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Education

Ph.D. Environmental Science, Policy & Mang., University of California, Berkeley, CA 2005
B.A., Environmental Science, University of Virginia, Charlottesville, VA 1998

Research Experience

Wildlife Health Researcher, U.S. Geological Survey 2005-present
Faculty Affiliate, Montana State University 2006-present
Graduate Student Researcher, U.C. Berkeley 1999-2005

Publications

2017

Benavides, J. A, D. Caillaud, B. M. Scurlock, E. J. Maichak, W. H. Edwards and P. C. Cross (2017). "Estimating loss of *Brucella abortus* antibodies from age-specific serological data in elk". In: *EcoHealth* 14, pp. 234-243. DOI: [10.1007/s10393-017-1235-z](https://doi.org/10.1007/s10393-017-1235-z).

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National Academies of Sciences, E. and Medicine (2017). *Revisiting Brucellosis in the Greater Yellowstone Area*. Washington, DC: The National Academies Press, p. 209. ISBN: 978-0-309-45831-3. DOI: [10.17226/24750](https://doi.org/10.17226/24750). URL: <https://doi.org/10.17226/24750>.

Pepin, K. M, S. L. Kay, B. D. Golas, S. S. Shriner, A. T. Gilbert, R. S. Miller, A. L. Graham, S. Riley, P. C. Cross, M. D. Samuel, M. B. Hooten, J. A. Hoeting, J. O. Lloyd-Smith, C. T. Webb and M. G. Buhnerkempe (2017). "Inferring infection hazard in wildlife populations by linking data across individual and population scales". In: *Ecology Letters* 20.3, pp. 275-292. DOI: [10.1111/ele.12732](https://doi.org/10.1111/ele.12732).

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Winnie, J. J., P. C. Cross and W. M. Getz (2008). "Habitat quality and heterogeneity influence distribution and behavior in African Buffalo (*Syncerus caffer*)". In: *Ecology* 89.5, pp. 1457-1468. DOI: [10.1890/07-0772.1](https://doi.org/10.1890/07-0772.1).

2007

Conner, M. M., J. Gross, P. C. Cross, M. D. Samuel, D. McKinnon and M. Miller (2007). *Scale-dependent approaches to modeling spatial epidemiology of chronic wasting disease*. Utah Division of Wildlife Resources. URL: <http://wildlife.utah.gov/diseases/cwd/e-book/>.

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Cross, P. C., P. L. Johnson, J. O. Lloyd-Smith and W. M. Getz (2007). "Utility of R_0 as a predictor of disease invasion in structured populations". In: *Journal of the Royal Society Interface* 4, pp. 315-324. DOI: [10.1098/rsif.2006.0185](https://doi.org/10.1098/rsif.2006.0185).

Cross, P. C. and G. Plumb (2007). "Wildlife health initiatives in Yellowstone National Park". In: *Yellowstone Science* 15.2, pp. 4-7. URL: <http://www.nps.gov/yell/planyourvisit/yellsci-issues.htm>.

Getz, W. M., S. Fortmann-Roe, P. Cross, A. Lyons, S. Ryan and C. Wilmers (2007). "LoCoH: nonparametric kernel methods for constructing home ranges and utilization distributions". In: *PLoS ONE* 2.2, p. e207. DOI: [10.1371/journal.pone.0000207](https://doi.org/10.1371/journal.pone.0000207).

Hines, A., V. O. Ezenwa, P. C. Cross and J. Rogerson (2007). "Effects of supplemental feeding on gastrointestinal parasite infection in elk (*Cervus elaphus*): Preliminary observations". In: *Veterinary Parasitology* 148.3-4, pp. 350-355. DOI: [10.1016/j.vetpar.2007.07.006](https://doi.org/10.1016/j.vetpar.2007.07.006).

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Cross, P. C. and W. M. Getz (2006). "Assessing vaccination as a control strategy in an ongoing epidemic: Bovine tuberculosis in African Buffalo". In: *Ecological Modelling* 196, pp. 494-504. DOI: [10.1016/j.ecolmodel.2006.02.009](https://doi.org/10.1016/j.ecolmodel.2006.02.009).

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Cross, P. C, J. O. Lloyd-Smith and W. Getz (2005). "Disentangling association patterns in fission-fusion societies using African buffalo as an example". In: *Animal Behavior* 69.2, pp. 499-506. DOI: [10.1016/j.anbehav.2004.08.006](https://doi.org/10.1016/j.anbehav.2004.08.006).

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Cross, P. C, J. O. Lloyd-Smith, J. Bowers, C. Hay, M. Hofmeyr and W. M. Getz (2004). "Integrating association data and disease dynamics in a social ungulate: bovine tuberculosis in African buffalo in the Kruger National Park". In: *Annales Zoologici Fennici* 41, pp. 879-892. URL: <http://www.jstor.org/stable/23736148>.

