

PAUL CHAFEE CROSS

pcross@usgs.gov

U.S. Geological Survey
Northern Rocky Mountain Science Center
2327 University Way, Suite 2
Bozeman, MT 59715

Phone: 406-994-6908
Fax: 406-994-6556

EDUCATION

PH.D. UNIVERSITY OF CALIFORNIA AT BERKELEY, 2005
B.A. UNIVERSITY OF VIRGINIA, ENVIRONMENTAL SCIENCE, *Magna cum laude.* 1998

RESEARCH EXPERIENCE

WILDLIFE HEALTH RESEARCHER, USGS - BOZEMAN, MT 2005-present
RESEARCH FELLOW, WILDLIFE CONSERVATION SOCIETY 2009-present
FACULTY AFFILIATE, MONTANA STATE UNIVERSITY 2006-present
RESEARCH FELLOW, MAMMAL RESEARCH INSTITUTE, UNIV. OF PRETORIA 2007-2010
GRADUATE STUDENT RESEARCHER, UC BERKELEY 1999-2005
RESEARCH ASSISTANT, UNIV. OF BOTSWANA Summer 1998
FIELD ASSISTANT, SMITHSONIAN INSTITUTE Summer 1997

PUBLICATIONS

Accepted

Cross, PC, ES Almborg, AC Burnett, MR Ebinger, C Haase, PJ Hudson, S Maloney, A Munn, P Nugent, O Putzeys, DR Stahler, DW Smith. Energetic costs of mange in Yellowstone wolves estimated from infrared thermography. *Ecology*.

du Toit, JT, **PC Cross**, M Valeix. *Submitted*. Weaving wildlife into a framework for rangeland resilience. In *Rangeland Systems: Processes, Management and Challenges*, ed. DD Briske. Springer.

Ebinger, MR, MA Haroldson, FT Van Manen, CM Costello, DD Bjornlie, DJ Thompson, KA Gunther, JK Fortin, JE Teisberg, SR Podruzny, PJ White, SL Cain, **PC Cross**. Detecting grizzly bear use of ungulate carcasses using Global Positioning System (GPS) telemetry and activity sensor data. *J. of Wildlife Management*.

Kamath, PL, JT Foster, KP Drees, C Quance, G Luikart, NJ Anderson, PR Clarke, EK Cole, WH Edwards, JC Rhyon, JJ Treanor, RL Wallen, S Robbe-Austerman, **PC Cross**. Whole genome sequencing reveals brucellosis transmission dynamics among wildlife and livestock of the Greater Yellowstone Ecosystem. *Nature Communications*

2015

Almborg, E, **PC Cross**, A Dobson, D Smith, M Metz, D Stahler, P Hudson. 2015. Social living mitigates the costs of a chronic illness in a cooperative carnivore. *Ecology Letters*. 18(7)660-667. <http://dx.doi.org/10.1111/ele.12444>

Brennan, A, **PC Cross**, S Creel. 2015. Managing more than the mean: using quantile regression to identify factors related to large elk groups. *J. Applied Ecology*. **52**:1656–1664. doi: 10.1111/1365-2664.12514

- Cole, EK, AM Foley, JM Warren, BL Smith, SR Dewey, DG Brimeyer, WS Fairbanks, H Sawyer, and **PC Cross**. 2015. Changing migratory patterns in the Jackson elk herd. *J. of Wildlife Management* 79(6):877-886.
- Cross, PC**, E Maichak, J Rogerson, KM Irvine, J Jones, D Heisey, WH Edwards, BM Scurlock. 2015. Estimating the phenology of elk brucellosis transmission with hierarchical models of cause-specific and baseline hazards. *J. of Wildlife Management*. 79(5):739-748 <http://dx.doi.org/10.1002/jwmg.883>
- Foley, AM, **PC Cross**, DA Christianson, BM Scurlock, S Creel. 2015. Influences on winter elk calf:cow ratios in southern Greater Yellowstone Ecosystem. *J. Wildlife Management*.79(6)887-897.
- Gorsich, E, **PC Cross**, R Bengis, VO Ezenwa, A Jolles. 2015. Context-dependent survival, fecundity, and predicted population-level consequences of brucellosis in African buffalo. *J. Animal Ecology* 84:999-1009.
- Sepulveda, M, K Pelican, **PC Cross**, A Eguren, R Singer. 2015. Fine-scale movements of rural domestic dogs in sensitive conservation areas in the South American temperate forest. *Mammalian Biology*. 80:290-297.

