DQ660984-DQ661004.

RESEARCH FUNDED BY GRANTS, CONTRACTS AND OTHER FUNDING

Research in applied wildlife population genetics and disease ecology; landscape scales; Mammals and birds ranging from mountain lion, pronghorn, bighorn sheep, black bear, sea otter, hummingbirds, Yellow-billed Magpie, hawks, Great Gray Owl.

Lab project page: <http://www.wildlifegenetichealth.org/projects-research/>

Role is principal investigator unless noted. Grants –Recent at University of Wyoming

Principal Investigator, **Genetics and non-invasive molecular mark-recapture for population estimation of black bears in California**. California Department of Fish and Wildlife. 2020-2022.

Principal Investigator, **Wyoming Statewide Elk CWD Genetic Susceptibility and Disease Ecology**. Wyoming Governor's Big Game Grant and WGFD. 2021-2022.

Principal Investigator, **Wyoming Statewide Elk CWD Genetic Susceptibility and Disease Ecology**. Hatch. 2020-2021.

Fulbright Scholar Award to H. Ernest for Jan-July 2021, covid pandemic impacted. Transborder Wildlife Health, Genomics, and Disease Ecology, Canada-USA. Host Institution: University of British Columbia.

Sabbatical Award (Flittie Award) to H. Ernest for Aug 2020-July 2021. Transborder Wildlife Health, Genomics, and Disease Ecology, Canada-USA. Host Institution: University of British Columbia.

Principal Investigator, **State-wide genetics and non-invasive molecular mark-recapture for population estimation of mountain lions in California**, California Department of Fish and Wildlife. 2015-2020.

Principal Investigator, **Sagebrush ecosystem ungulates genomics and disease ecology**. US Fish and Wildlife Service (USFWS), US Bureau of Land Management (BLM), US Geological Survey (USGS). Full Title: USGS RWO204 award #G20AC00062 "Using genetic analyses to inform on-the-ground conservation for multiple sagebrush-associated wildlife species". PhD Candidate Melanie LaCava. 2019-2021. With co-investigator Kevin Monteith.

Principal Investigator, **Landscape Disease Ecology - Mule Deer Population Genomics and CWD Genotyping in Wyoming**, Wyoming Governor's Big Game Grants 2017-2021. With PhD Candidate Melanie LaCava.

Principal Investigator, **Bighorn sheep Population Genomics in Wyoming**, Wyoming Governor's Big Game Grants and Wyoming Wild Sheep Foundation. Research includes work of Postdoctoral Researcher, Dr. Sierra Love Stowell. 2015-2021. Multiple grants.

Principal Mentor, for undergrad researcher Adrienne Mackenzie. **Landscape-scale Hummingbird Hemoparasite study**. (NASA-WY and INBRE funding)

Excellence Chair and Riverbend Grant/Chair Awards to H. Ernest 2014-2020.

P.I. and Mentor to students for their grant-funded research: NSF undergrad student REU- Erin Bentley, Grad Student Biodiversity grants (Hummingbird, Pronghorn Genomics), Bert and Meg Raynes Grants (Great Gray Owl and Hummingbird Genomics), Wyoming Wildlife Grant; Postdoc grants (Sierra Love Stowell: Cutthroat Trout Genomics and others).

Grants – UWyo Completed 2014-2019

2016-2019 Principal Investigator, Genetics and non-invasive molecular mark-recapture for population estimation of black bears in California. California Department of Fish and Wildlife.

2014-2019 Co-Investigator, Impacts of Landscape Structure, Host Demography, and Management Interventions on Disease Dynamics of Mountain Lions. National Science Foundation Ecology and Evolution of Infectious Disease. Collaboration

with Colorado State University, University of Minnesota, and University of Tasmania. PI = Dr. Sue VandeWoude. Grant to consortium of researchers: *Plus 2017 NSF REU (Research Experiences for Undergraduates) add on for Ernest undergrad intern, Erin Bentley's work on broader impacts component to develop K-12 video game illustrating and training disease dynamics for kids.*

2014-2017 Co-I. Mountain lion genetics and population dynamics in Southern California. SANDAG, consortium of counties. funds administered at UC Davis.

2017-2019 Co-PI for postdoc Dr. Sierra Love Stowell. USFWS Cutthroat trout genomics.

Grants – Completed (After 2014 = UWyo and UCD; 2014 and before = UC Davis, and as PI, except where noted)

2014-2015 Principal Investigator, Foundation of Wyoming-based Hummingbird Health Research Program. UWyo Kelly Ornithological Research Fund.

2012-2015 Principal Investigator, Genetics for population monitoring of Black Bears in California's Coast Ranges, California Department of Fish and Wildlife. UWyo and UCD

2012-2015 Principal Investigator, Cost-Benefit Analysis for Monitoring Black Bear Populations. California Department of Fish and Wildlife. Included with figure above. UWyo and UCD

2012-2015 Co-Investigator, Genetics of Bighorn sheep throughout the desert southwest, The Nature Conservancy. UWyo and UCD

2013-2015 Co-Investigator, Genetics for territoriality, reproductive success and dispersal in southern sea otters, UC Santa Cruz / US Fish and Wildlife Service. UWyo and UCD

2012-2014 Principal Investigator, Hummingbird Health and Diseases in California, US Fish and Wildlife Service

2013-2014 Co-Investigator, Transborder California-Mexico landscape genetics of endangered Bighorn sheep. The Nature Conservancy.

2011-2014 Principal Investigator, Landscape Genetic Assessment of Arizona Desert Bighorn sheep, Arizona Dept. of Game and Fish.

2013-2014 Provost's Fellowship to mentored undergraduate student, hummingbird genetics for conservation: DNA sexing marker development.

2011-2013 Principal Investigator, Advancing diagnostics for hunter food safety: comparing the efficacy of PCR and serology tests for *Trichinella* in game meat, California Food and Animal Health.

2011-2013 Co-Investigator, Genetics of mountain lions in Santa Cruz Mountains, UC Santa Cruz.

2011-2014 Co-Investigator, Genetics of mountain lions in San Diego County, The Nature Conservancy.

2004-2014 Co- Investigator, Genetics of mountain lions in Santa Monica Mountains, National Park Service.

2012-2013 Principal Investigator, Mark-recapture genetics of Black Bears in Mammoth, CA region, Mono County - Collaboration with Utah State University.

2010-2011 Foundation of Davis Hummingbird Field Ecology Research Station. UC Academic Senate Faculty Grant.

2009-2011 Conservation Genetics of Hummingbirds: DNA Sequence Assessment toward Development of Nuclear DNA Single Nucleotide Polymorphism Markers. Western

- Hummingbird Project.
- 2007-2010 Yellow-billed Magpie Ecology and Population Genetics. California Department of Fish and Game/US Fish and Wildlife Service.
- 2007-2011 Genetic Assessment of Inbreeding for Cancer in Pet Ferrets. Center for Companion Animal Health.
- 2006-2011 Yellow-billed Magpie genetic research during West Nile virus outbreak. Audubon Society chapters.
- 2006-2011 California Sea Otter DNA marker development. Monterey Bay Aquarium.
- 2007-2008 Galapagos Hawk population genetic analysis. University of Missouri. (Co-PI, post-doctoral researcher J. Hull)
- 2007-2009 Yosemite Fund. USDA Forest Service and National Park Service. Great Gray Owl Population Genetics and Monitoring.
- 2007-2010 Yellow-billed Magpie genetics and ecology research. Private donations from individuals.
- 2006 California Sea Otter DNA marker development. California Department of Fish and Game.
- 2005-2006 West Nile Virus Antibody Prevalence among Native Raptors Migrating through the Marin Headlands. Graduate student Joshua Hull wrote grant. National Park Service.
- 2005-2008 State-wide population genetic analysis of wild pigs. California Department of Fish and Game.
- 2005-2008 Population genetic and kinship assessment of white-tailed deer infected with chronic wasting disease. USDA Animal Research Service. Income through genetic service recharge.
- 2004-2007 State-wide population genetic analysis of black bears. California Department of Fish and Game.
- 2004-2005 Swainson's Hawks Health Assessment: West Nile Virus Antibody Levels and Genetics; Great Gray Owls: Health Assessment, Antibody Levels and Genetics. Natural Resources Assessment Program of California Department of Fish Game and UCD Wildlife Health Center.
- 2004-2006 West Nile virus in Spotted Owls and Great Gray Owls: health assessment, antibody levels and genetics. Co-investigators: Keane (USFS), Ernest, Hull (PhD student), L.A. Tell (VM:M&E), & W. Reisen (SVM-CVEC). USDA Forest Service.
- 2003-2007 Comparative Genetic Diversity and Population Structure of Swainson's Hawk in the Central Valley of California. Swainson's Hawk Technical Advisory Committee (CA Dept of Water Resources)
- 2003-2005 West Nile Virus Antibody Levels in Swainson's Hawks. California Department of Fish and Game.
- 2002-2008 Genetic resource banking for *Puma concolor* (mountain lion), Bears, Wild pigs, Raptors, Corvids. UC Genetic Resources Conservation Program.
- 2002 - Start of academic permanent position
- 2001 and prior – grants and contracts received while working on PhD in Ecology at UC Davis:
- 1999-2001 Contingency captive breeding plan for endangered bighorn sheep, mountain lion genetic analysis, ecological and genetic consultation. California Department of Fish and Game contracts for Sierra Nevada Bighorn Sheep Recovery Program. Work as

