

BRITTANY A. MOSHER

UNIVERSITY OF VERMONT, RUBENSTEIN SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES
WILDLIFE AND FISHERIES BIOLOGY PROGRAM
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PROFESSIONAL APPOINTMENTS

- November 2020 – present.** Affiliate, Gund Institute for Environment, University of Vermont.
- January 2020 – present.** Faculty, Quantitative and Evolutionary STEM Training (QuEST) project, University of Vermont.
- October 2019 – present.** Assistant Professor, Rubenstein School of Environment and Natural Resources, Wildlife and Fisheries Biology Program, University of Vermont, Burlington, VT.

EDUCATION AND TRAINING

- 2017 - 2019.** Postdoctoral Researcher, USGS Amphibian Research and Monitoring Initiative (ARMI) – Patuxent Wildlife Research Center and Pennsylvania State University, Turners Falls, MA.
- 2017.** Postdoctoral Researcher, Conservation Science Partners, Fort Collins, CO.
- 2012 – 2017.** Ph.D., Fish, Wildlife, and Conservation Biology, Colorado State University, Fort Collins, CO.
Dissertation: *Informing the ecology and conservation of amphibians imperiled by chytridiomycosis.*
- 2009 – 2011.** M.S., Fish and Wildlife Management, Montana State University, Bozeman, MT.
Thesis: *Implications of a recent mountain pine beetle outbreak for habitat and populations of birds.*
- 2005 – 2009.** B.S., Magna Cum Laude, Natural Resources, Cornell University, Ithaca, NY.

PUBLICATIONS

Peer-reviewed Publications

2021

17. A.M. Verrilli, N.F. Leibman, A.E. Hohenhaus, and **B.A. Mosher**. Safety and efficacy of a ribose-cysteine supplement to increase erythrocyte glutathione concentration in healthy dogs. 2021. *American Journal of Veterinary Medicine*, 82(8). In press.
16. D. Grear, **B.A. Mosher**, et al., Evaluation of regulatory action and surveillance as preventive risk-mitigation to an emerging global amphibian pathogen *Batrachochytrium salamandrivorans* (Bsal). 2021. *Biological Conservation*.

2020

15. A. D. Wright, R. F. Bernard, **B. A. Mosher**, et al. Moving from decision to action in conservation science. 2020. *Biological Conservation*, 249, 108698. <https://doi.org/10.1016/j.biocon.2020.108698>.
14. H.J. Waddle, D.A. Grear, **B.A. Mosher** et al. *Batrachochytrium salamandrivorans* (Bsal) not detected in an intensive survey of North American amphibians. 2020. *Scientific Reports*. 10, 13012. DOI: <https://doi.org/10.1038/s41598-020-69486-x>.
13. E. Muths, B.R. Hossack, E.H. Campbell Grant, D.S. Pilliod, and **B.A. Mosher**. Effects of snowpack, temperature, and disease on demography in a wild population of amphibians. 2020. *Herpetologica Special Issue*. 17 (2): 132-143. DOI: <https://doi.org/10.1655/0018-0831-76.2.132>.