2014

- Benavides, JA, **PC Cross**, G Luikart, S Creel. 2014. Limitations to estimating bacterial cross-species transmission using genetic and genomic markers: inferences from simulation modeling. *Evolutionary Applications*. 7(7) 774-787.
- Brennan, A, **PC Cross**, MD Higgs, WH, Edwards, BM Scurlock, S Creel. 2014. Multiple ways to be dense and transmit disease: patterns in elk aggregation and increasing brucellosis. *Ecosphere*. 5(10):138.
- Hand, BK, S Chen, N Anderson, A Beja-Pereira, **PC Cross**, M Ebinger, WH Edwards, RA Garrott, M Kardos, M Kauffman, A Middleton, M Schwartz, PJ White, P Zager, EL Landguth & G Luikart. 2014. Sex-biased gene flow among elk in the Greater Yellowstone Ecosystem. *Journal of Fish and Wildlife Management*. 5(1) 124-132.
- Jones, J, MJ Kauffman, KL Monteith, BM Scurlock, SE Albeke, **PC Cross**. 2014. Supplemental feeding alters migration of a temperate ungulate. *Ecological Applications*. 24(7) 1769-1779.
- Kamath, PL, D Elleder, L Bao, **PC Cross**, JH Powell, M Poss. 2014. The population history of endogenous retroviral elements in mule deer (*Odocoileus hemionus*). *Journal of Heredity*. 105(2): 173-187.
- Manlove, KR, EF Cassirer, **PC Cross**, PK Plowright, PJ Hudson. 2014. Costly connections: Social groups shape pneumonia transmission among bighorn lambs (*Ovis canadensis*). *Proc. Roy. Soc. B*. 281:20142331
- Viana, M, R Mancy, R Biek, S Cleaveland, **PC Cross**, JO Lloyd-Smith, DT Haydon. 2014. Assembling evidence for identifying reservoirs of infection. *Trends in Ecology and Evolution*. 29(5): 270-279.

2013

- Bright, PR, HT Buxton, LS Balistrieri, LB Barber, FH Chapelle, **PC Cross**, DP Krabbenhoft, GS Plumlee, JM Sleeman, DE Tillitt, PL Tocalino, and JR Winton 2013. U.S. Geological Survey environmental health science strategy—Providing environmental health science for a changing world: U.S. Geological Survey Circular 1383–E, 43 p.
- Brennan, A, **PC Cross**, S Creel, JP Beckmann, M Higgs, RW Klaver & BM Scurlock. 2013. Testing the consequences of modeling rather than measuring snow accumulation in studies of animal ecology. *Ecological Applications*. 23(3)643-653.
- Brennan, A, **PC Cross**, DE Ausband, A Barbknecht, & S Creel. 2013. Comparing

automated howling devices to snow-tracking in a wolf survey. *Wildlife Bulletin* 37(2):389-393.

- Cassirer, EF, RK Plowright, K Manlove, KA Potter, **PC Cross** & PJ Hudson. 2013. Spatio-temporal dynamics of pneumonia in bighorn sheep (*Ovis canadensis*). *Journal of Animal Ecology*. 82:518-528.
- Cross, PC**, D Caillaud, D Heisey. 2013. Underestimating the effects of spatial heterogeneity due to individual movement and spatial scale. *Landscape Ecology* 28(2) 247-257.
- Cross, PC**, E Maichak, A Brennan, BM Scurlock, J Henningsen, G Luikart. 2013. An ecological perspective on the changing face of *Brucella abortus* in the western United States. *OIE Review*. 32(1):79-87
- Cross, PC**, TG Creech, MR Ebinger, K Manlove, K Irvine, J Henningsen, J Rogerson, BM Scurlock, & S Creel. 2013. Female elk contacts are neither frequency nor density dependent. *Ecology* 94(9): 2076-2086.
<http://dx.doi.org/10.1890/12-2086.1>
- Joseph, MB, JR Mihaljevic, AL Arellano, JG Kueneman, DL Preston, **PC Cross**, PTJ Johnson. 2013. Taming wildlife disease: closing the loop between science and management. *Journal of Applied Ecology*. 50:702-712.
- Plowright, RK, K Manlove, F Cassirer, **PC Cross**, T Besser & PJ Hudson. 2013. Use of exposure history to identify patterns of immunity to pneumonia in bighorn sheep (*Ovis canadensis*) population. *PLoS ONE*.8(4):e61919.
- Powell, JH, ST Kalinowski, MD Higgs, MR Ebinger, NV Vu & **PC Cross**. 2013. Microsatellites indicate minimal barriers to mule deer movement across Montana. *Wildlife Biology*.19:102-110.

