

Justine Atkins Becker

Assistant Professor
Department of Ecology
Montana State University
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EDUCATION

- 2020 PhD, Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ
Thesis: Individual variation in ungulate movement behavior: an examination of the ecological causes and consequences. Advisor: Dr. Corina E. Tarnita
- 2017 MA, Department of Ecology & Evolutionary Biology, Princeton University.
- 2014 BSc (Hons) with First Class Honors in Biological Sciences, University of Auckland, Auckland, NZ
Thesis: Intrinsic influences on dispersal success in fragmented landscapes: a spatially explicit individual-based simulation. Advisors: Dr. Todd E. Dennis & Dr. George W. Perry
- 2013 BA/BSc conjoint degree, University of Auckland, majoring in History and Biological Sciences

PROFESSIONAL APPOINTMENTS

- 2020 – 2022 Postdoctoral Research Associate, Department of Zoology and Physiology, University of Wyoming

PEER-REVIEWED PUBLICATIONS[†]

[†]Publications prior to July 2020 are published under Justine L. Atkins

Palmer, M.S., Gaynor, K.G., **Becker, J.A.**, Abraham, J.O., Mumma, M.A., Pringle, R.M. 2022. Spatiotemporal landscapes of fear: understanding dynamic risk. *Trends in Ecology & Evolution*. doi: [10.1016/j.tree.2022.06.007](https://doi.org/10.1016/j.tree.2022.06.007).

Daskin, J.H.*, **Becker, J.A.***, Kartzinel, T.R., Potter, A.B., Lonneker, M., Eriksson, F.A., Buoncore, C., Gertraer, A., Long, R.A., Pringle, R.M. 2022. Allometry of behavior promotes niche differentiation among congeneric African antelopes. *Ecological Monographs*. doi: [10.1002/ecm.1549](https://doi.org/10.1002/ecm.1549).

*authors contributed equally

Gelzer, E.R., Laforge, M.P., **Becker, J.A.**, Hough, N.P., Sandoval Lambert, M., Poulin, M-P., Thomas-Kuzilik, R., Verzuh, T.L., Krausman, P.R., Merkle J.A. 2022. Factors influencing early citations of peer-reviewed publications. *Journal of Wildlife Management*. doi: [10.1002/jwmg.22214](https://doi.org/10.1002/jwmg.22214).

Becker, J.A.*, Hutchinson, M.C.*, Potter, A.B., Park, S., Guyton, J.A., Abernathy, K., Americo, V., da Conceição, A.G., Kartzinel, T.R., Kuziel, L., Leonard, N.E., Lorenzi, E., Martins, N.C., Pansu, J., Scott, W.L., Stahl, M.K., Torrens, K.R., Stalmans, M.E., Long, R.A., Pringle, R.M. 2021. Ecological and behavioral mechanisms of density-dependent habitat expansion in a recovering African ungulate population. *Ecological Monographs*. doi: [10.1002/ecm.1476](https://doi.org/10.1002/ecm.1476)

*authors contributed equally

Smith, J.A.* , Suraci, J.P. * , Hunter, J.S., Gaynor, K.M.** , Keller, C.** , Palmer, M.S. ** , **Atkins, J.L.**, Castañeda, I., Cherry, M.J., Garvey, P.M., Huebner, S., Morin, D.J., Teckentrup, L., Weterings, M.J.A., and Beaudrot, L. 2020. Zooming in on mechanistic predator-prey ecology: integrating camera traps with experimental methods to reveal the drivers of ecological interactions. *Journal of Animal Ecology*. doi: [10.1111/1365-2656.13264](https://doi.org/10.1111/1365-2656.13264)

*authors contributed equally; **authors contributed equally.

