Brett R. Jesmer

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Research Interests

Movement ecology, nutritional and physiological ecology, foraging theory, behavioral ecology, demography, vertebrate conservation and management

Education

2018 **Doctor of Philosophy, Ph.D. in Ecology**
University of Wyoming, Laramie, WY
Dissertation: Physiological, behavioral, and demographic consequences of resource limitation for large herbivores

2006 **Bachelor of Science, B.S. in Environmental and Forest Biology**
State University of New York College of Environmental Science & Forestry. Syracuse, NY

2003 **Associates of Applied Science, A.A.S in Environmental Science**
State University of New York, Delhi. Delhi, NY

Professional Employment and Experience

2018 to present **Postdoctoral Associate**, Yale University
2012 – 2018 **Research & Teaching Assistant**, University of Wyoming
2011 **Research Technician**, New York State Department of Environmental Conservation
2007 – 2010 **Research Associate**, University of California, Davis
2003 – 2006 **Research Associate**, State University of New York Research Foundation

Peer-Reviewed Publications (*****equal contribution first authorship; manuscript number provided for those in review)

Jesmer, B. R., J. A. Merkle, J. R. Goheen, E. O. Aikens, D. E. McWhirter, A. B. Courtemanch, M. A. Hurley, H. M. Miyasaki, K. L. Monteith, J. L. Beck, and M. J. Kauffman. 2018. Is ungulate migration culturally transmitted? Evidence of social learning from translocated animals. *Science*. 361(6406): 1023-1025.

Jachowski, D. S., M. J. Kauffman, B. R. Jesmer, H. Sawyer, J. J. Millspaugh. 2018. Integrating physiological stress into the movement ecology of migratory ungulates: a spatial analysis with mule deer. *Conservation Physiology*. 6(1): coy064-coy54.

Jesmer, B. R., J. R. Goheen, K. L. Monteith, and M. J. Kauffman. 2017. State-dependent behavior alters endocrine-energy relationship: implications for conservation and management. *Ecological Applications*. 27(8): 2303-2312.

*****Billerman, S. M. and B. R. Jesmer, A. G. Watts, P. Schlichting, M.-J. Fortin, C. Funk, P. Hapeman, E. L. Muths, and M. A. Murphy. *In Revision*. Testing theoretical metapopulation conditions with genotypic data: an amphibian case study. *Canadian Journal of Zoology*. CJZ-2018-0275.

Alston, J. M., B. M. Maitland, B. T. Britto, S. Esmaeili, A. T. Ford, B. Hays, B. R. Jesmer, F. J. Molina, and J. R. Goheen. *In Revision*. Reciprocity in restoration ecology: when might large carnivore reintroductions restore ecosystems? *Biological Conservation*. BIOC-2018-1546

DeCesare, N., K. Pilgrim, M. Schwartz, B. Weckworth, A. Walker, E. Bergman, K. Colson, R. Corrigan, R. Harris, M. Hebblewhite, B. Jesmer, J. Newby, J. Smith, R. Tether, T. Thomas. *In Review*. Phylogeography of a range edge subspecies: is there such thing as Shiras moose*? Journal of Mammalogy*. JMAMM-2018-257.

Sikes, R. S., J. A. Bryan, D. Byman, B. J. Danielson, J. Eggleston, M. R. Gannon, W. L. Gannon, D. W. Hale, B. R. Jesmer, D. K. Odell, L. E. Olson, R. D. Stevens, T. A. Thompson, R. M. Timm, S. A. Trewhitt, J. R. Willoughby. 2016. Guidelines of the American Society of Mammalogists for the use of wild mammals in research and education. *Journal of Mammalogy* **97**(3): 663-688

Watts, A. G., P. Schlichting, S. Billerman, B. R. Jesmer, S. Micheletti, M.-J. Fortin, C. Funk, P. Hapeman, E. L. Muths, and M. A. Murphy. 2015. How spatio-temporal habitat connectivity affects amphibian genetic structure. *Frontiers in Genetics* 6:275.

Kelt, D. A., D. H. Van Vuren, M. L. Johnson, J. A. Wilson, R. J. Innes, B. R. Jesmer, K. P. Ingram, J. R. Smith, S. W. Bigelow, and R. D. Burnett. 2013. Small mammals exhibit limited spatiotemporal structure in Sierra Nevada forests. *Journal of Mammalogy* 94:1197-1213.