2012

- Almberg, ES, **PC Cross**, AP Dobson, DW Smith & PJ Hudson. 2012. Disease invasion after reintroduction: A case study of sarcoptic mange in Yellowstone's wolves. *Philosophical Transactions of the Royal Society*.367:2840-2851.
- Creech, T, **PC Cross**, S Creel, E Maichak, & B Scurlock. 2012. Altered feeding styles dramatically reduces elk contact rates. *Journal of Wildlife Management*. 67(5):877:886.
- Cross, PC***, Creech, TG*, MR Ebinger, DM Heisey, K Irvine, & S Creel. 2012. Wildlife contact analysis: emerging methods, questions, and challenges. *Behavioral Ecology and Sociobiology*. 66(10):1437-1447 *authors contributed equally
- Forristal, VE, S Creel, ML Taper, B Scurlock & **PC Cross**. 2012. Effects of supplemental feeding and aggregation on stress hormone concentrations in elk. *Journal of Wildlife Management* 76(4):694-702.
- Plowright, RK, **PC Cross**, GM Tabor, E Almberg, L Bienen, & P Hudson. 2012. Climate-change adaptation and disease dynamics. Pages 111-121 In AA Aguirre, RS Ostefeld & P Daszak (eds.) *New Directions in Conservation Medicine: Applied Cases of Ecological Health*. Oxford Univ. Press, Inc. New York.
- Ryan, SJ, **PC Cross**, J Winnie, CT Hay, JA Bowers & WM Getz. 2012. Characterizing the relationship between NDVI and forage for African buffalo (*Syncerus caffer*) in Kruger National Park, South Africa. *Journal of Wildlife Management*.76(7):1499-1508

2011

- Almberg, ES, DL Mech, **PC Cross**, DW Smith, JW Sheldon & RL Crabtree. 2011. Infectious disease in Yellowstone National Park's canid community. *Yellowstone Science*. 19(2):16-25
- Almberg, ES, **PC Cross**, D Heisey, CJ Johnson & BJ Richards. 2011. Modeling routes of

- chronic wasting disease transmission: Environmental prion persistence promotes deer population decline and extinction. *PLoS ONE*. **6**(5):e19896.
- Bai, Y, **PC Cross**, L Malania, M Kosoy. 2011. Isolation of *Bartonella capreoli* from elk in the northern Rocky Mountains. *Veterinary Microbiology*. **148**:329-332.
- Ebinger, MR, **PC Cross**, R Wallen, PJ White & J Treanor. 2011. Modeling Brucellosis Management in Bison: A Heuristic Model of Management Actions on Disease Dynamics. *Ecological Applications* **21**:2944-2959
- LaBeaud, AD, **PC Cross**, WM Getz, A Glinka & CH King. 2011. Rift Valley fever virus infection in African buffalo (*Syncerus caffer*) herds in rural South Africa: Evidence of inter-epizootic transmission. *American Journal of Tropical Medicine and Hygiene*. **84**(4):641-646.
- Serrano, E, **PC Cross**, M Beneria, A Ficapal, J Curia, S Marco, X Lavín & I Marco. 2011. Brucellosis management in a free-ranging red deer population via livestock control efforts in northwest Spain. *Epidemiology and Infection*. **139**:1626-1630.
- 2010**
- Almberg, ES, **PC Cross** & DW Smith. 2010. Modeling the spatial scale and multi-host dynamics of canine distemper virus in Greater Yellowstone Ecosystem carnivores. *Ecological Applications* **20**(7):2058-2074.
- Cross, PC**, DM Heisey, BM Scurlock, WH Edwards, MR Ebinger, & A Brennan. 2010. Mapping brucellosis increases relative to elk density using hierarchical Bayesian models. *PLoS One* **5**:e10322
- Cross, PC**, EK Cole, AP Dobson, WH Edwards, KL Hamlin, G Luikart, AD Middleton, BM Scurlock & PJ White. 2010. Probable causes of increasing elk brucellosis in the Greater Yellowstone Ecosystem. *Ecological Applications* **20**:278-288.
- Cross, PC**, MR Ebinger, V Patrek, & R Wallen. 2010. Brucellosis in cattle, bison, and elk: Management conflicts in a society with diverse values. Pages 81-94 In J Johnson (ed.) *Knowing Yellowstone: Science in America's First National Park*. Boulder, CO: Taylor Trade Publishing.
- Heisey, DM, EE Osnas, **PC Cross**, DO Joly, JA Langenberg, & MW Miller. 2010. Linking process to pattern: estimating spatiotemporal dynamics of a wildlife epidemic from cross-sectional data. *Ecological Monographs* **80**:221-240.
- Heisey, DM, EE Osnas, **PC Cross**, DO Joly, JA Langenberg & MW Miller. 2010. Rejoinder - Shifting through model space. *Ecology* **91**:3503-3514
- Polansky, L, G Wittemyer, **PC Cross**, CJ Tambling & WM Getz. 2010. From moonlight to movement and synchronized randomness: Fourier and wavelet analyses of animal location time series data. *Ecology* **91**:1506-1518.
- Wittekindt, NE, A Padhi, SC Schuster, J Qi, F Zhao, L Tomsho, L Kasson, M Packard, **P Cross**, & M Poss. 2010. Nodeomics: pathogen detection in vertebrate lymph nodes using meta-transcriptomics. *PLoS One* **5**(10):e13432
- 2009**
- Bar-David, S, I Bar-David, **PC Cross**, SJ Ryan, CU Knechtel & WM Getz. 2009. Methods for assessing movement path recursion with application to African buffalo in South Africa. *Ecology* **90**(9): 2467-2479.
- Cross, PC**, D Heisey, J Bowers, CT Hay, J Wolhuter, P Buss, M Hofmeyr, A Michel, TLF Bird, JT Du Toit & WM Getz. 2009. Disease, predation and demography: assessing the impacts of bovine tuberculosis on African buffalo by monitoring at individual and population levels. *Journal of Applied Ecology* **46**: 467-475.