Atkins, J.L., Long, R.A., Pansu, J., Daskin, J.H., Potter, A.P., Stalmans, M.E., Tarnita, C.E., Pringle, R.M. 2019. Cascading impacts of large-carnivore extirpation in an African ecosystem. *Science*. [doi:10.1126/science.aau3561](https://doi.org/10.1126/science.aau3561)

Atkins, J.L., Perry, G.W., Dennis, T.E. 2019. Effects of mismatches between dispersal traits and landscape structure on dispersal success in fragmented landscapes. *Royal Society Open Science*. [doi:10.1098/rsos.181702](https://doi.org/10.1098/rsos.181702)

Pansu, J., Guyton, J.A., Potter, A.B., **Atkins, J.L.**, Daskin, J.H., Wursten, B., Kartzinell, T., Pringle, R.M. 2018. Trophic ecology of large herbivores in a reassembling African ecosystem. *Journal of Ecology*. [doi:10.1111/1365-2745.13113](https://doi.org/10.1111/1365-2745.13113)

PUBLICATIONS SUBMITTED OR IN PREPARATION (full manuscripts available upon request)

Walker, R.H., Hutchinson, M.C., **Becker, J.A.**, Pringle, R.M., Long, R.A. Individual dietary niche emerges from landscape heterogeneity and state-dependent foraging in a tropical herbivore. *In revision at Ecology*.

Becker, J.A., Beck, J.L., Hall, L.E., Henning, J., Kauffman, M.J., Sawyer, H., Merkle, J.A. Spatiotemporal variation in habitat partially shapes diverse movement strategies in a large ungulate. *In preparation for submission*.

Walker, R.H., Hutchinson, M.C., **Becker, J.A.**, Daskin, J.H., Gaynor, K.M., Palmer, M.S., Gonçalves, D.D., Stalmans, M.E., Denlinger, J., Bouley, P., Angela, M., Paulo, A., Arumooogum, N., Potter, A.B., Pringle, R.M., and Long, R.A. Trait-based sensitivity of large mammals to a catastrophic tropical cyclone. *In preparation for submission*.

Becker, J.A., Walker, R.H., Becker, A.D., Monteith, K.L., Pringle, R.M., Tarnita, C.E., Long, R.A. The interactive effects of energetic state and body size on foraging movements in two congeneric African antelopes. *In preparation for submission*.

Thomas-Kuzilik, R., **Becker, J.A.**, Beck, J.L., Courtemanch, A., Fralick, G.L., Geremia, C., Hall, L.E., Kauffman, M.J., Lowrey, B., Miyasaki, H.M., Ortega, A.C., Sawyer, H., Smith, D.W., Stahler, D.R., Merkle, J.A. Behavioral plasticity of large mammals in the Rocky Mountains to increasing temperature. *In preparation for submission*.

Gelzer, E.R., **Becker, J.A.**, Sawyer, H., Dwinnell S.P.H., Fralick, G.L., Kaiser, R.C., Kauffman, M.J., LaSharr, T.N., Monteith, K.L., Ortega, A.C., Randall, J.E., Thonhoff, M.A., and Merkle, J.A. How site fidelity and habitat consistency influence population distribution consistency. *In preparation for submission*.

BOOK CHAPTERS

Lee, F., Zhang, J., Simpkins, C.E., **Becker, J.A.**, Perry, G.L.W. Chapter 5: Spatially structured ecosystems, connectivity, and movement. In Francis, R.A., Millington, J.D.A., Perry, G.L.W., Minor, E.S. (Eds.), *Routledge Handbook of Landscape Ecology* (1st ed.). Routledge. 2021. <https://www.routledge.com/The-Routledge-Handbook-of-Landscape-Ecology/Francis-Millington-Perry-Minor/p/book/9780367024567>

FUNDING AND AWARDS

Research funding

- | | |
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| 2022 | Wyoming Governor's Big Game License Coalition (\$15,000) – co-PI with Dr. Jerod Merkle |
| 2017 | Young Explorers Grant, National Geographic (\$5,000) |
| 2017 | Student Research Grant, Animal Behavior Society (\$1,500) |