Macandza, V, N. Owen-Smith and P. C. Cross (2004). "Forage selection by African buffalo (*Syncerus caffer*) through the dry season in two landscapes of the Kruger National Park". In: *South African Journal of Wildlife Research* 34.2, pp. 113-121.

2003

Caron, A, P. C. Cross and J. du Toit (2003). "Ecological implications of bovine tuberculosis in African Buffalo herds". In: *Ecological Applications* 13.5, pp. 1338-1345. DOI: [10.1890/02-5266](https://doi.org/10.1890/02-5266).

2001

Cross, P. C. and S. Beissinger (2001). "Using logistic regression to analyze the sensitivity of PVA models: a comparison of methods based on African Wild Dog models". In: *Conservation Biology* 15.5, pp. 1335-1346. DOI: [10.1111/j.1523-1739.2001.00031.x](https://doi.org/10.1111/j.1523-1739.2001.00031.x).

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.

Databases

Merkle, JA, PC Cross, BM Scurlock, EK Cole, AB Courtemanch, SR Dewey, MJ Kauffman, and KE Szcudronski, 2017, Elk movement and predicted number of brucellosis-induced abortion events in the southern Greater Yellowstone Ecosystem (1993-2015): U.S. Geological Survey data release, <https://doi.org/10.5066/F7474803>.

Cross, PC, DM Heisey, JA Bowers, CT. Hay, J Wolhuter, P Buss, M Hofmeyr, A Michel, R Bengis, T Bird, IJ Whyte, JT Du Toit, and WM Getz. 2009. Buffalo herd tracking with VHF and GPS data. <http://www.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. <http://dx.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

- Gavin Cotterill. In progress. Managing disease in the supplemental feeding grounds of Wyoming. Utah State University. Co-supervisor: JT Du Toit
- Ellen Brandell. In progress. Disease impacts on wolves in Yellowstone National Park. Penn State University. Co-supervisor: PJ Hudson
- Angela Brennan. 2014. Broad-scale determinants of elk aggregation and brucellosis seroprevalence. Montana State University. Co-supervisor: S Creel
- Tyler Creech. 2011. Heterogeneity in the fine-scale contact patterns of elk as determined by proximity collars. Montana State University. Co-supervisor: S 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: M Taper, S 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: P 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: E Cameron

Field Supervisor

- Manlove, K. 2017. Penn State University. Supervisor: PJ Hudson
- Almberg, ES. 2015. The Invasion, Dynamics, and Impacts of Infectious Disease in Yellowstone's Wolf Population. Penn State University. Supervisor: PJ 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

- 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.
- Plant-Disease Invasion Seminar (informal graduate seminar). Fall 2006. MSU.
- 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
- 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.

Grants/Awards

- USGS Performance Award (2016-2012,2010-2007)
- USDA grant to Univ of Washington, \$96,000 Livestock-wildlife disease modeling 2016
- USGS Grade Promotion
- MT FWP cooperative agreement \$45,000 Cattle disease risk assessment. 2015
- USGS, PI \$ 133,000 Greater Yellowstone ecosystem disease research.
- NIMBioS Workshop (Co-PI) ~\$60,000 2013
- NSF Dissertation Improvement Grant (Co-PI) \$19,343
- USGS, PI \$ 98,000 Greater Yellowstone ecosystem disease research
- USGS Powell Center Grant, Co-PI (declined) 2012
- USGS, 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.
- USGS Best Paper in Biology 2011
- USGS Grade Promotion
- NSF-NIH Ecology of Infectious Disease Program, co-PI \$1,971,033, 2010
- USGS, PI \$75,000, Park Oriented Biological Support Grant
- USGS, PI \$39,000, Modeling environmental transmission of Chronic Wasting Disease 2009
- USGS, Co-PI \$320,000, Global Climate Change Initiative 2008
- Co-PI \$112,180, Wyoming Livestock-Wildlife Disease Initiative
- Co-PI \$281,000, Wyoming Game and Fish Department: Tracking elk movements.
- USGS, Co-PI \$750,000 with Mary Poss (Penn State): Viral tracking of mule deer and elk. 2007
- NPS, PI \$10,000: Brucellosis in Yellowstone National Park 2006
- USGS, PI \$210,000 for chronic wasting disease research. 2005
- NSF-NIH Ecology of Infectious Disease Grant. \$1.8 million. Initiated, co-authored, and developed the research program with Dr. Wayne Getz. 1999

Invited Presentations

- Glasgow University Ecology Seminar, Glasgow, UK. 2017
- University of California at Berkeley, Wildlife Seminar
- Plenary, 12th Western States and Provinces Deer and Elk Workshop. Sun Valley, ID.
- Center for Infectious Disease Dynamics, Penn State University.
- Utah State University Ecology Seminar. Logan, UT 2016
- Monthly USGS Disease webinar.
- UCLA Ecology Seminar, Los Angeles, CA.
- Patuxent USGS Seminar.
- Georgetown Ecology Seminar, Washington, D.C.
- Ecology Society of America Annual Meeting. Fort Lauderdale, FL