- Associate Wildlife Veterinarian.
- 1999-2002 Statewide Population Genetic Analysis of Mountain Lions in Nevada. Nevada Division of Wildlife's Heritage Fund and the U.S. Fish and Wildlife Service.
- 1997-1998 DNA Identification of Mountain Lions Involved in Predation of Domestic Sheep and Bighorn Sheep. Department of Agriculture and Natural Resources (University of California and State of California). P.I. Dr. Walter Boyce; Co-PI Ernest (primary author of grant and conducted research) and others.
- 1997-1998 Mountain lion fecal DNA at Bighorn sheep kill sites: predator genetic identity. American Museum of Natural History - Theodore Roosevelt Memorial Fund.
- 1997 Mountain Lion Forensic DNA Study. Friends of the Intermountain Region, Siskiyou and Shasta Counties, CA.
- 1996-1997 Mountain Lion Forensic DNA Study. CDFG Wildlife Protection Division Wildlife Forensic Lab. In-kind donation of pipettes and lab materials.
- 1996-1997 Mountain Lion Research. Yosemite National Park - Yosemite Fund.
- 1994-1999 Mountain Lion Ecological Genetics. Co-PI with Walter Boyce. UC Genetic Resources Conservation Program. Mountain Lion Ecological Genetics.

INSTRUCTION – UNDERGRADUATE, GRADUATE AND VETERINARY (UWYO & UC DAVIS)

Teaching Interests: Making disease ecology, wildlife population health, ecosystem health, One Health, and genomic sciences accessible and meaningful to students. Applications and theory of genomics and genetics for wildlife health, conservation, and management; population genetics, population genetic statistical analyses & software, wildlife disease ecology and epidemiology. Mentoring veterinary and pre-veterinary students.

Course Instructor

- 2022 New undergraduate and graduate online synchronous course developed and offered Spring 2022: **Genomics for Animal Disease**.
- 2016-present New graduate seminar course developed: **Conservation Genomics**. University of Wyoming. Review and discuss recent journal papers. Two additional group learning term project segments; 1) “Coffee Break Conservation Genomics” segment (chapter-by Chapter read population/conservation genetics book); 2) segment for advanced credit with term projects.
- 2020 New graduate seminar course developed: **Ecology and Genomics of Disease**. University of Wyoming. Review and discuss recent journal papers. Two additional group learning term project segments; 1) “Coffee Break Disease Ecology” segment (chapter-by Chapter read book such as Hurst et al 2018; 2) segment for advanced credit with term projects.
- 2016-2020 New course developed: **Disease Ecology**. University of Wyoming. Teach yearly to undergraduate and graduate students. Includes computer lab for disease and risk assessment modeling. 2019 incorporating new R computational segment for S-I-R modeling. Transferred course 2021 to Assistant Professor, Dr. Jennifer Malmberg.
- 2011-2014 **Co-Leader for School of Veterinary Medicine new curriculum in Population Health**. UC Davis School of Veterinary Medicine embarked on

total curriculum revamp starting ~2008. I became involved in development of population health and ecosystem health material in 2009. Appointed co-leader to develop and deliver population health veterinary material to first and second year veterinary students. Developed new material, guided and coordinated faculty instructors on implementation, participated in teaching and problem-based, team-based, and case-based learning facilitation. One of main developers for the first core curriculum in One Health for UC Davis SVM vet student training

- 2007-2013 **Applied Ecological Genetics and Genomics for Wildlife Conservation, Management, and Health (PHR 242 and ECL 242).** Developed new course to introduce ecology students to applications of genomics and genetics. For graduate students, and advanced undergraduates.
- 2011, 2012, 2013 Facilitation teaching for problem-based learning in vet school new curriculum first year core foundations course.
- 2010, 2011 **Landscape Genetics with GIS.** Developed new graduate computer laboratory course to introduce PhD and MS students to genetic data analysis and informatics using geospatial and landscape genetics tools including add-ins to ArcGIS.
- 2004, 2007, 2008 **UCD graduate student seminar (ECL 290).** Course leader. Data analysis and software for population genetics. 2008 sole instructor; 2004: Co-taught with Dr. Bernie May, UCD Dept. of Animal Science; 2008 Co-led with Dr. John Eadie (Wildlife and Fisheries Biology) and Dr. May. Resulted in online population genetics analysis guides.
- 2004, 2009 **Graduate student seminar (ECL 290):** Molecular Genetic Markers in Ecology. 2009 sole instructor; 2004: Co-led course with Dr. Bernie May, UCD Dept. of Animal Science.
- Invited Guest Lecturer – UC Davis courses**
- 2015 Courses in Program in Ecology and Ecosystem and Rangeland Sciences, Univ. Wyoming.
- 2013 & 2014 One Health/Ecosystem Health (VME201) “Genetics and Genomics for Wildlife population health”.
- 2012 Genetics and Genomics for wild bird conservation and population health. AVS 103 (Avian Science undergraduate course lecture). Dec 2012.
- 2012 Genetics toward conservation of California’s Wildlife. ENH 150 Undergraduate conservation genetics course. Nov 2012.
- 2012 Molecular Epidemiology (graduate course EPI298) “Molecular Epidemiology for Wildlife Conservation” Spring 2012
- 2012 “Intrepid Research Explorers Seminar Series (Epidemiology graduate group EPI290): Disease ecology in California’s wild birds and mammals: Striving for the great questions, research approaches, samples and data. Spring 2012
- 2011 Forensic Science Graduate Group Seminar: Wildlife Forensic Genetics Research.
- 2007, 2008, 2009 Veterinary Doctoring (VMD400) for 2nd and 3rd year vet students. Faculty guide for medical case scenarios.

- 2008-2012 annually Ecosystem Health (VME201/VME401/VME298) "Genetics for Wildlife population health"
- 2009 Seminar in Epidemiology (VME290) "Linking wildlife genetics with population health: research on California's hummingbirds, magpies, and sea otters."
- 2008 Conservation Ecology (ECL208) "Genetic tools for Conservation Ecology"
- 2007 Changing Patterns of Vector-borne Infections (PHR214/ENT214) "Wildlife Vector-borne Diseases"
- 2007 Advanced Concepts in Epidemiologic Study Design (EPI207) "Genetics on the Wild Side: Opportunities & Challenges for Epidemiology"
- 2004-2007 annually Veterinary Genetics (VMD 425). First year veterinary student core course. Lectures and discussion sections in population genetics, conservation genetics, wildlife genetics, and immunogenetics.
- 2003, 2005 Genetics and Society (SAS 20) Undergraduate course. "Wildlife Genetics"
- 2005 Complex Systems Behavior in Ecology (ECL200B). Core Ecology graduate course.
- 2004, 2005, 2006 "Genetic considerations for wildlife reproduction' in course: Reproduction of Nondomestic Animals (PHR 446C).
- 2003, 2005 "Genetics for Wildlife Health"; in "Cases in Genetics for Wildlife Health" VMD 418 Veterinary and Graduate Student course.
- 2005 Environmental Toxicology 20 for Forensic Science graduate students and E-tox undergraduates. "Wildlife Forensic Genetics"
- 2003 Forensic DNA analysis graduate course. "Wildlife Forensic Genetics"
- 1997-1999 Academic Fellow and instructor in veterinary core curriculum courses_(1st and 2nd year) in bacteriology, immunology, parasitology, virology, UC Davis; 2nd and 3rd year vet student course in wildlife restraint and disease field courses, senior veterinary student clinical sciences review course.
- 1994 Teaching Assistantship, UC Davis, Biological Science 1 B (Animal Ecology, Taxonomy, and Evolution). 1994.