- Cross, PC**, J Drewe, V Patrek, G Pearce MD Samuel & RJ Delahay. 2009. Host population structure and implications for disease management. Pages 9-30 *In* RJ Delahay, GC Smith, & MR Hutchings (eds.) *Management of Disease in Wild Mammals*. Springer-Verlag Tokyo, Inc. Tokyo.
- Maichak, EJ, BM Scurlock, JD Rogerson, LL Meadows, AE Barbknecht, WH Edwards, and **PC Cross**. 2009. Effects of management, behavior, and scavenging on risk of brucellosis transmission in elk of western Wyoming. *Journal of Wildlife Diseases* **45**:398-410.
- Oosthuizen, C, **PC Cross**, JA Bowers, CT Hay, MR Ebinger, P Buss, M Hofmeyr, EZ Cameron. 2009. Chemical immobilization of African buffalo (*Syncerus caffer*) in Kruger National Park: Evaluating effects on movement, survival and reproduction. *Journal of Wildlife Management* **73**(1): 149-153.
- Wolhuter, J, RG Bengis, BK Reilly, & **PC Cross**. 2009. Clinical demodicosis in African Buffalo (*Syncerus caffer*) in the Kruger National Park. *Journal of Wildlife Diseases* **45**:502-504.

2008

- Conner, MM, JA Blanchong, MR Ebinger, & **PC Cross**. 2008. Infectious disease in cervids of North America: models, data, & management challenges. *The Year in Ecology and Conservation Biology* **1134**: 146-172.
- Hay, CT*, **PC Cross***, & P Funston. 2008. Tradeoffs of predation and foraging explain sexual segregation in African buffalo (*Syncerus caffer*). *Journal of Animal Ecology* **77**:850-858.
* authors contributed equally.
- LaBeaud, AD., **PC Cross**, WM Getz, & CH King. 2008. Rift Valley Fever Virus infection in African Buffalo (*Syncerus caffer*) herds in rural South Africa: Evidence of inter-epizootic transmission. *American Journal of Tropical Medicine and Hygiene* **79**:332.
- Winnie, JA Jr., **PC Cross**, WM Getz. 2008. Habitat quality and heterogeneity influences distribution, individual and herd behavior in African Buffalo (*Syncerus caffer*). *Ecology* **89**:1457-1468.

