Erica Christensen
Postdoctoral Researcher
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RESEARCH INTERESTS

Quantitative ecology; community ecology; population modeling; dryland ecology; ecosystem response to extreme weather/climate events; community and population dynamics over long (multi-decadal) time spans

RESEARCH POSITIONS & EDUCATION

Postdoctoral Researcher 2025-present
New Mexico State University/Department of Fish, Wildlife & Conservation Ecology
Las Cruces, NM
Advisers: Dr. Fitsum Gebreselassie and Dr. Martha Desmond

Biologist 2024-2025
U.S. Geological Survey, Fort Collins Science Center
Fort Collins, CO

Postdoctoral Researcher 2022-2024
New Mexico State University/Department of Fish, Wildlife & Conservation Ecology
Las Cruces, NM
Adviser: Dr. Abby Lawson

Research Ecologist 2020-2022
USDA-ARS-Jornada Experimental Range
Las Cruces, NM

Postdoctoral Researcher 2018-2020
New Mexico State University/Jornada Experimental Range
Las Cruces, NM

PhD, Wildlife Ecology and Conservation 2012-2018
University of Florida, Gainesville, Florida
Adviser: Dr. Morgan Ernest

MS, Environmental Science 2009-2011
Drexel University, Philadelphia, Pennsylvania

BA, Pure Mathematics 2004-2007
Oberlin College, Oberlin, Ohio

RESEARCH EXPERIENCE

Biologist (GS-0401-11): USGS Fort Collins Science Center, Fort Collins, CO *2024-2025*

- Completed models fitting trends in land cover components (annual herbaceous, perennial herbaceous, and bare ground) following different restoration treatments, using a large database of land treatments (Land Treatment Digital Library).
- Led effort to evaluate relationships between environmental properties and chronic wasting disease transmission risk in a population of mule deer in Wyoming.

Postdoctoral Researcher: New Mexico State University, Las Cruces NM, *2022-2024*

- Conducted population viability analysis of Alligator Snapping Turtle across its geographic range in the US.
- Incorporated new and additional data into the species status assessment of the Alligator Snapping Turtle for presentation to decision makers.
- Conducted elicitation of expert information to expand population projection models of the Alligator Snapping Turtle to previously un-modeled geographic areas.
- Constructed hierarchical models to infer abundance and detection probability from animal trapping data.

Research Ecologist (RA) (GS-0408-12): USDA-ARS-Jornada Experimental Range, Las Cruces NM, *2020-2022*

- Assisted in development and application of analytical techniques and tools to support development and quantification of state and transition models for rangelands.
- Collaborated with private, state, and federal land managers in projects related to state and transition models for rangelands.
- Contributed to the development of procedures for improving ecological site descriptions.

Postdoctoral Researcher: Jornada Experimental Range, New Mexico State University, NM, *2018-2020*

- Led initiative to clean, compile, and publish a long-term plant quadrat data set (data spanning 1915-2016; Christensen et al. 2021).
- Investigated dynamics of perennial grasses on permanent quadrats, and how recent dynamics relate to historical dynamics, soil properties, and local weather events.

Research Assistant: The Portal Project: University of Florida field site, near Portal, AZ, *2012-2018*

- Managed data collection in long-term study of desert rodent communities, setting ~1200 live traps divided over two nights every month.
- Processed captured rodents in the field by PIT tagging, weighing, and identifying sex and species
- Performed plant surveys twice a year, including identifying and counting desert grass and forb species within quadrats and running transects for shrub cover estimation.
- Managed and trained volunteers to assist with monthly rodent surveys.
- Managed a 40-year dataset of rodent species data (maintained on GitHub, https://github.com/weecology/PortalData), including writing R scripts for data cleaning and error checking.

Data and Computational Manager: Lone Cabbage Reef Oyster Restoration Project, University of Florida, *1/2018-7/2018*

- Managed a dataset of oyster count data collected for the Lone Cabbage Reef Restoration Project near Cedar Key, FL.
- Trained other researchers in best practices of data management and use of GitHub for version control.

Research Assistant: The Leatherback Trust/Earthwatch Institute, Playa Grande, Costa Rica, *9/2011-3/2012*

- Monitored nesting leatherback, olive ridley, and black sea turtles using nightly foot patrols along a 3.6 km beach.
- Measured nest temperature during incubation using thermocouples, and marked adult females using PIT tags or Monel flipper tags.
- Trained Earthwatch volunteers to collect data such as carapace measurements and egg counts.
- Collaborated with Spanish-speaking public on a daily basis, including National Park guards and local tour guides.