Advanced training in teaching approaches and techniques, and leadership

- 2014 Hybrid course development course for faculty. January 2014.
- 2013 School of Veterinary Medicine Dean's Academic Council year-long training sessions in Academic Leadership. Selected by Dean's Academic Council.
- 2010-2012 Veterinary student education training for development and implementation of new curriculum in UC Davis School of Veterinary Medicine.
- 2009 Veterinary Doctoring teaching workshop.
- 2007-2008 Teaching Scholars program. UCD Medical School.
- 2007 and 2008 UCD Summer Institute in Teaching and Technology (SITT).

AFFILIATIONS AND SERVICE FOR UNIVERSITY OF WYOMING. 2014-PRESENT

UWyo Graduate Council Member, voted in, one of two representing College of Agriculture and Natural Resources. 2017-2020.

[Program in Ecology](#), Graduate program in [Veterinary Sciences](#), Wyoming Wildlife Livestock Health Center, [Haub School Environment and Natural Resources](#) and

Biodiversity Institute

Chair, Program in Ecology Curriculum Committee, 2016-2019
Graduate Program Coordinator, Department of Veterinary Sciences, 2017-2020, then 2021-2022.
Serve on multiple MS and PhD graduate committees involving diversity wildlife disease and population genomics systems.

AFFILIATIONS AND SERVICE FOR UC DAVIS. THROUGH 2014

Graduate groups in Animal Biology, Avian Sciences, Ecology, Epidemiology, Forensic Science, Genetics, and Masters in Preventive Veterinary Medicine (MPVM). Major Professor, academic advising, mentorship and PhD qualifying examiner for over 100 M.S. and PhD graduate students. Invited member of Designated Emphasis Programs specialization for PhD students in Biology of Vector-borne Diseases and Organism-Environment Interaction.

- 2011-2014 Executive committees of MPVM, Epidemiology, and Ecology Graduate Groups (elected position); advising committee of Genetics Graduate Group.
- 2010-2012 Executive committee of Avian Science Graduate Group.
- 2002-2011 Chair of Genetics Graduate group Recruitment Committee; Executive committee membership in Forensic Science (at foundation of group) and Ecology Graduate Groups; Curriculum, Admissions and/or Awards committees of Ecology, Genetics and Preventive Veterinary Medicine Graduate Groups. Approx. 125 students advised since 2003 in various capacities (major professor, grad group adviser, STAR vet student mentor, etc.)

POST-DOCTORAL TRAINING, YEARS IN MY LAB (RESEARCHER'S CURRENT STATUS)
- UC DAVIS

- Benjamin Sacks 2002-2005 (Adjunct Professor, UC Davis)
- Joshua Hull 2008-2009 (Branch Chief/Supervising Biologist, U.S. Fish and Wildlife Service; and Asst. Adjunct Professor at San Francisco State University and UC Davis) – current collaboration with my lab on wildlife research
- Michael Buchalski 2013-2014 primary mentor; 2014-2015 co-mentored with Dr. Walter Boyce. Postdoc with Oregon State U/New Mexico State U. 2016; Current position: Wildlife Geneticist and Lab Leader at California Dept of Fish and Wildlife, 2016-present. Current collaboration with my lab on wildlife research, including bighorn sheep.

POST-DOCTORAL TRAINING - U WYOMING

Postdocs below work/collaborate actively with lab projects and assisting graduate and undergraduate students

- Erick Gagne PhD 2015-2017 (current position Asst Professor of Wildlife Disease Ecology, University of Pennsylvania)
- Sierra Love Stowell PhD 2016-2018 (current position, Research Genomicist, Pharmaceutical Private Industry, in Boulder, CO)
- Kyle Gustafson PhD 2016-2018 (current position, Asst Professor of Biology and Genetics, Arkansas State University)
- Josh Jahner PhD 2021: 3 months postdoctoral work supervised jointly with Dr. Alex

Buerkle.

GRADUATE STUDENT TRAINING (RESEARCHER'S CURRENT STATUS) – U WYOMING

Melanie LaCava, PhD Candidate, 2015-present. Program in Ecology and Minor in Environment and Natural Resources. Graduation expected 2021. Wyoming Ungulate population genomics and Chronic Wasting Disease Ecology at large landscape levels.

Will Swain PhD Student, 2020-present. Program in Ecology. Wyoming Elk population genomics and Chronic Wasting Disease Ecology at large landscape levels.

Beth Mendelsohn, MS student, Fall 2016-Dec 2018 (Graduated 2018). Double Major: Veterinary Sciences and Environment and Natural Resources. Great Gray Owl population genomics at large landscape levels.

Nicole Carter, MS student, Fall 2018-May 2020. Double Major: Veterinary Sciences and Environment and Natural Resources. Southern Sea Otter Genetic Relatedness and Disease Ecology. Graduated May 2020.

Braden Godwin, MS Candidate, 2015-Dec 2019. Double Major: Veterinary Sciences and Environment and Natural Resources. Hummingbird population genomics in California landscapes. Graduated December 2019.

GRADUATE STUDENT COMMITTEE MEMBER – WHILE FACULTY U WYOMING (2014-PRESENT)

Current/Recent:

Chris Anderson, Wyoming Bighorn sheep pathogen biology; PhD student UWyo Dept of Veterinary Sciences (Main Mentor = Kerry Sondgeroth)

Melanie Torres, Wyoming amphibian species dynamics, metagenomics, and disease ecology, PhD Candidate, Program in Ecology (Main Mentor = Melanie Murphy)

Dedan Ngatia, Kenya African Wild Dog research; PhD student UWyo Dept of Zoo/Phys; (Main Mentor = Jake Goheen) Until 2022

Eric Anderson, Bird disease ecology, PhD student UWyo Dept of Zoo/Phys; (Main Mentor = Matt Carling); Until 2022

Graduated (2017-2022):

Jessi Rick, African fish (cichlids) evolutionary genomics, PhD Candidate, UWyo Program in Ecology (Main Mentor = Katie Wagner)

Gabriel Barrile, Wyoming Boreal Toad Disease Ecology and Population Dynamics, PhD Candidate, Program in Ecology (Main Mentor = Anna Chalfoun and Annika Walters)

Jennifer Rushlow, Endangered species decision economics and disease ecology, Dept of Economics, College of Business, (Main Mentor = Jo Albers and David Finnoff)

Adele Reinking, Pronghorn population and landscape ecology, MS Student, UWyo Ecosystem Science and Management (Main Mentor = Jeff Beck)

Bryan Barry, Economic assessment of Chronic Wasting Disease in Wyoming, MS student, UWyo Dept of Economics, College of Business, (Main Mentor = David Aadland and David Finnoff)

Douglas Eddy, Bird disease ecology, MS student, UWyo Dept of Zoo/Phys; (Main Mentor = Craig

Benkman)

L. Max Tarjan, Sea otter population dynamics, PhD student, Department of Biology, Univ of California Santa Cruz, (Main Mentors = Tim Tinker and Jim Estes)

POST-GRADUATE RESEARCH SCIENTIST MENTORSHIP – U WYOMING

Douglas DJ Sandidge, Assistant Research Scientist, Assistant Technician, Assisting in lab on Elk CWD PRNP Genetics and Lab Management, Fall 2021 (as part-time) then January 2022 as Asst Res Sci – to present.