2007

- Conner, MM, JE Gross, **PC Cross**, MD. Samuel, DT McKinnon, MM Miller, & MR Ebinger. 2007. Scale-dependent approaches to modeling spatial epidemiology of chronic wasting disease. E-book publication. *Utah Division of Wildlife Resources*.
<http://wildlife.utah.gov/diseases/cwd/e-book/>
- Cross, PC**, WH Edwards, B Scurlock, E Machaik, & J Rogerson, 2007. Management and climate impacts on brucellosis in elk of the Greater Yellowstone Ecosystem. *Ecological Applications* **17**(4):957-964.
- Cross, PC**, PLF Johnson, JO Lloyd-Smith, & WM Getz. 2007. Utility of R_0 as a predictor of disease invasion in structured populations. *Journal of the Royal Society Interface* **4**:315-324.
- Cross, PC**, G Plumb. 2007. Disease ecology of the Yellowstone National Park. *Yellowstone Science*. 15(2):4-7. <http://www.nps.gov/yell/planyourvisit/yellsci-issues.htm>
(Also served as guest editor of this edition).
- Getz, WM, S Fortmann-Roe, **PC Cross**, AJ Lyons, SJ Ryan, CC Wilmers. 2007. LoCoH: Non-parameteric kernel methods for constructing home ranges and utilization distributions. *PLoS One* **2**(2):e207.
- Hines, AM, VO Ezenwa, **PC Cross**, & JR Rogerson. 2007. Effects of supplemental feeding on gastrointestinal parasite infection in Rocky Mountain Elk (*Cervus elaphus*). *Veterinary Parasitology* **148**(3-4):350-355.

2006

- Cross, PC** & WM Getz. 2006. Combining data and models of bovine Tb in African buffalo to assess research directions and management options. *Ecological Modelling* **196**:494-504.
- Getz, WM, JO Lloyd-Smith, **PC Cross**, S Bar-David, PLF Johnson, TC Porco, & MS Sánchez. 2006. Modeling the invasion and spread of contagious disease in heterogeneous populations. In Feng, Z., Dieckmann, U., Levin, S.A. (eds.) *Disease Evolution: Models, Concepts, and Data Analysis*, AMS/DIMACS Vol. 71:113-144
- Michel, AL, RG Bengis, DF Keet, M Hofmeyer, LM de Klerk, **PC Cross**, AE Jolles, D Cooper, IJ Whyte, & P Buss. 2006. Wildlife tuberculosis in South African game reserves: implications and challenges. *Veterinary Microbiology* **112**:91-100.

2005

- Lloyd-Smith, JO, **PC Cross**, CJ Briggs, M Daugherty, WM Getz, J Latta, M Sanchez, A Smith, A Sweil. 2005. Population thresholds for disease invasion and persistence in natural populations. *Trends in Ecology and Evolution* **20**(9):511-519.
- Cross, PC**, JO Lloyd-Smith, PLF Johnson, & WM Getz. 2005. Duelling timescales of host mixing and disease spread determine invasion of disease in structured populations. *Ecology Letters* **8**:587-595.
- Cross, PC**, JO Lloyd-Smith, & WM Getz. 2005. Disentangling individual associations in fission and fusion societies. *Animal Behaviour* **69**(2):499-506.

2004 and earlier

- Macandza, V, N Owen-Smith, **PC Cross**. 2004. Forage selection by African buffalo (*Syncerus caffer*) through the dry season in two landscapes of the Kruger National Park. *South African Journal of Wildlife Research* **34**(2):113-121.
- Cross, PC**, JO Lloyd-Smith, J Bowers, CT Hay, M Hofmeyr, & WM Getz. 2004. Integrating association data and disease dynamics: an illustration using African Buffalo in Kruger National Park. *Annales Zoologici Fennici* **41**:879-892.
- Caron, A, **PC Cross**, & JT du Toit. 2003. Ecological implications of bovine tuberculosis in African Buffalo herds. *Ecological Applications* **13**(5):1338-1345.
- Cross, PC** & SR Beissinger. 2001. Using logistic regression to analyze the sensitivity of PVA models: a comparison of methods based on African Wild Dogs. *Conservation Biology* **15**(5):1335-1346.

Grey Literature

- Ebinger, MR & **PC Cross**. 2008. Surveillance for brucellosis in Yellowstone bison: The power of various strategies to detect vaccination effects. National Park Service, Mammoth, WY, YCR-2008-04. 69 pages.
- Conner, MM, JE Gross, **PC Cross**, MD. Samuel, DT McKinnon, MM Miller, & MR Ebinger. 2007. Scale-dependent approaches to modeling spatial epidemiology of chronic wasting disease. E-book publication. *Utah Division of Wildlife Resources*.
<http://wildlife.utah.gov/diseases/cwd/e-book/>
- Cross, PC**, S Creel, WH Edwards, V Ezenwa, E Maichak, B Scurlock, J. Rogerson. 2006. Ecology and epidemiology of elk brucellosis. In 2005 Greater Yellowstone Interagency Brucellosis Committee Annual Report. Pg 14-15. <http://gyibc.com>

PUBLISHED DATABASES

Cross, PC, E Maichak, J Rogerson, KM Irvine, J Jones, D Heisey, WH Edwards, BM Scurlock 2015. Data from: Estimating the phenology of elk brucellosis transmission with hierarchical models of cause-specific and baseline hazards. DOI: doi:10.5061/dryad.c15ph

Cross, P.C. D. M. Heisey, J. A. Bowers, C. T. Hay, J. Wolhuter, P. Buss, M. Hofmeyr, A. Michel, R. Bengis, T. Bird, I. J. Whyte, J. T. Du Toit, and W. M. Getz. 2009. Buffalo herd tracking with VHF and GPS data. Movebank.org.