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12. **B. A. Mosher**, R. F. Bernard, et al. Successful molecular detection studies require clear communication among diverse research partners. 2020. *Frontiers in Ecology and the Environment*. 18(1), 43-51. DOI: <https://doi-org/10.1002/fee.2141>.
- 2019**
11. **B. A. Mosher**, et al. Forest birds exhibit variable changes during a mountain pine beetle epidemic. 2019. *Ecosphere*. 10(12), e02935. DOI: <https://doi-org.ezproxy.uvm.edu/10.1002/ecs2.2935>.
10. R. E. Russell, B. J. Halstead, **B. A. Mosher**, et al. Effects of amphibian chytrid fungus on apparent survival of frogs and toads of the western USA. 2019. *Biological Conservation*. 236: 296-304. DOI: <https://doi.org/10.1016/j.biocon.2019.05.017>.
9. **B. A. Mosher**, A. B. Brand, A. N. M. Wiewel, D. A. W. Miller, M. J. Gray, D. L. Miller and E. H. C. Grant. 2019. Estimating occurrence, prevalence, and detection of amphibian pathogens: insights from occupancy models. *Journal of Wildlife Diseases*. 55(3): 563-575. DOI: [10.7589/2018-02-042](https://doi.org/10.7589/2018-02-042).
- 2018**
8. **B. A. Mosher**, K. P. Huyvaert, and L. L. Bailey. 2018. Beyond the swab: ecosystem sampling to understand the persistence of an amphibian pathogen. *Oecologia*, 188(1): 319-330. DOI: [10.1007/s00442-018-4167-6](https://doi.org/10.1007/s00442-018-4167-6).
7. B. M. Brost, **B. A. Mosher**, and K. A. Davenport. 2018. A model-based solution for observational errors in clinical studies. *Molecular Ecology Resources*, 18:580-589. DOI: 10.1111/1755-0998.12765.
6. B. D. Gerber, S. J. Converse, H. J. Crockett, **B. A. Mosher**, E. Muths, and L. L. Bailey. 2018. Identifying species conservation strategies to reduce disease-associated declines. *Conservation Letters*, 11(2): 1-10. DOI: [10.1111/conl.12393](https://doi.org/10.1111/conl.12393).
5. **B. A. Mosher**, L. L. Bailey, and K. P. Huyvaert. 2018. Host-pathogen metapopulation dynamics suggest high elevation refugia for boreal toads. *Ecological Applications*, 28(4): 928-937. DOI: [10.1002/eap.1699](https://doi.org/10.1002/eap.1699).
4. **B. A. Mosher**, L. L. Bailey, B. A. Hubbard, and K. P. Huyvaert. 2018. Making inference using complex occupancy models with an unobservable state. *Ecography*, 41(1): 32-39. DOI: [10.1111/ecog.02849](https://doi.org/10.1111/ecog.02849).
3. K. A. Davenport, **B. A. Mosher**, B. M. Brost, D. Henderson, N. Denkers, A. Nalls, E. McNulty, C. Mathiason, and E. Hoover. 2018. Distinguishing the shedding and detection of chronic wasting disease prions in deer saliva using occupancy modeling. *Journal of Clinical Microbiology*, 56(1): e01243-17. DOI: [10.1128/JCM.01243-17](https://doi.org/10.1128/JCM.01243-17).
- 2017**
2. **B. A. Mosher**, K. P. Huyvaert, T. Chestnut, J. L. Kerby, J. D. Madison, and L. L. Bailey. 2017. Design- and model-based strategies for detecting and quantifying an amphibian pathogen in environmental samples. *Ecology and Evolution*, 7(24): 10952–10962. DOI: [10.1002/ece3.3616](https://doi.org/10.1002/ece3.3616).
1. S. J. Converse, L. L. Bailey, **B. A. Mosher**, W. C. Funk, B. D. Gerber, and E. Muths. 2017. A model to inform management actions as a response to chytridiomycosis-associated decline. *EcoHealth*, 14(S1): 144–155. DOI: [10.1007/s10393-016-1117-9](https://doi.org/10.1007/s10393-016-1117-9).

Book Chapters

1. B. Gerber, **B. A. Mosher**, D. Martin, T. Chambert, and L. L. Bailey. (2017). Occupancy models. In *A Gentle Introduction to Program MARK* (Chapter 21). Available from phidot.org/software/mark/docs/book.

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Popular Press

1. **B. A. Mosher**, B. Gerber, and L. L. Bailey. (2017). "Saving amphibians from a deadly fungus means acting before we know all the answers". The Conversation. Available at: <https://theconversation.com/saving-amphibians-from-a-deadly-fungus-means-acting-without-knowing-all-the-answers-81739>.