Jesmer, B. R., D. H. Van Vuren, J. A. Wilson, D. A. Kelt, and M. L. Johnson. 2011. Spatial organization in female golden-mantled ground squirrels. *The American Midland Naturalist* 165:162-168.

Publications in Preparation (intended outlet, expected submission date)

Jesmer B. R., M. J. Kauffman, M. A. Murphy, and J. R. Goheen. *In Prep*. Are heritable foraging traits required for individual specialization? A test of the niche variation hypothesis in a ruminant herbivore. (*American Naturalist*, January 2019)

Jesmer B. R., J. R. Goheen, M. A. Murphy, K.L. Monteith, and M. J. Kauffman. *In Prep*. Climate and weather determine nutritional carrying capacity for a large herbivore: tools for monitoring resource limitation. (*Journal of Wildlife Management*, March 2019)

Jesmer B. R., J. P. Whiteman, K. L. Monteith, S. D. Newsome. *In Prep*. Stable isotopes reveal state-dependent life history strategy in a large mammalian herbivore. (*Journal of Animal Ecology*, July 2019)

Non Peer-Reviewed Publications

Jesmer B. R. 2016. **Invited Book Review.** What should a clever moose eat? Natural history, ecology, and the north woods. John pastor. Island press. The Journal of Wildlife Management.

Jesmer B. R., J. R. Goheen, M. J. Kauffman, K.L. Monteith. Linking Habitat and Climate with Nutrition and Recruitment in Shiras Moose. Wyoming Game and Fish Department, Governors Big Game License Coalition, Colorado Parks and Wildlife. 2012, 2013, 2014, 2015, 2016 Annual Reports.

Jesmer B. R., D. A. Kelt, D. H. Van Vuren, and M. L. Johnson. Small Mammal Distribution, Abundance, and Habitat Relationships. p. 73-131 *In*: U.S. Forest Service Plumas-Lassen Study 2008, 2009, 2010 Annual Reports.

Grants, Fellowships, and Awards

2017	Albert R. and Alma Shadle Fellowship, American Society of Mammalogists ($4,700)
2017	Elmer C. Birney Honorarium, American Society of Mammalogists ($2,000)
2017	Berry Biodiversity Grant, University of Wyoming ($3,000)
2016	Doctoral Dissertation Improvement Grant, National Science Foundation ($18,000)
2016	Menkens Memorial Fellowship, Dept. Zoology and Physiology, University of Wyoming ($12,000)
2015	Al Franzmann and Distinguished Colleagues Award, Alces Society ($2,500)
2015	Auction and Raffle Funds Grant, Colorado Parks and Wildlife ($30,000)
2014	Wyoming Space Grant Consortium Fellowship, National Aeronautics and Space Administration ($20,000)
2012–2014	Wyoming Governors Big Game License Coalition Grant, Wyoming Game and Fish Department ($90,000)
2012, 2013	National Park Service Research Center Small Grant ($10,000)
2012	L. Floyd Clarke Greater Yellowstone Scholarship ($1,000)

Teaching Experience

2018	Teaching assistantship, Comparative and Environmental Physiology, Dept. Zoology and Physiology, University of Wyoming
2017	Physiological and Behavioral Mechanisms for Coping with Resource Limitation. Invited lecture, Conservation Biology, University of Wyoming
2012, 2015	Teaching assistantship, Mammalogy, Dept. Zoology and Physiology, University of Wyoming
2015	Are Large Mammals Simply Small Mammals Writ Large? Mammalogy lecture, University of Wyoming
2015, 2017	Teaching assistantship, General Ecology, Program in Ecology, University of Wyoming

2014	Teaching assistantship, Field Course in Ecology and Conservation of African Savannas, Mpala Research Centre, Laikipia County, Kenya
2013	Of Mice and Moose: Ecological Generalities and Their Conservation Implications. Conservation Biology lecture, University of Wyoming
2011	Shiras Moose Declines in Wyoming. Conservation Biology lecture, University of Wyoming

Student Mentorship (name, position held by student at time of mentorship, current position held by mentee)

2017–present	Saeideh Esmaeili, University of Wyoming, Ph.D., Ph.D. student at University of Wyoming
2015	Brittany Britto, University of Wyoming, B.Sc., M.Sc. student at University of Wyoming
2013-2014	Daniel Greenwood, University of Wyoming, B.Sc., Ph.D. student at University of Wyoming
2013-2014	Patrick Rogers, University of Wyoming, B.Sc., M.Sc. student at University of Wyoming
2012-2013	Clint Atkinson, University of Wyoming, B.Sc., carnivore biologist at Wyoming Game and Fish Dept.