Cross PC, Heisey DM, Bowers JA, Hay CT, Wolhuter J, Buss P, Hofmeyr M, Michel AL, Bengis RG, Bird TLF, Du Toit JT, Getz WM (2008) Data from: Disease, predation and demography: assessing the impacts of bovine tuberculosis on African buffalo by monitoring at individual and population levels. Dryad Digital Repository. [doi:10.5061/dryad.5hh3h](https://doi.org/10.5061/dryad.5hh3h)

Gorsich EE, Ezenwa VO, Cross PC, Bengis RG, Jolles AE (2015) Data from: Context-dependent survival, fecundity, and predicted population-level consequences of brucellosis in African buffalo. Dryad Digital Repository. <http://dx.doi.org/10.5061/dryad.p6678>

STUDENTS

Angela Brennan. 2014. Broad-scale determinants of elk aggregation and brucellosis seroprevalence. Montana State University. Co-supervisor: Scott Creel.

Tyler Creech. 2011. Heterogeneity in the fine-scale contact patterns of elk as determined by proximity collars. Montana State University. Co-supervisor: Scott Creel

Victoria Forristal (formerly Patrek). 2009. Masters. Fat but not happy: The Effects of Supplemental Feeding on Stress Hormone Levels in Elk. Montana State University. Co-supervisors: Mark Taper, Scott Creel

Craig Hay. 2006 Choice of Social environment of male buffalo (*Syncerus caffer*) in the Kruger National Park, South Africa. Tshwane University of Technology. South Africa. Co-supervisor: Paul Funston

Chris Oosthuizen. 2006. Honour's thesis: Chemical immobilization of African buffalo (*Syncerus caffer*) in Kruger National Park: Evaluating effects on survival and reproduction. University of Pretoria. South Africa. Co-supervisor: Elissa Cameron

Field Supervisor

Almberg, ES. Current PhD. Penn State University. Supervisor: Peter Hudson

Manlove, K. Current PhD. Penn State University. Supervisor: Peter Hudson

Bowers, JA. 2006. Master's thesis: Feeding patch selection of African Buffalo (*Syncerus caffer caffer*) in the central region of the Kruger National Park. Tshwane University of Technology. South Africa

Tania Bird. 2004. Master's thesis: Influence of bovine tuberculosis (*Mycobacterium bovis*) on condition and reproductive success of females African buffalo (*Syncerus caffer*) in Kruger National Park. University of Pretoria. South Africa

Shane Abeare. 2004. Master's thesis: Dry season habitat and patch selection by African buffalo herds: test of a new home range estimator. University of Pretoria. South Africa

Valerio Macandza 2002. Master's thesis: Forage selection by African buffalo in the late dry season in two landscapes. Witwatersrand University. South Africa

Alex Caron. 2001. Master's thesis: Ecological implications of bovine tuberculosis in African Buffalo. University of Pretoria. South Africa

TEACHING

Courses Taught

Data Analysis and Multi-level / Hierarchical Modeling in Ecology (1 credit) Fall 2009. MSU.
Modeling Infectious Disease (3 day workshop) 2009. Univ. of Montana.

EcoLunch Seminar (1 credit) Fall 2008. MSU. I initiated this class to provide a venue for graduate students to get practice giving seminars and provide feedback on ongoing projects.

Plant-Disease Invasion Seminar (informal graduate seminar). Fall 2006. MSU. Compared the approaches of plant and disease ecologists to non-native invasions.

Wildlife Ecology (4 credits with lab) Spring 2005. Co-Lecturer UC Berkeley.

Disease Ecology (1 credit) 2004. Co-supervised graduate seminar on disease ecology, UC Berkeley

Modeling Infectious Disease (1 week short-course) 2001. Univ. of Witwatersrand, South Africa

Invited Classes

Diseases of the GYE. 1 lectures per year for an introductory class on the GYE. MSU.

Disease Ecology. 2 lectures per year for upper-level ecology students. MSU

Philosophy of Science. 2007. 2 classes. MSU.