GRANTS, AWARDS, AND FELLOWSHIPS (*total awarded while at UVM = \$338,919*)

- 2021 – 2023.** "Improving management and surveillance decisions related to white nose syndrome by accounting for imperfect detection and misclassification error". US Geological Survey. Co-PI. Awarded. \$168,000. (\$18,810 to UVM)
- 2020 - 2023.** "Influence of winter ticks on moose demography, habitat selection, and genetic structure in the Northeast U.S." US Geological Survey. Co-PI. Awarded. \$250,000.
- 2020 - 2022.** "Managing forests for resilient vernal pool amphibian populations". US Geological Survey Cooperative Ecosystem Studies Unit Award. Awarded. PI. \$85,919.
- 2019.** "The role of temperature in mediating amphibian disease dynamics". UVM Office of the Vice President for Research EXPRESS. PI. Awarded. \$3,000.
- 2019-2021.** "Re-visiting Bsal risk: how 3 years of pathogen surveillance, research, and regulatory action change invasion risk of the exotic amphibian pathogen *Batrochochytrium salamandrivorans*." US Geological Survey Emerging Diseases Cyclical. Co-PI. Awarded. \$52,588.
- 2017.** School of Global and Environmental Sustainability, Sustainability Leadership Fellow, Colorado State University

SELECT PRESENTATIONS (**invited presenter*)

TGIR pres

BES presentation

- ***Mosher, B.A.** Knowledge co-production yields conservation successes in amphibian disease management. Vermont Agency of Natural Resources Seminar. Remote (November 2020).
- ***Mosher, B.A.** A tale of toads: host-pathogen insights inform amphibian disease management. Vermont Center for Ecostudies. Northfield, VT (January 2020).
- *Grant, E.H., A.D. Wright, R.F. Bernard and **B.A. Mosher**. Multiple kinds of success in amphibian conservation. Amphibian Conservation in the Anthropocene – Challenges, Priorities & Solutions for the Human Epoch. Otago, New Zealand (January 2020).
- ***Mosher, B.A.** Accounting for uncertainty: pathogen detection and management of amphibian disease. Amphibian Conservation in the Anthropocene – Challenges, Priorities & Solutions for the Human Epoch. World Congress of Herpetology. Otago, New Zealand (January 2020).
- *Ferguson, P. and **B.A. Mosher**. An introduction to the false positive detection problem and model-based approaches to deal with it. Organized session on model-based approaches for addressing false positive detection errors in Fish and Wildlife Studies. American Fisheries Society and The Wildlife Society Joint Conference. October, 2019.
- *Muths, E. and **B.A. Mosher**. Effects of disease, temperature, and community on demography in a wild population of temperate amphibians (and why the details still matter). Amphibian population declines: 30 years of progress in confronting a complex problem. Montreal, Canada (October 2019).

Commented [BAM1]: Need to update calculated value to UVM

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***Mosher, B.A.** Who's who and what's where: understanding the distributions of imperfectly detected species and communities. Pennsylvania State University Ecology Seminar Series. University Park, PA (October 2018).

Mosher, B.A., R.F. Bernard, J.M. Lorch, D.A.W. Miller, K.L.D. Richgels, C.L. White, E.H.C. Grant. Broadening the conversation: harnessing the full utility of molecular detection methods in disease ecology. The Wildlife Society annual meeting. Cleveland, OH (October 2018).

Mosher, B. A., D. A. W. Miller, A. Wright, and E. H. Campbell Grant. I've made a huge (misidentification) mistake: accounting for detection errors in complex communities. Ecological Society of America annual meeting. New Orleans, LA (August 2018).

Mosher, B. A., D. A. W. Miller, A. Wright, and E. H. Campbell Grant. Pairwise misidentification in community occupancy models. International Statistical Ecology Conference meeting. St. Andrews, Scotland (July 2018).

***Mosher, B. A.** Using an arsenal of tactics to understand amphibian disease dynamics. Oral presentation at the USGS SO Conte Anadromous Fish Research Lab. Turners Falls, MA (November 2017).

***Mosher, B. A.**, L. L. Bailey, E. Muths, and K. P. Huyvaert. Identifying drivers of local extinction in an amphibian-pathogen system using multi-state occupancy models. Oral presentation at an organized symposium at The Wildlife Society annual meeting. Albuquerque, NM (September 2017).