Laura Johnson, MS, Associate Research Scientist, Lab Manager & Lead Lab Technician, Multiple genetics projects (Lead in Lab on Mountain lion, Bear; Assisting in lab on Sea otter, Mule Deer, Elk, Hummingbird, 2018- Fall 2021.

Megan Dudenhoeffer, MS, Assistant Research Scientist, Assistant Technician, Assisting in lab on Mountain lion and Bear genetics projects, 2020-Fall 2021.

Amelia Vazquez, MS, Assistant Research Scientist, Lab Manager, Mountain lion and Bear lab projects, 2016-2018.

Adrienne McKenzie, BS, Post-graduate Researcher. Hummingbird Hemoparasite Project, 2020.

Erin Bentley, BS, Post-graduate Researcher. Ungulate genetics lab work, 2018

GRADUATE STUDENT TRAINING – UC DAVIS

Graduated: 14 graduate students from my lab at UC Davis.

UNDERGRADUATE LABORATORY WILDLIFE GENETICS INTERNSHIP HOST – UW

2017-2020. Adrienne Mackenzie. Animal Science/Veterinary Sci major, BS 2020.

2015-2018. Erin Bentley, Animal Science/Veterinary Science major, 2018. Now MS student in UWyo colleague Alex Buerkle lab in Dept of Botany.

2018-May 2019. Marguerite Johnson. Wildlife Biology major, BS 2019. Now UWyo MS student

2018- May 2019. Emily Winward. Physiology major, BS 2019.

LABORATORY INTERNSHIP HOST – UC DAVIS

Wildlife Genetics Interns (veterinary students or undergraduates): 14 undergraduate students from my lab. 12 are now veterinarians; most of rest continued to graduate training.

UNDERGRADUATE STUDENT MENTORING

UC Davis - Mentored and provided laboratory and field ecology internships in UC Davis Wildlife Health, Diseases, and Genetics to numerous undergraduate students since 2003 (nearly all proceeded to graduate or veterinary school).

UWyo – mentored many pre-vet undergraduate students in official and unofficial capacities.

HONORS AND AWARDS

2020 Fulbright Scholar, Wildlife Health, Genomics, and Disease Ecology at the Canada/USA interface. University of British Columbia. 2021. Covid pandemic impacted.

2020 Sabbatical and Visiting Professor Status Awarded for Aug 2020-July 2021. Wildlife Health, Genomics, and Disease Ecology at the Canada/USA interface. University of British Columbia. 2021

- 2019 Certified Senior Ecologist, Ecological Society of America. June 2019-present.
- 2019 Offered an endowed professor chair at other university (wildlife genomics and disease ecology); accepted retention package at University of Wyoming.
- 2014 Excellence Chair in Disease Ecology. University of Wyoming
- 2013 Finalist for Associate Dean of Student Programs, UC Davis School of Veterinary Medicine. Demonstrated leadership abilities and potential.
- 2011-2023 Awarded Master Bird Bander Permit/Hummingbirds by USGS Bird Banding Lab (one of fewer than ~ 150 specifically for hummingbirds nationally, while >4000 permitted for other birds). Permit renewed through 2023 for states including Wyoming, Colorado, Arizona, California, and Oregon.
- 2007-2008 Selected for one-year "Teaching Scholars" certificate program for professors in UC Davis School of Medical and School of Veterinary Medicine. Training in teaching problem/case-based learning and techniques for adult learners.
- 1997-1999 Graduate Academic Fellowship: Pathology, Microbiology and Immunology in School of Veterinary Medicine. Two years.
- 1995-1996 Research Fellowship in Wildlife Health, UC Davis School of Veterinary Medicine.
- 1996-1997 Fellowship in Ecology, UC Davis, 1993-94 Two years.
- 1996-1997 Jastro-Shields Scholarship Award for Mountain Lion Ecological Genetics.
- 1996 Student research presentation award honorable mention, Wildlife Disease Association, Fairbanks, AK 1996
- 1986 Hill's Senior Veterinary Student Internal Medicine Award.
- 1986 Phi Zeta Veterinary Honor Society (top 10% of veterinary class)
- 1986 American Veterinary Medical Association Senior Veterinary Student Service Award (included service as SCAVMA President)
- 1985 Ohio State University College of Veterinary Medicine Junior Service Award

INVITED PRESENTATIONS – SEMINARS, WORKSHOPS

- 2021 Invited speaker for Fulbright Scholar Public Panel discussion on Research in Nature, Ecology, and Evolution during Fulbright Canada virtual meeting
- 2017, 2018 Invited speaker twice for University of Wyoming's "[Saturday U](#)" program to bring professors and their craft to the public around the state of Wyoming. Main focus was bighorn sheep. Jackson (2017), Rock Springs (2018)
- 2016 Invited speaker for [University of Idaho Wildlife Seminar](#) series. "Genomics of wildlife and their diseases: research views of a molecular ecologist/wildlife veterinarian". April 2016.
- 2016 Invited speaker for Laramie Audubon monthly talk: Hummingbird Health Program in Wyoming and Colorado.
- 2014 Invited to speak for Ecological Society of America annual conference, talk, "Ecology and impacts of vector-borne disease on native birds: California avian communities". Deferred to collaborator to present talk due to move to Wyoming: Lisa A. Tell (speaker) (UC Davis School of Veterinary Medicine, Holly B. Ernest, Sarah Bahan (vet student), Ravinder N.M. Sehgal (Dept. of Biology, San Francisco State University), Joshua M. Hull (Recovery Division Chief, Sacramento US Fish and Wildlife Office, and Dept. of Animal Science, UC Davis).
- 2014 Scheduled July 2014. For California Mountain Lion Researchers Workshop.

- “California’s mountain lion landscape genetics: informing conservation and management. Holly B. Ernest (speaker), T. Winston Vickers (UCD Wildlife Health Center), Walter M. Boyce (UCD Wildlife Health Center), Seth P. D. Riley (National Park Service-Santa Monica Mountains National Recreation Area), Christopher C. Wilmers (Environmental Studies Division, UC Santa Cruz).
- 2013 Oct 2013 as invited speaker for The Wildlife Society annual Conference to lead-off the workshop in “Application of Molecular and Genetic Techniques to Wildlife Epidemiology”.
- 2012 California Wildlife Connectivity Forum, UC Berkeley. Genetics for Landscape Connectivity. Dec 2012.
- 2012 Ernest H. Hummingbirds: Environmental sentinels, ecology and genetics. City of Davis Native Pollinator Talk Series. April 2012.
- 2010 Hummingbird Monitoring Network Workshop, Patagonia, Arizona. Updates on Hummingbird Conservation Genetics and Diseases of hummingbirds.
- 2009 Hummingbird Workshop, Cooper Ornithology Conference. Tucson, AZ. Two talks: 1) Genetic Tools for Hummingbird Conservation (solo talk); 2) Diseases and population health of hummingbirds: State of current knowledge and priorities for research (joint presentation with Dr. Lisa Tell.
- 2007 University of Minnesota. Genetics on the Wild Side: *Opportunities & Challenges in Wildlife Ecological Genetics*. Additionally, day of meetings to advise students and faculty on their ecological genetics projects; invited to speak at meeting of U Minnesota School of Vet Med’s committee to organize a Ecosystem Health program. Minneapolis.
- 2006 The Wildlife Society, Sacramento-Shasta chapter. Chased by West Nile Virus: Yellow-billed Magpie. Sacramento.
- 2006 Wildlife and Aquatic Animal Medicine Symposium. Clinical and Epidemiologic Update on West Nile Virus. UC Davis. Joint Talk with Dr. Nancy Anderson. UCD.
- 2005 Genetic Monitoring Workshop, for California Department of Parks and Recreation and Genetic Resources Conservation Program. Audience: state and federal wildlife and environmental agency biologists and administrators. Genetic Monitoring of Wildlife: Mammals and Birds. Davis.
- 2004 International Society for Animal Genetics Conference Animal Forensic Genetics Workshop. Wildlife Forensic Genetics. Tokyo, Japan.
- 2004 US Department of Agriculture Wildlife Services Conference: Genetics for Wildlife Health. Training for USDA field personnel. Yosemite, CA.
- 2004 UC Davis Veterinary Medicine Population Health & Reproduction Seminar: Genomics for Wildlife Population Health.
- 2004 California Department of Health Sciences. Zoonotic Diseases Workshop. “Threatened & Endangered California Species potentially at risk for West Nile Virus”. Sacramento.
- 2002 & 2003 Envirovet Summer Institute. White Oak Plantation, Florida. Seminar in Conservation Genetics, as part of the six week program for veterinary students, veterinarians, and wildlife biologists in terrestrial and aquatic wildlife and ecosystem health.
- 2003 Forensic DNA Course for Forensic Science Masters of Science curriculum. Animal

- 2002 Forensic DNA Analysis.
California Association of Criminalists bay area meeting. Animal Forensic DNA analysis.