Teaching Assistant

Natural Resource Modeling (3 credits) 2003. UC Berkeley

GRANTS & AWARDS

2015 USGS Performance Award

2014 USGS Performance Award

USGS, PI \$ 125,000 Greater Yellowstone ecosystem disease research

2013 USGS Performance Award

National Institute for Mathematical and Biological Synthesis (NIMBioS)
Workshop (Co-PI) ~\$60,000

NSF Dissertation Improvement Grant (Co-PI) \$19,343

USGS, PI \$ 98,000 Greater Yellowstone ecosystem disease research

2012 USGS Powell Center Grant, Co-PI (declined)

USGS Performance Award

USGS/NPS, PI \$75,000, Disease effects on Yellowstone Wolves.

USFWS, PI\$45,000, Elk space-use of the National Elk Refuge.

Morris Animal Foundation, Co-PI \$ 75,000, Developing an evidence base for managing bighorn sheep pneumonia.

2011 USGS Best Paper in Biology

USGS Grade Promotion

2010 NSF-NIH Ecology of Infectious Disease Program [DEB-1067129](#), co-PI \$1,971,033,
Effects of land-use, predation and management on wildlife contact and *Brucella*
transmission in the Yellowstone Ecosystem

USGS, PI \$75,000, Park Oriented Biological Support Grant: Effects of Sarcoptic Mange on Gray Wolves in Yellowstone National Park

- USGS Star Award for Performance
- 2009 USGS, PI \$39,000, Modeling environmental transmission of Chronic Wasting Disease
USGS Star Award for Performance
- 2008 USGS, Co-PI \$320,000, Global Climate Change Initiative
Co-PI \$112,180, Wyoming Livestock-Wildlife Disease Initiative
Co-PI \$281,000, Wyoming Game and Fish Department: Tracking elk movements around the supplemental feedgrounds.
- 2007 USGS, Co-PI \$750,000 with Mary Poss (Penn State): Viral tracking of mule deer and elk.
NPS, PI \$10,000: Brucellosis in Yellowstone National Park
USGS Star Award
- 2006 USGS, PI \$210,000 for chronic wasting disease research.
- 2004, 2005 Graduate Assembly Travel Grant
- 2002-2004 Student Travel Grant
- 1999 NSF-NIH Ecology of Infectious Disease Grant. \$1.8 million. Initiated, co-authored, and developed the research program with Dr. Wayne Getz.

PRESENTATIONS

- 2015 Speaker, Bozeman Public Library, Montana
Speaker, Annual Wildlife Society Meeting, Winnepeg, Canada
- 2014 Invited Speaker, Ecology Seminar, University of Sherbrooke, Canada
Speaker, Montana Wildlife Society Meeting, Bozeman MT
Invited Speaker, NIH Rocky Mountain Lab, Hamilton MT
Invited Speaker, 18° Congreso Chileno de Medicina Veterinaria, Santiago, Chile
Invited Speaker, Dept. Seminar, Univ. Catolica, Valdivia, Chile
Public Talk, Emerging wildlife pandemics, Menlo Park, CA
- 2013 Steering Committee & Invited Speaker. Foreign Animal Disease Preparedness, Shepardstown WV
Speaker, Western States Deer and Elk Meeting, Missoula MT
Invited Speaker. Interagency Bison Management Plan Meeting. Chico MT
- 2012 Invited Speaker. European Conservation Biology Meeting, Glasgow UK
Poster, NSF Ecology of Infectious Disease Meeting, Berkeley, CA
Invited Speaker & Workshop Participant, Bighorn Sheep disease ecology. Penn State Univ. State College PA
- 2011 Speaker, The Wildlife Society Annual Meeting, Hawaii
Invited Speaker, Wildlife disease management workshop, Penn State Univ.
Invited Speaker, Ecology and Evolution of Infectious Disease Meeting, Santa Barbara.
Invited Participant, NIH sponsored, Movement and the Spatial Dynamics of Mosquito-Transmitted Diseases Meeting, Washington D.C.
- 2010 Invited Keynote, Berryman Institute Biennial Meeting, Logan UT.
Invited Participant, NIH sponsored, Movement and the Spatial Dynamics of Mosquito-Transmitted Diseases Meeting, Washington D.C.
- 2009 Kopriva Lecture [Invited] MSU College of Arts and Science, Bozeman, MT
Invited Speaker, Dept. Seminar, Colorado State University, Fort Collins, CO
Invited Speaker, EcoHealth Student Chapter, Bozeman, MT
Invited Speaker, 10th Biennial Conference of Research on the Colorado Plateau
Speaker, Ecological Society of America, Albuquerque, NM
- 2008 Invited Speaker, Ecology Seminar, Montana State University, Bozeman MT
Poster, Society for Conservation Biology Montana Chapter, University of Montana.