Professional Society Membership

2017 to present	Ecological Society of America
2014 to present	American Society of Mammalogists
2012 to 2018	Wyoming Chapter of The Wildlife Society
2012 to 2017	The Wildlife Society
2012 to 2016	Alces Society

Professional Service

2015–2017	Institutional Animal Care and Use Committee, American Society of Mammalogists
2016	President of Program in Ecology, University of Wyoming
2015	Student Representative to Faculty, Department of Zoology and Physiology, University of Wyoming
2013–2014	Curriculum Committee, Department of Zoology and Physiology, University of Wyoming,

Select Presentations (seven additional presentations given to the Wyoming Chapter of The Wildlife Society)

Jesmer B. R. 2018. Niche variation and optimal foraging in moose (*Alces alces*): a mechanistic evaluation. Invited oral presentation to the American Society of Mammalogists, Manhatten, KS.

Jesmer B. R. 2017. Ungulate Migration is a Cultural Phenomenon. Invited oral presentation to the American Society of Mammalogists, Moscow, ID.

Jesmer B. R. 2017. New Approaches for Monitoring Big Game Productivity: Examples from Wyoming Moose. Oral Presentation to Wyoming Game and Fish Department, U.S. Geological Survey, U.S. Fish and Wildlife Service, U.S. Forest Service. Laramie, WY.

Jesmer B. R., J. R. Goheen, K.L. Monteith, M. J. Kauffman. 2016. Linking Habitat and Climate with Nutrition and Recruitment in Shiras Moose. Oral presentation to The American Society of Mammalogists, Minneapolis, MN.

Jesmer B. R., J. R. Goheen, K.L. Monteith, M. J. Kauffman. 2015. State-Dependent Foraging Alters Endocrine-Energy Relationships in a Large Herbivore. Oral presentation to The American Society of Mammalogists, Jacksonville, FL.

Jesmer B. R., J. R. Goheen, K.L. Monteith, M. J. Kauffman. 2014. Linking Habitat and Climate with Nutrition and Recruitment in Shiras Moose. Poster presentation to The American Society of Mammalogists, Oklahoma City, OK.

Jesmer B. R., J. R. Goheen, K.L. Monteith, M. J. Kauffman. 2013. Linking Habitat and Climate with Nutrition and Recruitment in Shiras Moose. Oral presentation to the Alces Society, Girdwood, AK.

Jesmer B. R, Kelt, D. A., D. H. Van Vuren, M. L. Johnson. 2010. Small Mammal Distribution, Abundance, and Habitat Relationships. Oral Presentation to the U.S. Forest Service, Plumas Lassen Administrative Study, Research Seminar, Annual Meeting, Quincy, CA.

Manuscript Reviews (Date, Journal)

2019	Behavioral Ecology
2015, 2016, 2018	Ecological Applications
2017, 2019	Journal of Mammalogy
2014	Journal of Wildlife Management
2013	Canadian Journal of Zoology
2011	The Prairie Naturalist

Analytical and Software Skills

–Spatial and Movement Analyses (Program R, ArcGIS; resource and step selection functions, biased and unbiased random walks, custom movement simulations, manipulation and analysis of numerous remotely-sensed products)
–Analysis of DNA metabarcoding data (trnL [plants], 16S [bacteria])
–Statistical programming (Program R; linear and non-linear models, AIC model selection, multivariate techniques, Mantel tests, CART, random forests, Monte Carlo simulation)
–Database management (Program R, Access, SQL Server)
–Genotyping (Program R, GIMLET, Reliotype, MSA, Genepop, GeneMarker)