RESEARCH PRESENTATION ABSTRACTS

* Presenter (students, postdocs, research associates listed as speakers were mentored by H. Ernest). Since 2002

- 2021 H. Ernest. "Genomics and Disease Ecology for Applied Wildlife Conservation", to the University of British Columbia WildCo Research Group. Spring 2021.
- 2021 *Main mentor to Melanie LaCava (PhD student) presentation "Disease-driven selection in free-ranging wildlife as revealed by spatiotemporal analyses" to the Evolution 2021 Conference.
- 2021 *Main mentor to Nicole Carter (MS student) presentation "Investigating Relationships Between Genetics and Causes of Mortality in Southern Sea Otters (*Enhydra lutris nereis*)" at the Sea Otter Research and Conservation Symposium.
- 2020 *M. LaCava, RB Gagne, KD Gustafson, CA Buerkle, L Knox, D McWhirter, H Edwards, HB Ernest. Ecological Society of America virtual annual conference. Aug 2020. **"Genetic structure reflects habitat requirements and social structure in three Wyoming ungulates."**
- 2020 Multiple coauthor on talks at various venues (The Wildlife Society, Univ. of Nebraska, etc.) by collaborators on **Mountain lion conservation, extinction risk of small populations, and genetics.**
- 2020 Covid pandemic affected our abilities to present research
- 2019 H. Ernest. Presentation. **"Enhancing Wildlife Health and Conservation from Individual to Species. Research at the Wildlife Genomics and Disease Ecology Lab, Univ. of Wyoming. ANGUS Bioinformatics Workshop, UC Davis. July 1-13, 2019**
- 2019 Shawn Larsen, Roderick Gagne, James Bodkin, Tim Tinker, Liz Bowen, **Holly Ernest**, Katherine Ralls, and Raphael Leblois. **Sea otter genetics update: Diversity, population structure and taxonomy.** World Marine Mammal Conference. Barcelona Spain. Dec 2019
- 2019 *Melanie LaCava, Sierra M. Love Stowell, Roderick B. Gagne, Holly B. Ernest. **Implications of marker type and species ecology on forensic use of genetic data: STRs and SNPs in wild ungulates.** June 2019. Society for Wildlife Forensic Science, Denver, CO.
- 2019 *L. Johnson (presenter) and H. Ernest. Presentation. **"Enhancing Wildlife Health and Conservation from Individual to Species for Forensic Applications.** June 2019. Society for Wildlife Forensic Science, Denver, CO.
- 2019 *Nicole H. Carter, Melissa A. Miller, Roderick B. Gagne, Berit Bangoura, Christine K. Johnson, Megan Moriarty, Tim Tinker, Jason Gigley, Holly B. Ernest. **Investigating the Relationship between Genetics and Disease Outcome in Necropsied Southern Sea Otters (*Enhydra Lutris Nereis*).** Biennial Sea Otter Workshop. Seattle. Mar 2019.
- 2019 *Adrienne Mackenzie, Brady Godwin, Berit Bangoura, Ravinder Sehgal, Lisa Tell,

- and Holly Ernest. **Hemoparasites: Determining prevalence in Rocky Mountain Broad-tailed Hummingbirds.** UWyo Undergrad Research Day Apr 2019
- 2018 * Multiple lab members' talks and posters at Wyoming Wildlife Society (TWS) meeting. **Population Genomics of Bighorn sheep, Pronghorn, Hummingbirds, Great Gray Owls,** etc. Nov 2018. Laramie, WY
- 2018 *Roderick Gagne, Daryl Trumbo, Melanie LaCava, Patricia Salerno, Christopher Kozakiewicz, Winston Vickers, Seth Riley, Walter Boyce, Kevin Crooks, Chris Funk, Sue VandeWoude, Holly Ernest. **Comparative landscape genomics of mountain lion populations across an urban landscape.** Ecological Society of America Annual Conf. Aug 2018 New Orleans, Louisiana, USA.
- 2018 *Erick Gagne and coauthors. NSF-Ecology and Evolution of Infectious Disease (EEID) "**Genomics identify landscape variation of host and viral spread in urban landscapes**"), Scotland. June 2018.
- 2018 *Melanie LaCava, Sierra M. Love Stowell, Roderick B. Gagne, Holly B. Ernest. **Landscape genomic analysis of Wyoming pronghorn informs population biology and nomadic behavior.** Reno, NV. Aug 2018.
- 2017 * Sierra Love Stowell et al Sep 2017. The Wildlife Society annual conference, Albuquerque, NM. Wyoming **Bighorn sheep** Population Genomics. Talk.
- 2017 * Multiple lab members' talks and posters at Wyoming Wildlife Society (TWS) meeting. **Population Genomics of Bighorn sheep, Pronghorn, Hummingbirds, Great Gray Owls,** etc. Dec 2017. Jackson, WY.
- 2017 * Amelia Vazquez, et al Sep 2017. The Wildlife Society annual conference, Albuquerque, NM. **Yellow-billed Magpie population genetics before and after West Nile Virus.** Poster.
- 2017 John Benson et al. The Wildlife Society annual conference, Albuquerque, NM. **Mountain lion small population extinction modeling.**
- 2017 *Roderick B Gagne (mtn lion genomics), Kyle Gustafson (state-wide Calif. mtn lion genetics) to Triennial Mtn Lion Workshop, Estes Park, CO in May 2017.
- 2017 * Kyle Gustafson, Winston Vickers, Walter Boyce, Holly Ernest. Urban Wildlife Conf, San Diego. June. 2017. **A single migrant enhances the genetic diversity of an inbred puma population.**
- 2017 *Roderick B Gagne (oral presentation) et al and Holly Ernest: **1000-Sea Otter genetic analysis presentation** at the 10th biennial Sea Otter Conference, Seattle.
- 2016 *Roderick B Gagne (oral presentation); Winston T Vickers; Patricia E Salerno; Daryl R Trumbo; W Chris Funk; Jeffrey A Sikich; Seth PD Riley; Walter M Boyce; **Holly B Ernest. Improving Resolution of Population Genetic Estimates of Pumas within an Urbanized Landscape.** The Wildlife Society annual international conference, Raleigh, NC Oct 2016.
- 2016 *Melanie Lacava (poster); Roderick B Gagne; Sierra M Love Stowell; **Holly B Ernest. Development and Application of Population Genomic Tools for Conservation and Management of Wyoming Pronghorn.** The Wildlife Society annual international conference, Raleigh, NC, Oct 2016.
- 2016 *Braden L Godwin (poster); Lisa Tell; Robert Poppenga; **Holly Ernest. Heavy Metal Concentrations in Wyoming Hummingbirds: An Assessment of Population Health and Status as Sentinel Species.** The Wildlife Society annual