2016 Women in Conservation Science Award in the Department of Ecology and Evolutionary Biology, Princeton University (\$4,500)

Fellowships & scholarships

2018 The Petrie Fellowship, Princeton University

2015 May Fellowship in the Department of Ecology and Evolutionary Biology, Princeton University

2015 First Year Fellowship in Science and Engineering, Princeton University Graduate School and Department of Ecology and Evolutionary Biology

2013 University of Auckland Masters/Honours/PGDip Scholarship, University of Auckland

2013 Senior Scholar Award in the Faculty of Science, University of Auckland

2009 The University of Auckland Scholarship, University of Auckland

PRESENTATIONS

Conference talks

2022 Spatiotemporal variation in habitat explains movement strategies of pronghorn
Wyoming Chapter of the Wildlife Society Annual Meeting

2021 State-dependent decision-making and individual variation in large-herbivore space use
The Wildlife Society's Annual Conference, held virtually

2021 Ecological and behavioral mechanisms of density-dependent habitat expansion in a recovering African ungulate population.
Annual Meeting of the American Society of Mammalogists, held virtually

2019 Camera traps as a tool for the experimental study of predator-prey interactions
A case study from a recovering African savanna ecosystem.
International Symposium of Integrative Zoology, Auckland, NZ (invited)

2018 Cascading impacts of large-carnivore extirpation in an African ecosystem
Annual Meeting of the Ecological Society of America, New Orleans, LA

2018 Cascading impacts of large-carnivore extirpation in an African ecosystem
Annual Meeting of Princeton, Penn, Columbia, Rutgers and Yale EEB Graduate Students, New Brunswick, NJ

Poster presentations

2019 Allometric and state-dependent drivers of ungulate space use
Gordon Research Conference on the Movement Ecology of Animals, Barga, Italy

2019 Allometric and state-dependent drivers of ungulate space use
Gordon Research Seminar on the Movement Ecology of Animals, Barga, Italy

2018 Cascading impacts of large-carnivore extirpation in an African ecosystem
Gordon Research Conference on Predator Prey Interactions, Ventura, CA

2016 Modeling the drivers of large herbivore movement in a spatially patterned landscape
Student Conference on Conservation Science, New York, NY

TEACHING

2021 (fall) Co-instructor of record, University of Wyoming, Laramie, WY

- ZOO 5530 R Intro for Wildlife Ecology, 1.0-4.0 credit hours, 24 students enrolled

- 2021 (spring) Co-instructor of record, University of Wyoming, Laramie, WY
- ZOO 5890-04 Animal Movement and Habitat Selection Modeling, 4.0 credit hours, 15 students enrolled
- 2017 – 2019 Co-instructor and pod leader for accredited college courses, Prison Teaching Initiative, Princeton University, Princeton, NJ
Designed and taught lectures and laboratories, administered assessments.
- BIO 113 Biological Concepts at Federal Correctional Institution, Fort Dix, NJ
 - BIO 111 Introductory Biology at Garden State Youth Correctional Facility, NJ
- 2015 – 2018 Teaching Assistant, Princeton University, Princeton, NJ
Taught discussion and laboratory classes.
- EEB 380 Ecology and Conservation of African Landscapes
 - EEB 321 Ecology: Species interactions, biodiversity, and society
 - EEB 346 Biology of Coral Reefs
 - EEB 211 Life on Earth: Chaos and Clockwork of Biological Design
- 2013 – 2014 Teaching Assistant, University of Auckland, Auckland, NZ
Taught laboratory classes.
- BIOSCI 107 Biology for Biomedical Science
 - BIOSCI 104 New Zealand Ecology and Conservation