- 2007 Invited Speaker, Social networks in humans and wildlife workshop, Penn State Univ.
Speaker, Jackson Hole Cooperative Elk Working Group, Jackson WY
- 2006 Speaker, Ecological Society of America, Nashville, TN.
- 2005 Speaker, Departmental Seminar, Montana State University
Invited Speaker, International Mammal Conference, Sapporo Japan.
- 2005 Speaker, Kruger National Park Annual Meeting, South Africa.
Speaker, University of California Wildlife Lunch, Berkeley CA.
Speaker & Attendee, Chronic Wasting Disease Technical Workshop, Park City UT.
Speaker, NSF-NIH Ecology of Infectious Disease Meeting, Falls Church VA.
- 2004 Best Poster, Wildlife Disease Association, San Diego CA.
Attendee, Greater Limpopo Transfrontier Conservation Area AHEAD-WCS Meeting, Maputo, Mozambique
- 2003 Speaker, Animal Behavior Society, Boise ID.
Poster, NSF-NIH Ecology of Infectious Disease Meeting, Bethesda MD.
Invited speaker, Conservation Research Center Smithsonian Institute,
Speaker, SF Bay Area Conservation Biology Symposium, Berkeley CA.
- 2002 Speaker, University of Pretoria, Department of Zoology Annual Meeting, Pretoria.
Speaker, South African Wildlife Management Association Annual Meeting, Pretoria.
Speaker, University of California Wildlife Lunch, Berkeley CA.
- 2001 Speaker, Wildlife Disease Association, Pilanesburg, South Africa.
Speaker, University of Pretoria, Department of Zoology Annual Meeting, Pretoria.
- 1999 Poster, Wildlife Society, Population Viability Analysis, San Diego CA.
- 1998 Speaker, University of California Wildlife Lunch, Berkeley CA.

SERVICE

Ongoing

- National Academy of Science Panel Member: Revisiting Brucellosis in the GYE
Associate Editor, Journal of Wildlife Management
Red Wolf Recovery Implementation Team, USFWS.
Chair, Northern Yellowstone Cooperative Wildlife Working Group.
Chair, USGS Animal Use and Care Committee for NOROCK.
- 2014 Participant, Wildlife Conservation Society Wildlife Health Program, Internal Strategic Workshop for future research.
- 2013 Steering Committee, Group Leader & Speaker. Foreign Animal Disease National Preparedness Workshop. USGS/DHS/USDA/CDC.

- 2011 Member Environmental Health Strategic Science Planning Team
Co-coordinator & originator, NIH & DHS RAPIDD Working group on cross-species transmission. 15 participants
Participant, NIH & DHS RAPIDD Working group on movement and mosquito-borne diseases.
USGS representative. Northern Rockies NEON committee.
- 2009 Organizer, Greater Yellowstone Brucellosis Research Meeting (2 days), 60 participants, 27 speakers, Bozeman MT
Participant, Dept. of Interior Avian Influenza Preparedness workshop, Madison WI
Participant, Yellowstone National Park Science Agenda Workshop, Bozeman MT
- 2008 Acting Chair, Northern Yellowstone Cooperative Wildlife Working Group.
- 2007 Steering Committee, Yellowstone National Park Wildlife Health Program Meeting.
Participant, USDA workshop: The Science of Surveillance, Control and Eradication of Catastrophic Diseases in Wildlife, Pinagree Park CO
- 2006 Participant, Disease and conservation of mammals, Conservation International
2005-8 USGS representative. Greater Yellowstone Interagency Brucellosis Committee.

REVIEWER

Journals: Nature, Ecol App, J Anim Ecol, J App Ecol, Proc Roy Soc B, Phil Trans Roy Soc B, Biol Letters, Cons Bio, Biol Cons, Anim Cons, Biodiv Cons, Behavior, Envi. Cons., J Wildl Mang, J Wildl Dis, Wildl Bio, PloS ONE, EcoHealth, J. Theo Bio, SA J Wildl Res, Ann Zoo Fennici, Ecol Mod, USGS FSP, USGS Study Plans.

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PRESS & OUTREACH

Economist 2015
NSF Science 360 2015
The Wildlife Professional 2015
New Zealand Herald 2013
Discovery Channel Curiosity X-Ray Yellowstone 2012
Wired Magazine 2012
Science World Scholastic Magazine 2012
Billings Gazette 2010
Examiner.com 2010
www.yellowstonewolf.org