- international conference, Raleigh, NC, Oct 2016.
- 2016 **Holly Ernest**, Sierra Love Stowell. Genomics for **Bighorn sheep** Conservation and Management. Wyoming Game and Fish Bighorn Sheep Annual Meeting, Burgess Junction, WY. July 2016
- 2016 *Sierra Love Stowell, **Holly Ernest**. Genomics for **Bighorn Sheep** Conservation and Management. Wyoming Wild Sheep Foundation Annual Meeting, Casper, WY. June 2016
- 2016 *Melanie LaCava (poster); Roderick B Gagne; Sierra M Love Stowell; **Holly B Ernest**. **Development of Population Genomic Tools for Conservation and Management of Wyoming Pronghorn**. Biennial Pronghorn Working Group meeting. Montana. 2016
- 2015 **Ernest HB**, several talks for Wyoming Department of Game and Fish: Landscape Genomics of **Bighorn Sheep**; Landscape Genomics of **Pronghorn**.
- 2014 **Ernest HB**, **Hummingbird Health Program takes flight in the Rocky Mountain West**. Jackson Hole Wildlife Symposium. Teton School. Dec 2014.
- 2014 **Ernest HB**, T. Winston Vickers, Scott A. Morrison, Michael R. Buchalski, Walter M. Boyce. International Wildlife Disease Association conference, Albuquerque, New Mexico, Aug 1, 2104: **Mountain lion genetic health: fractured connectivity and low genetic connectivity threatens a southern California puma (*Puma concolor*) population**.
- 2014 **Holly B. Ernest (speaker)**, T. Winston Vickers (UCD Wildlife Health Center), Walter M. Boyce (UCD Wildlife Health Center), Seth P. D. Riley (National Park Service-Santa Monica Mountains National Recreation Area), Christopher C. Wilmers (Environmental Studies Division, UC Santa Cruz). May 13, 2014, Triennial 11th Mountain Lion Workshop, Cedar City, UT, talk, "**California's cougar connectivity: genetics informing conservation and management**."
- 2014 *Michael Buchalski; Asako Y Navarro; Walter M Boyce; T. Winston Vickers; Mathias Tobler; Lisa Nordstrom; Jorge Alaniz Garcia; Daphne A Gille; Maria Cecilia T Penedo; Oliver A Ryder; **Holly B Ernest**. **Genetic population structure of Peninsular bighorn sheep (*Ovis canadensis nelsoni*) indicates substantial gene flow across US-Mexico border**. Society for Mammalogy. Norman Oklahoma. Aug 2014.
- 2012 *Micheletti C, Goldberg L, **Ernest H**. Reconstructing 130 years of genetic diversity in California pumas: historic DNA from museums for conservation genetics Merck-Merial Veterinary Scholar National Symposium. (poster)
- 2012 *Loreto Godoy, Lisa Tell, Barbara Robinson, Rita Colwell, Susan Wethington, Lisa Goldberg, and **Holly Ernest**. **Investigation of a Debilitating Disease Syndrome of Unknown Cause in Wild Hummingbirds**. En Cuentros Conference. San Francisco. Nov 2011.
- 2011 ***Ernest H.**, Goldberg L, Godoy L, Stice M, Wethington S, Colwell R, Robinson B, Engilis A, Truan M, Tell L, Aigner P, and Kohler C. **Conservation Genetics in Hummingbirds: Species identity, population structure, and genetic diversity for ecology of hummingbirds**. The Wildlife Society Annual Conference. Kona, HI. Nov 2011.
- 2011 *Goldberg L, Blumenshine K, Heeg E, Morrison S, Vermeer L, Sweitzer R, Updike D,

- Gilliland T, Godoy L, Marsden C, Gille D, Beardsley K, **Ernest H. Population Genetics of California's Wild Pigs**. The Wildlife Society Annual Conference. Kona, HI. Nov 2011.
- 2010 ***Ernest H.**, L Goldberg, L Lam, T Gilliland, M Miller, E Dodd, D Jessup. **Toward testing associations: molecular genetic profile, kinship, and disease status in southern sea otters**. Wildlife Disease Association 59th Annual Conference. Iguazu, Argentina.
- 2009 *Harmeling B, Goldberg L, **Ernest H.** West Nile virus and the Yellow-billed Magpie. Did genetic diversity decrease following the onset of a high mortality infectious disease in California endemic birds? Merck-Merial Veterinary Scholar National Symposium. (poster)
- 2009 *Hull J, J Keane, W Savage, E Jepsen, **H Ernest**. Isolation and divergence of southern Sierra Great Gray Owls. The Wildlife Society Willow Flycatcher-Great Gray Owl Workshop, Truckee, CA (oral)
- 2009 *Hull J, J Keane, W Savage, E Jepsen, **H Ernest**. Great Gray Owl population genetics in western North America. 2009 Annual Conference of the Western Section of the Wildlife Society, Sacramento
- 2009 *Lam L, Kurushima J, Miller M, Jessup D, Dodd E, Goldberg E, and ***Ernest HB**. DNA Markers To Test Genetic Associations in Southern Sea Otters with Cardiac Disease. Annual Sea Otter Research Symposium. Monterey, CA (poster)
- 2009 *Crosbie S, **Ernest H.** California Birds and West Nile Virus. Sagehen Summer Speaker Series. (oral)
- 2009 *Crosbie S, **Ernest H.** Status of the Yellow-billed Magpie. US Fish and Wildlife Service speaker series. (oral)
- 2009 *Goldberg LS , Blumenshine KM, Heeg ER, Morrison SA, Vermeer LA, Sweitzer RA, Updike DR, Gilliland T, **Ernest HB**. Genetic diversity of California's island feral pigs. International Plant and Animal Genomes XVII. San Diego, CA (poster)
- 2008 * **Ernest HB**. Integrating Genetic Tools In Disease Ecology. Wildlife Disease Association Annual Conference. Edmonton, Alberta. (oral)
- 2008 * **Ernest HB**. Integrating Genetic Tools In Disease Ecology. Center for Disease Modeling and Surveillance, UC Davis. (oral)
- 2008 *Crosbie S, **Ernest H.** Yellow-billed Magpie: Post-WNV Abundance and Habitat Use. Yolo Audubon Society. (oral)
- 2008 *Crosbie S, ***Ernest H.** (joint presentation) Yellow-billed Magpie: Endemic "Island" Species in Sea of WNV. The Nature Conservancy Island Scrub-Jay Workshop. (oral)
- 2008 *Hull J, J Keane, and **H Ernest**. Molecular genetic tools for use in the conservation of Great Gray Owls. Yosemite Great Gray Owl Management Workshop, Yosemite National Park (oral)
- 2008 *Jepsen E, Keane J, Maurer J, **Ernest H.** Occupancy, Reproduction and Nest-Site Habitat of Great Gray Owls in the central Sierra Nevada, 2004-2007. Yosemite Great Gray Owl Management Workshop, Yosemite National Park (oral)
- 2007 *Crosbie S, **Ernest H.** Monitoring Magpie Abundance and Habitat Associations Post-WNV. Central Valley Birding Symposium. (oral)
- 2006 ***Ernest H.** North American Ornithological Conference-Emerging Infectious Disease Symposium. Impact of West Nile virus on the Yellow-Billed Magpie.