Davenport, K. A., **B. A. Mosher**, and B. M. Brost. Non-random CWD prion shedding in the saliva of white-tailed deer. Oral presentation at the Front Range Student Ecology Symposium. Fort Collins, CO (February 2017).

Mosher, B. A., L. L. Bailey, E. Muths, and K. P. Huyvaert. Identifying drivers of local extinction in an amphibian-pathogen system. Oral presentation at the joint Utah and Colorado/Wyoming chapters of the American Fisheries Society meeting. Grand Junction, CO (February 2017).

Gerber, B., L.L. Bailey, H. Crockett, **B.A. Mosher**, and E. Muths. Conservation decision-making via spatially-explicit metapopulation dynamics of an amphibian-pathogen system. Oral presentation at The Wildlife Society annual meeting. Raleigh, NC (October 2016).

***Mosher B.A.**, K.P. Huyvaert, and L.L. Bailey. Hosts, pathogens, and species occurrence: using occupancy models to make inference in disease systems. Oral presentation at an organized symposium at The Ecological Society of America annual meeting. Baltimore, MD (August 2015).

***Mosher B.A.**, W.E. Lanier, K.P. Huyvaert, and L.L. Bailey. A tale of toads in Rocky Mountain National Park. Science Behind the Scenery Seminar Series. Rocky Mountain National Park, Estes Park, Colorado (July 2015).

Converse S.J., L.L. Bailey, **B.A. Mosher**, E. Muths, and W.C. Funk. Decision analysis and expert judgement: implications for disease risk analysis in reintroductions. Oral presentation at Zoological Society of London Symposium. London, England (May 2015).

Mosher B.A., K.P. Huyvaert, and L.L. Bailey. Evaluating factors that influence amphibian chytrid fungus detection via filtration. Oral presentation at The American Fisheries Society CO/WY Chapter annual meeting. Fort Collins, CO (February 2015).

Mosher B.A., K.P. Huyvaert, and L.L. Bailey. Confounding of pathogen detection and host presence induces bias in occupancy estimation. Oral presentation at The Wildlife Society national annual conference. Pittsburgh, PA (October 2014)

Mosher B.A., K.P. Huyvaert, and L.L. Bailey. *Bd* and chytridiomycosis in the boreal toads of Rocky Mountain National Park. Invited oral presentation at National Park Service/Colorado State University Wildlife Disease Short

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Course. Fort Collins, CO (March 2014)

Mosher B.A., K.P. Huyvaert, and L.L. Bailey. Factors influencing boreal toad (*Anaxyrus boreas boreas*) and *Batrachochytrium dendrobatidis* disease dynamics in Colorado. Oral presentation at Boreal Toad Recovery Team Meeting. Fort Collins, CO (February 2013).

MENTORING

Current graduate students

Lindsey Pekurny (MS student)

Matthew Gorton (MS student)

Service on graduate committees

Natalia Aristizabal (PhD student, Gund/RSENR)

Raymond Looney (AMP student, Biology)

Meredith Naughton (Field Naturalist MS student)

Undergraduate advising

~30 undergraduate advisees per year

Undergraduate honors research

Rhiannon Henderson (CALS; co-advisor; thesis completed)

Sophie Heny (RSENR; in progress)

TEACHING AT THE UNIVERSITY OF VERMONT

The following courses have been taught as an Assistant Professor in the Rubenstein School of Environment and Natural Resources at the University of Vermont.

NR 103: Ecology, Ecosystems, and Environment (50% co-instructor) – 3 credits, 162 students, Fall 2020.

WFB 224: Conservation Biology (50% co-instructor) – 4 credits, 92 students, Spring 2020.

WFB 141: Field Herpetology – 4 credits, 27 students, Spring 2020.

WFB 174: Principles of Wildlife Management – 3 credits, 76 students, Fall 2019.