- 50th Anniv. Mammal Research Institute, South Africa
- K-5 science and technology night, Bozeman MT.
- MT Conservation Biology Evening Lecture, Bozeman MT 2015
- The National Academy of Sciences, Washington DC
- Wildlife Society Meeting, Winnipeg, Canada 2014
- Ecology Seminar, University of Sherbrooke, Canada
- Montana Wildlife Society Meeting, Bozeman MT
- NIH Rocky Mountain Lab, Hamilton MT
- 18th Congreso Chileno de Medicina Veterinaria, Santiago, Chile
- Dept. Seminar, Univ. Catolica, Valdivia, Chile
- Public Talk, Emerging wildlife pandemics, Menlo Park, CA
- Steering Committee & Speaker. Foreign Animal Disease, Shepardsstown WV 2013
- Interagency Bison Management Plan Meeting. Chico MT
- European Conservation Biology Meeting, Glasgow UK 2012
- Bighorn Sheep disease ecology. Penn State Univ.
- Wildlife disease management workshop, Penn State Univ. 2011
- Ecology and Evolution of Infectious Disease Meeting, Santa Barbara.
- Invited Participant, RAPPID-NIH Movement and Mosquito-Transmitted Diseases Meeting, Washington D.C.
- Invited Keynote, Berryman Institute Biennial Meeting, Logan UT. 2010
- Invited Participant, RAPPID-NIH Movement and Mosquito-Transmitted Diseases Meeting, Washington D.C.
- Kopriva Lecture [Invited] MSU College of Arts and Science, Bozeman, MT 2009
- Dept. Seminar, Colorado State University, Fort Collins, CO
- EcoHealth Student Chapter, Bozeman, MT
- 10th Biennial Conference of Research on the Colorado Plateau Speaker, ESA, Albuquerque, NM
- Ecology Seminar, Montana State University, Bozeman MT Prior to 2009
- Social networks in humans and wildlife workshop, Penn State Univ.
- International Mammal Conference, Sapporo Japan.
- Conservation Research Center Smithsonian Institute, Speaker, SF Bay Area Conservation Biology Symposium, Berkeley CA.

Service

- Northern Yellowstone Cooperative Wildlife Working Group. ongoing
- Chair, USGS Animal Use and Care Committee for NOROCK.
- Associate Editor, Journal of Wildlife Management 2015-2017
- National Academy of Science Panel Member: Revisiting Brucellosis in the GYE
- Dept. Homeland Security IPT for outbreak response and assessment tools. 2016
- Red Wolf Recovery Implementation Team, USFWS. 2014
- Participant, Wildlife Conservation Society Wildlife Health Program, Internal Strategic Workshop for future research.
- Steering Committee, Group Leader & Speaker. Foreign Animal Disease National Preparedness Workshop. USGS/DHS/USDA/CDC. 2013
- Member Environmental Health Strategic Science Planning Team 2011
- 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.
- Organizer, Greater Yellowstone Brucellosis Research Meeting (2 days), 60 participants, 27 speakers, Bozeman MT 2009
- Participant, Dept. of Interior Avian Influenza Preparedness workshop, Madison WI
- Participant, Yellowstone National Park Science Agenda Workshop, Bozeman MT
- Steering Committee, Yellowstone National Park Wildlife Health Program Meeting. 2007

- 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 (since 2004): Nature, Ecol App, J Anim Ecol, J App Ecol, Proc Roy Soc B, Phil Trans Roy Soc, Biol Letters, Cons Bio, Biol Cons, Anim Cons, Biodiv Cons, Behavior, Envi Cons, 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

Funding Agencies: National Science Foundation, Wildlife Conservation Society, Wellcome Trust, Biotechnology and Biological Sciences Research Council UK, Natural Environment Research Council UK, South African National Research Foundation, Alberta Prion Research Institute, National Institutes of Health

Press and Outreach

- [Naturally Speaking](#) 2017
- [Bozeman Daily Chronicle](#) 2016
- [The 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
- Yellowstone Wolf Citizen Science Webpage: <www.yellowstonewolf.org>

References

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Mr. Brandon Scurlock, Brucellosis-Feedground-Habitat Supervisor, Wyoming Game and Fish Department, Pinedale Office, PO Box 850, Pinedale, WY 82941 Phone: (307) 367-4347ext224 Email: bscurlock@wyo.gov

Dr. Doug W. Smith, Yellowstone Center for Resources, Wolf Project, Yellowstone National Park, WY 82190 Phone: (307) 344-2242 Email: doug_smith@nps.gov