- Veracruz, Mexico. (oral)
- 2006 ***Ernest HB**. Magpie Monitors Workshop. For citizen scientist volunteers. West Nile Virus and the Yellow-billed Magpie: Why are magpies at risk of decline? Davis. (oral)
- 2006 ***Ernest HB**. The Wildlife Society Western Section. West Nile Virus, Genetics, and the Yellow-billed Magpie. Sacramento. (oral)
- 2006 *Scott Crosbie, **Ernest HB** Sandhill Crane Festival. Invited presentation by PhD student, West Nile Virus and Yellow-billed Magpies. (oral)
- 2006 *Hull JM, **Ernest HB**. Golden Gate Raptor Observatory. Conservation Genetics of Swainson's Hawks. (oral)
- 2006 *Hull J, **Ernest H**. The Wildlife Society, Sacramento-Shasta chapter. Conservation Genetics of Swainson's Hawks. Sacramento. (oral)
- 2006 *Hull J, **Ernest H**. North American Ornithological Conference-Raptor Conservation Symposium. Conservation Genetics of Swainson's Hawks. Veracruz, Mexico. (oral)
- 2006 *Pitzer, S, Hull J, **Ernest H**. North American Ornithological Conference-Raptor Conservation Symposium. Fall migration in monomorphic raptors: utilizing gender determination techniques. Veracruz, Mexico. (oral)
- 2006 *Heeg E, Updike D, **Ernest HB**. Ecological Society Annual Conference. Presentation by MS student Elizabeth Heeg. The landscape genetics of invasion: a study of California wild pigs. Memphis, TN. (oral)
- 2006 *Heeg E, Updike D, **Ernest HB**. Annual Wild Pig Conference. Presentation by MS student Elizabeth Heeg. The landscape genetics of invasion: a study of California wild pigs. Mobile, AL. (oral)
- 2006 *Multiple and **Ernest H**. The Wildlife Society Western Section. Annual Meeting. Coauthored presentations by my students. Elizabeth Heeg (Population genetics of feral pigs), Sarah Pitzer (Construction of key to sex raptors: genetics and morphology), Sarah Brown (Black bear population genetics), Joshua Hull (West Nile virus in raptors), Jennifer Kurushima (Puma DNA panel for ecology). Sacramento, CA. (oral)
- 2005 ***Ernest HB**. Yellow-billed Magpie Workshop. Genetics, West Nile virus and the Yellow-billed Magpie. Davis. (oral)
- 2005 ***Ernest HB**, O'Rourke K. Wildlife Disease Association. Kinship genetics of deer with Chronic Wasting Disease (poster); ***Ernest HB**. West Nile virus and genetics in Yellow-billed Magpies (oral). Australia.
- 2005 ***Ernest HB**, West Nile Virus Conference. Pathology associated with West Nile Virus Infections in a California Endemic Bird: the Yellow-billed Magpie. With co-authors, Leslie Woods DVM PhD, Jay Well1, Vicki Kramer PhD, Ryan Carney, Barbara Calhoun-Young PhD, William Reisen PhD, Gerald Wiscomb. San Jose, CA. (oral)
- 2005 *Hull J, **Ernest H**. Sonoma State University Colloquium. West Nile Virus Antibody Prevalence in California Raptors. (oral)
- 2005 *Hull J, **Ernest H**. Cooper Ornithological Society Annual Meeting. West Nile Virus Antibody Prevalence In California Raptors. Presentation by PhD student Joshua Hull. Arcata, CA.
- 2005 *Multiple and **Ernest H**. Genetic Monitoring Workshop, for California Department

of Parks and Recreation and Genetic Resources Conservation Program. Audience: state and federal wildlife and environmental agency biologists and administrators. Genetic Monitoring of Wildlife: Mammals and Birds. Co-authored presentations by my students. Elizabeth Heeg (Population genetics of feral pigs), Sarah Brown (Black bear population genetics), Joshua Hull (West Nile virus in raptors); Post-doctoral scholar Dr. Ben Sacks (Coyote population genetics).

- 2004 ***Ernest HB**, USDA Wildlife Service Annual Conference. Applications of Genetics and Disease Ecology for Wildlife Management. Yosemite National Park. (oral)
- 2004 Collins J, ***Ernest H. International Society for Animal Genetics Biennial Conference**. Microsatellite Marker Panel for Puma (*Puma concolor*): Development and Applications for Ecology and Forensics. Tokyo.
- 2004 *Sacks B, Brown S, **Ernest H**. Your genes may flow but the coyote carries hers. **Bay Area Conservation Biology Annual Conference**. Berkeley, CA.
- 2003 ***Ernest HB**. American Genetics Association Conservation Genetics Conference (first annual). Genetic Structure of Mountain Lion Populations in California and Nevada. Front Royale, VA. (oral)
- 2003 ***Ernest HB**, Wictum E. California Association of Criminalists Annual Conference. Solving Crimes using Animal Genetics. Reno, NV. (oral)
- 2002 ***Ernest HB**. Carnivores Annual Conference. Genetic Structure of Mountain Lion Populations in California and Nevada. Monterey, CA. (oral)

REPORTS AND MAGAZINE ARTICLES

- **Forensic genetic evidence case reports submitted to law enforcement agencies (25 cases) and private parties involved in civil law suits (20 cases)**. Casework presented from federal, state, and local law enforcement agencies as well as to the general public to the Forensic Unit of the Veterinary Genetics Laboratory. 2002-2003.
- **Population genetics of Nevada mountain lions**. Nevada Division of Wildlife contract. 2002. H. Ernest
- **Review of Mountain Caribou Captive Breeding Plan** for British Columbia Ministry of Water, Land & Air Protection. 2001. H. Ernest
- **Contingency Captive Breeding Plan for Sierra Nevada Bighorn Sheep**. Holly Ernest. Final Report submitted to the California Department of Fish and Game. Population viability analyses, genetic recommendations, decision trees, facility site assessments, veterinary care, husbandry, selection of founder breeding stock, review of diseases, and reports on existing captive bighorn sheep facilities. 2001.
- **DNA analysis for mountain lion conservation**. Holly Ernest. *Outdoor California*. May-June. 61(3)16-19. Invited article. 2000.
- **DNA sampling and research techniques**. Holly Ernest. *Outdoor California*. May-June. 61(3)20-21. Invited article. 2000.
- **Eastern cougar DNA identification reports to state agencies**. DNA identification of samples from Kentucky and Missouri. H. Ernest. Genetic assignment analysis for population source of cougars. Reports to Kentucky and Missouri state wildlife departments. 1999.
- **Forensic DNA report**. Microsatellite DNA analysis of forensic samples taken from a

human fatality due to mountain lion attack in Canada. H. Ernest. Report submitted to the British Columbia Ministry of the Environment and California Department of Fish and Game. 1997.

WEBSITES

Development and maintenance

- <http://www.wildlifegenetichealth.org> and over 30 educational web pages. 2015-present.
- Active blogging presence on WildlifeGeneticHealth twitter 2015-present. <https://twitter.com/hollyernest>
- Active blogging presence on Facebook 2015-present. <https://www.facebook.com/wildlifegenetichealth/>
- **Hummingbird Health Program.** 2011-present, developed program and website.
- **Magpie Monitor.** Public education and citizen science information about the Yellow-billed Magpie, a species found only in central California, and its health and population risks due to West Nile virus. Internet portal. 2004-2011. Transitioned material that was on dedicated non-campus web site to my faculty web sites.
- **UC Davis Wildlife Population Health and Ecological Genetics.** Portal, information.

PUBLIC, NATIONAL AND INTERNATIONAL SERVICE

- 2022 Invited consultant and committee member, Canada BioGenomes Project, part of GenomeCanada. <https://genomecanada.ca/project/canadian-biogenome-project/>
Invitation to this panel was an outcome of my Fulbright Canada sabbatical work.
- 2017-June 2022. Invited participant, and voting member of Federal NIST OSAC **Wildlife Forensic working group**, Reston, VA. Federal wildlife forensic consultant. OSAC Forensics = Organization of Scientific Area Committees for Forensic Science. <https://www.nist.gov/topics/forensic-science/osac-subcommittees> - click on "wildlife forensics"
- 2021-present. **Southern Sea Otter Reintroduction Science Working Group.** Invited member.
- 2010-June 2022. **Assoc. Editor, Conservation Genetics journal.**
<https://link.springer.com/journal/10592>
- 2017-2020 Wildlife Disease Assoc. Council member. <https://www.wildlifedisease.org>
- 2014-2016 **Secretary, Wildlife Veterinary Section of Wildlife Disease Assoc.**
- 2010-present Master Bander, hummingbirds, contributing data and health information to Hummingbird Monitoring Network.
- 2008-2011 Board member, Hummingbird Monitoring Network
- 2008-2009 Volunteer hummingbird bander, UC McLaughlin Nature Reserve Hummingbird Banding Station
- 2008-2011 Wildlife Disease Association student awards committee
- 2007-2009 **Member, Great Gray Owl Interagency Working Group** (National Park Service, USDA Forest Service, Calif. Department of Fish and Game).
- 2004-2012 **Citizen Science: Founded and coordinate citizen science group - Magpie Monitors.** Educate and involve the public in bird conservation and monitoring. Involvement of ages (school kids to retirees).