In addition, I have provided guest lectures in the following courses:

WFB 095: Introduction to WFB and Forestry – 2020

ASCI 191: Wildlife Health and Conservation – 2020

ADDITIONAL TEACHING EXPERIENCE

2018 and 2019. Co-instructor. Estimating Animal Abundance and Occupancy Workshop (4 days). Smithsonian Mason School of Conservation Biology. (Front Royal, VA) [2019 workshop cancelled due to COVID]

2017. Instructor, FW471: Wildlife Data Collection & Analysis. Colorado State University (Todos Santos, MX)

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- 2016.** Teaching Assistant, 5 courses, Fish, Wildlife, and Conservation Education Abroad Program. Colorado State University (Todos Santos, MX)
- 2017, 2015, & 2014.** Introductory and Advanced Program MARK Workshop Assistant. Various locations.
- 2012.** Adjunct Instructor, Culinary Mathematics. Culinary Institute of America

DIVERSITY TRAINING

- 2018.** Ensuring Diversity in Peer Review (webinar). Elsevier Researcher Academy.
- 2018.** Using Communication to Promote Diversity, Inclusion and Equity. Ecological Society of America.
- 2017.** Unconscious Bias in STEM: Who, Me? (1 hour workshop). The Institute for Learning and Teaching. Colorado State University.
- 2015.** ECOL592: Gender and Ethnicity in Science (2-credit class). Colorado State University.

PROFESSIONAL TRAINING

- 2020. National Center for Faculty Diversity and Development Faculty Success Program.**
A 12-week, online program that was designed to teach tenure-track and tenured faculty the skills they need to increase both their research and writing productivity while maintaining a healthy work-life balance
- 2016 – 2017. Sustainability Leadership Fellow, Colorado State University, Fort Collins, CO.**
One of 20 early career scientists selected to complete a year-long program in being an effective communicator of science to a variety of audiences including the public and the media.

PROFESSIONAL ACTIVITIES

- 2019 – 2021.** Associate Editor Mentee, *Journal of Applied Ecology*.
- 2017 – 2018 and 2018 - 2019.** Board Member, Biometrics Working Group. The Wildlife Society.
- 2021 – 2023.** Secretary, Biometrics Working Group. The Wildlife Society.
- Reviewer for: *Animal Conservation, Biological Conservation, Diseases of Aquatic Organisms, Ecological Applications, Ecology and Evolution, Forest Ecology and Management, Herpetological Conservation and Biology, Journal of Applied Ecology, Journal of Avian Biology, Journal of Herpetology, Journal of Mammalogy, Oecologia, Scientific Reports, The Condor, US Geological Survey FSP, Viruses*. (Reviews since 2017 verified at <https://publons.com/author/1241398/brittany-a-mosher#profile>.)
- Professional Societies: The Wildlife Society (Working Groups: Ethnic and Gender Diversity, Biometrics, Wildlife Diseases), The British Ecological Society, The Ecological Society of America (Sections: Inclusive Ecology, Statistical Ecology, Disease Ecology), American Ornithological Society, Partners in Amphibian and Reptile Conservation.

PROFESSIONAL SERVICE AND WORKING GROUPS

- 2020.** Forest Ecosystems Monitoring Cooperative 2020 Conference Steering Committee.
- 2019 – present.** BSaI Task Force Decision Science Working Group (Member)

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- 2019 – present.** BSaI Task Force Response and Monitoring Working Group (Member)
- 2019 – present.** Student Network for Amphibian Pathogen Surveillance (Member)
- 2019 – present.** Graduate Standards Committee, RSENR, University of Vermont (Member)
- 2019 – present.** Vermont Reptile and Amphibian Advisory Group (Member)
- 2020 – present.** Society for Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS; Faculty Mentor)

COMMUNITY SERVICE AND OUTREACH

- 2020.** Spiny softshell turtle nest monitoring volunteer.
- 2017 – present.** Ascienzo Family Foundation (Board Member)
- 2017 – present.** Letters to a Pre-Scientist (Volunteer Scientist Pen Pal)
- 2016 – 2017.** Expand Your Horizons Northern Colorado and Wyoming (Steering Committee Member)