Field and Lab Skills

–Large mammal capture (moose, white-tailed deer, mule deer, elk, bighorn sheep, pronghorn, black bear)
–Flight experience (helicopters; classification counts of moose, elk, mule deer, and bighorn sheep; VHF homing)
–GPS/VHF collar affixation (white-tailed deer, mule deer, elk, moose, bighorn sheep, flying squirrels, spruce grouse)
–VHF collar tracking (homing and triangulation)
–Vegetation surveys (browse surveys [Live-Dead, biomass removal], point-quarter, line-intercept, Daubenmire method)
–Blood drawing & drug administration (IV, IM, sub-cutaneous; large mammals, small mammals, birds)
–Tooth extraction & Tissue biopsy (deer, elk, moose, black bear)
–Molecular techniques (DNA extraction, PCR)
–Small vertebrate capture experience (small mammals, birds, reptiles, amphibians)
–Occupancy surveys (track and scat surveys, camera trapping)

Field Experience

Fall 2011 – Summer 2018
Shiras Moose Physiology, Behavior, and Demography
University of Wyoming, Research Assistant
Designed and implemented a study to: (1) develop behavioral, physiological, and habitat indicators of resource limitation, and (2) assess the roles of climate, habitat, behavior, and physiology in Shiras moose declines across in the intermountain west. Movement analysis, remote-sensing, vegetation monitoring, nutrition monitoring, non-invasive genetic sampling techniques, hormone, diet, and microbiome assessment are being employed to help quantify climatic variability, migratory and foraging behavior, habitat condition, forage quantity and quality, nutritional condition, and pregnancy rates among eight herds across a gradient of population performance.

Winter 2011
River Otter Occupancy Surveys
SUNY Research Foundation, Field Technician
Conducted daily surveys for semi-aquatic freshwater mammals during winter in the St. Lawrence River valley of New York state. Track and scat detections were used along with a suite of land cover metrics to parameterize occupancy models and determine the population status and habitat selection of otter, mink, beaver, and muskrat.

Summer 2007
Small Mammal Habitat Management
Spring 2008 – Fall 2010
University of California Davis, Project Leader & Field Technician
Lead and assisted with a small mammal distribution, abundance, and habitat relationship study in California's Sierra Nevada. Responsible for all managerial, logistical, and field operations needed to successfully collect a variety of data necessary to determine small mammal community responses in demography, distribution, and habitat selection to habitat alterations occurring during experimental forest-fuel-reductions as part of the Plumas-Lassen Administrative Study. Additionally, lead a

landscape scale sampling effort directed towards determining forest wide small mammal distributions and habitat selections.

Winter 2008 **Shiras Moose Survival and Diet Study**
University of Wyoming, Field Technician
Assisted in Shiras moose survival and diet study in Grand Teton National Park and Bridger-Teton National Forest. Snowshoed, skied and used homing techniques to collect fecal samples for diet and progestagen analyses, and to determine over-winter calf survival. Also, quantified browse levels to help determine resource availability.

Winter 2006 **White-tailed Deer Movement, Behavior and Epidemiology**
Winter 2007 **SUNY Research Foundation, Crew Leader & Field Technician**
Assisted in a white-tailed deer movement and behavior study in an agricultural-woodland matrix. Used capture (clover trap, rocket net, capture gun), VHF/GPS collar affixation, chemical immobilization, and vitals monitoring techniques while working as a primary handler to help determine space-use, dispersal, and contact rates in order to develop a model for potential chronic wasting disease epidemics in central New York State.

Summer 2006 **Herpetological Road Ecology**
SUNY Research Foundation, Field Technician
Independently conducted a herpetological road ecology study for the New York State Department of Transportation. Assessed the diversity and abundance of turtles and frogs across a road density gradient from suburban developments to state wildlife preserves. Also conducted mortality surveys and crossing structure (barrier and choice arena) experiments to determine road mortality hot spots and which types of crossing structures are most effective for frogs and turtles.

Summer 2005 **Spruce-grouse Conservation**
Summer 2004 **SUNY Research Foundation, Field Technician**
Assisted in and independently performed spruce grouse population and habitat surveys in New York's Adirondack Park. Employed playback surveys, noose capture, banding, radio-collar affixation, homing and triangulation, blood collection, and vegetation quantification techniques in order to help determine metapopulation dynamics such as, habitat associations, habitat connectivity, space-use, dispersal rates, and survival.