- 2002-2008 **Print and televised/online media interviews. Discovery Channel** televised 2009 featuring our wild pig population genetic research and ecological destruction due to invasive feral hogs; show entitled “Pig Bomb”). **West Nile virus and bird populations (2004-2008):** newspapers, TV/online (San Francisco and Sacramento stations. Regular telephone and email communications with the public and press on wildlife health and genetics issues.
- 2005 **Organized and moderated Interagency Yellow-billed Magpie Scientist Workshop.** Attendees: US Fish and Wildlife Service, California Department of Fish and Game, Audubon Society (California HQ), PBRO-Conservation Science, UC Berkeley, Cal State Stanislaus, The Nature Conservancy, UC Riverside, Sacramento-Yolo Mosquito and Vector Control District, and others. Coordinated production of white paper presented to state agencies.
- 2006 **Citizen Science: Organized and moderated Magpie Citizen Science Education Workshop.**
- 2005-2006 **Member, Peninsular Bighorn Sheep Recovery Team Subcommittees, US Fish and Wildlife Service, southern California:** 1) Disease outbreaks 2) Captive breeding, translocation, and reintroduction.
- 2006 **Bird Conservation and Biology booth at Sacramento Zoo.** Interactive exhibit for adults and children.
- 2002-2003 **Court Testimony Expert Witness** at kidnap-murder trial in San Diego. Testified on analysis of animal DNA forensic evidence. Broadcast on news channels and Court TV.
Expert Witness at dog mauling child fatality grand jury hearing. Testified on analysis of animal DNA forensic evidence.
- 1994-1997 Teaching at California Department of Fish and Game (CDFG) Wildlife Handling and Restraint Courses – assisted in training of wildlife rehabilitators, animal damage control officers, wildlife biologists, **California Department of Fish and Game**

REVIEW SERVICE

- 2006-present. **Grant Reviews:** National Science Foundation, US Geological Service-Anchorage AK, National Science Foundation, Oiled Wildlife Care Network, and others.
- 2003 **Invited reviewer of US Fish and Wildlife Service:** science document and plan recovery of endangered Florida panther recovery
- 2002-2003 Lead reviewer of a research **proposal animal care and use research protocols to ensure humane use of wildlife species in research;** for the Western Ecological Research Center, U. S. Geological Service, and the UC Davis Wildlife Health Center.
- 2002-present. *Adhoc* manuscript reviewer for journals (generally in wildlife genetics and health, plus other topics as noted): American Midlands Naturalist, Animal Conservation, Animal Ecology, Journal of Animal Science (also rare sheep breed genetics), Behavioral Ecology and Sociobiology, Canadian Journal of Zoology, Journal of Field Ornithology, Conservation Biology, Conservation Genetics (also rare cattle breed genetics), Ecological Applications (also ungulate ecology), Evolutionary Applications, Journal of Wild and Zoo Animal Medicine, Journal of Wildlife Management, Journal of Wildlife Diseases, Mammalogy, Molecular Ecology (also

ecological and trace DNA genetics), PlosONE, Veterinary Research, Western North American Naturalist, and others.

UNIVERSITY SERVICE (UNIV. OF WYOMING)

2014-present Various years of service: Dept. Graduate Coordinator 2017-2020 and 2021-2022; Program in Ecology steering committee, Department of Veterinary Sciences Faculty Search Chair (Parasitologist), graduate student committees, Pre-veterinary advising; Program in Ecology curriculum committee, Department of Veterinary Sciences Faculty Search Chair, Faculty Search Committee for Dept of Animal Sciences, Graduate student committees, Pre-veterinary advising. Starting after Fall 2016: Tenure and Promotion Committee for School of Agriculture and Natural Resources (2017-2018 and 2022).

UNIVERSITY SERVICE (UC DAVIS)

Including School of Veterinary Medicine (SVM), Department of Population Health and Reproduction (VM:PHR), Veterinary Genetics Laboratory (VGL)

2013-2014 UC Davis One Health Institute and Wildlife Health Center Senior Staff committee

2008-2014 SVM Population Health curriculum committee

2010-2012 John Muir Center for the Environment Advisory Committee

2006-2011 SVM Ecosystem Health curriculum Working Group

2002-2014 VGL Executive Committee; then Scientific Advisory Committee (2014)

2005-2014 Various Department Committees (Personnel, Curriculum, Equipment & Resources, etc)

2006-2009 SVM International Student Programs Committee

2006-2007 Search Committee, VGL Forensic Unit Associate Director (2006-7)

2005-2007 Department VM:PHR Curriculum committee

2002-2003 Coordinator and member of steering committee for UC Davis research working group, Effects of West Nile Virus on Wildlife Health and Ecology

PROFESSIONAL SOCIETIES & ORGANIZATIONS (CURRENT /OR RECENT MEMBERSHIP)

My professional memberships focus on my diverse, yet interconnected scientific areas of interest in wildlife ecology, conservation, genomics, disease, and natural history; and include birds, mammals, forensics, wildlife disease, and wildlife veterinary medicine. Within these groups, I donate every year to help support student activities and chapters in developing countries. Professional memberships and donations are generally paid out of my personal funds.

- Wildlife Disease Association, including Wildlife Veterinary Section, <https://www.wildlifedisease.org/wda/>
- The Wildlife Society, including Wyoming chapter, Western section, working groups in College and University Wildlife Education Working Group, Wildlife Diseases, and Molecular Ecology. <https://wildlife.org/>
- American Association of Wildlife Veterinarians <https://aawv.net/>

- Ecological Society of America, including Certification as Senior Ecologist, Wildlife Disease and Molec. Ecology Sections; <https://www.esa.org/>
- Ornithological Societies of North America, including American Ornithological Society, Field Ornithologists, Raptor Research Foundation, and Wilson Ornithological Society: <https://osnabirds.wordpress.com/>
- American Society of Mammalogists, <https://www.mammalsociety.org/>
- AAAS, American Association for the Advancement of Science, <https://www.aaas.org/>

UNIV. OF WYOMING AFFILIATIONS (2014 TO PRESENT)

- Department of Veterinary Sciences (home department)
- Program in Ecology
- Haub School of Natural Resources and the Environment

UC DAVIS AFFILIATIONS (2002 TO 2017)

Department of Population Health & Reproduction (home department, including permanently 2014-present, as Emeritus Professor). Center affiliations officially through 2014, with continued collaborations: One Health Institute, Wildlife Health Center, John Muir Center for the Environment, Veterinary Genetics Laboratory, Center for Vectorborne Diseases.

VETERINARY AND FIELD ECOLOGIST EXPERIENCE

- **Federally permitted hummingbird bander.** 2009-present. Hummingbird capture, sampling, and banding in Arizona, Colorado, and California. Awarded Master Bander certificate by USGS in 2011.
- **Foreign Animal Disease readiness.** Representative from Wildlife health Center to California state committee: working group of wildlife and state-federal agency veterinarians and biologists to plan readiness in California for potential threats of introduction of Foot and Mouth Disease and other foreign animal diseases to wildlife. 2001.
- **Veterinarian, capture team member for wildlife captures and surveys.** U.S. Fish and Wildlife Service, USFWS capture of endangered desert **bighorn sheep**, San Andres Mountains, New Mexico, September 1999. Base camp veterinarian and helicopter capture team member, CDFG bighorn sheep captures, Eagle Mountains, Mojave Desert, 1993; Anza Borrego Desert State Park, 1993 and 1997; Peninsular Ranges of southern CA, 1996. Restraint and sample collection of captive bighorn sheep for a hematological and disease survey Living Desert Museum, Palm Desert, CA, 1994. Base camp veterinarian and team leader of helicopter capture crews for two mule deer netgun captures (140 deer in eastern Sierra Nevada Mountains).
- **Veterinary and genetics advisor** to the Yosemite National Park Mountain Lion Project. Trained park service personnel in mountain lion capture, handling, restraint, safety issues. Performed genetic typing of radiocollared lions and scats collected from hiking trails. 1995 to 1999.
- **Veterinary advisor and surgeon** for USGS-Biological Resource Division Project on endangered Giant Garter Snakes, a water snake endemic to a narrow band in California's

Sacramento Valley. Surgical implantation of radios for telemetry, disease investigations. 1997-99.

- **Wildlife Disease Investigation:** Performed on-site investigation of **bighorn sheep** die-off (at least 45 animals, botulism) in Mojave Desert for the California Dept of Fish and Game; member of the team which planned the outbreak investigation, collected diagnostic samples, planned diagnostic tests, and with Dr. Randy Singer and Dr. John Wehausen wrote up case for publication in J. Wildlife Diseases. September 1995.