MENTORSHIP

- 2020 – present MSc student mentorship, University of Wyoming, Laramie, WY
Supervising study design, data analysis, and writing of thesis and manuscripts.
- Emily Gelzer, MSc thesis, 2022
 - Rebecca Thomas-Kuzilik, MSc thesis, 2021
- 2017 – present Undergraduate instruction and mentorship, Princeton University, Princeton, NJ
Supervised study design, data collection and analysis, and writing of thesis and manuscripts.
- Stephanie Neatby, senior thesis, 2020 (co-advisor)
 - Vienna Lunking, senior thesis, 2020 (co-advisor)
 - Daniel Petticord III, senior thesis, 2020 (co-advisor)
 - Gabrielle Gibbons, senior thesis, 2018 (primary advisor)
- 2017 Undergraduate intern supervisor for the Princeton Environmental Institute, Princeton University, Princeton, NJ
Supervised training in field data collection techniques.
- Megan Demmel, undergraduate fieldwork intern, 2017 (primary supervisor)

SCIENCE COMMUNICATION

Documentaries

Featured in “Nature’s Fear Factor”, a NOVA documentary screened nationwide on PBS and [available to stream](#) (within the USA). 14 October 2020.

Popular articles & blogs

Atkins, J. Conservation Crossroads in Ecuador: Tiputini Biodiversity Station and the Yasuní oil fields. *Highwire Earth*. 27 April 2016. <https://highwire.princeton.edu/2016/04/27/conservation-crossroads-tiputini-biodiversity-station-and-the-yasuni-oil-fields/>

Radio stories

Featured interview on **BBC Science in Action**, BBC World Service, 7 March 2019.

Featured interview on **These Vibes Are Too Cosmic**, WPRB, Princeton, 10 May 2016.

https://tvr2c.com/2016/05/11/ecology_justineatkins/

SCIENCE OUTREACH AND SERVICE

- 2022 Panellist, Building Inclusive Professional Spaces in the Wildlife Field, The Wyoming Chapter of the Wildlife Society Annual Conference
- 2021 – present Mentor for the Científico Latino Graduate Student Mentorship Initiative
- 2020 – present Member of the JEDI (Justice, Equity, Diversity, and Inclusion) Reading Group and departmental climate survey committee, Department of Zoology and Physiology, University of Wyoming, Laramie, WY
- 2016 – 2020 Member and Treasurer, Women in STEM Leadership Council, Princeton University, Princeton, NJ
- 2015 – 2020 Group leader, Ecology and Evolutionary Biology Women in Science Partnership (EEB WiSP), Princeton University, Princeton, NJ
- 2017 – 2019 Graduate student representative, Department of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ
- 2017 Judge, Hopewell Elementary School Science Fair, Hopewell, NJ
- 2016 Instructor & mentor, OpenLabs – Princeton branch, a science outreach organization for education and mentoring of underprivileged & underrepresented students interested in pursuing scientific careers, Princeton, NJ

PROFESSIONAL SERVICE AND TRAINING

Memberships: Animal Behavior Society, The Wildlife Society, The American Society of Mammalogists

Ad hoc reviewer: Animals, Animal Behavior, Ecological Applications, Ecology, eLife, FACETS, Frontiers in Ecology and Evolution, Mammal Research, Oikos, PLOS One, The American Naturalist (11 total)

Courses: Participant, AniMove: Animal Movement Analysis for Conservation, 2016. Max Planck Institute for Ornithology, Germany

TECHNICAL AND FIELD SKILLS

Software: R, ArcGIS, QGIS, Mathematica, NetLogo, Behavioral Observation Research Interactive Software (BORIS), MATLAB (beginner)

Data management: extensive experience with management, manipulation, and analysis of large spatial and animal movement datasets (GPS tags and remote sensing) in coding and GIS software; experience managing large datasets of remote imagery (camera traps)

Data collection: Animal handling (under chemical immobilization), data collection and GPS collar deployment, camera trap deployment and maintenance, focal individual and group behavioural surveys, taxon identification and systematic survey of flora and fauna

Computational analysis: parallel computing, Monte Carlo simulations, individual-based movement simulations, matrix population models, numerical analysis