Volunteer Coordinator/Research Assistant: Drexel University/Earthwatch Institute, Barnegat, NJ, *Summer 2011 & 2012*

- Acted as field liaison between Drexel staff and groups of 8 Earthwatch volunteers during 9-day expeditions.
- Organized local excursions for volunteers as part of the Earthwatch expeditions, such as canoeing in the Pine Barrens, and visiting Albert Music Hall and Jenkinson's Aquarium.
- Trapped diamondback terrapins daily in Barnegat Bay (in particular Forsythe National Wildlife Refuge) in the 6th and 7th years of a planned 20-year population study.
- Processed captured terrapins in the field lab by PIT tagging, taking blood samples, x-raying gravid females, and measuring carapace dimensions.

Junior Scientist: Navmar Applied Sciences Corp. (formerly Advanced Avionics Inc.),Warminster, PA, 5*/2008-6/2011*

- Simulated free-drifting ocean sonobuoys using a MATLAB model as support to Navy projects.
- Modeled ocean currents in collaboration with University of Delaware personnel
- Presented work in official reports.

PUBLICATIONS

Christensen, E.M., Lawson, A.J., Rivenbark, E., London, P.K., Castellanos, D., Culbertson, J.C., DeMay, S.M., Eakin, C., Pearson, L.S., Soileau, K., Waddle, H., McGowan, C.P. (2024) Accounting for multiple uncertainties in a decision-support population viability assessment. Biological Conservation. https://doi.org/10.1016/j.biocon.2024.110811

Christensen, E.M., James, D., Randall, R.M., Bestelmeyer, B. (2023). Abrupt transitions in a southwest U.S. desert grassland related to the Pacific Decadal Oscillation. Ecology. https://doi.org/10.1002/ecy.4065

Christensen, E.M., Maxwell, C. J., Slaughter, A. (2022). Long-term permanent quadrat sampling project at the Jornada Experimental Range, New Mexico. The Bulletin of the Ecological Society of America. DOI: https://doi.org/10.1002/bes2.1940.

Christensen, E.M., James, D., Maxwell, C., Slaughter, A., Adler, P.B., Havstad, K., Bestelemeyer, B. (2021). Quadrat-based monitoring of desert grassland vegetation at the Jornada Experimental Range, New Mexico, 1915-2016. Ecology. doi:10.1002/ecy.3530.

Cárdenas, P.A., **Christensen, E.M.**, Ernest, S.K.M., Lightfoot, D.C., Schooley, R.L., Stapp, P., Rudgers, J.A. (2021). Declines in rodent abundance and diversity track regional climate variability

in North American drylands. Global Change Biology. Doi: https://doi.org/10.1111/gcb.15672.

McCord, S.E., Webb, N.P., Van Zee, J.W., Burnett, S.H**., Christensen, E.M.,** Courtright, E.M., Laney, C.M., Lunch, C., Maxwell, C., Karl, J.W., Slaughter, A., Stauffer, N.G., Tweedie, C. (2021). Provoking a Cultural Shift in Data Quality. BioScience. Doi: https://doi.org/10.1093/biosci/biab020.

Simonis, J.L., **Christensen, E.M.,** Harris, D.J., Diaz, R.M., Ye, H., White, E.P., Ernest, S.K.M. (2020). LDATS: Latent Dirichlet Allocation Coupled with Time Series Analyses. R package version 0.2.7. https://CRAN.R-project.org/package=LDATS.

Christensen, E.M., Simpson, G.L., Ernest, S.K.M. (2019). Established rodent community delays recovery of dominant competitor following experimental disturbance. Proceedings of the Royal Society B, 286. Doi: https://doi.org/10.1098/rspb.2019.2269.

Christensen, E.M., Yenni, G.M., Ye, H., Simonis, J.L., Bledsoe, E.K., Diaz, R., Taylor, S.D., White, E.P., and Ernest, S.K.M. (2019). portalr: an R package for summarizing and using the Portal Project Data. Journal of Open Source Software, 4(33), 1098. Doi: https://doi.org/10.21105/joss.01098.

Yenni, G.M., **Christensen, E.M**., Bledsoe, E.K., Supp, S.R., Diaz, R.M., White, E.P., and Ernest, S.K.M. (2019). Developing a modern data workflow for living data. PLoS Biology 17(1). doi: https://doi.org/10.1371/journal.pbio.3000125

White, E.P., Yenni, G.M., Taylor, S.D**., Christensen, E.M**., Bledsoe, E.K., Simonis, J.L., Ernest, S.K.M. (2018). Developing an automated iterative near-term forecasting system for an ecological study. Methods in Ecology and Evolution. Doi: https://doi.org/10.1111/2041-210X.13104

Christensen, E.M., Harris, D., and Ernest, S.K.M. (2018). Long-term community change through multiple rapid transitions in a desert rodent community. Ecology 99, 1523-1529. Doi: https://doi.org/10.1002/ecy.2373

Ernest, S.K.M., Yenni, G.M., Allington, G., **Christensen, E.M**., Geluso, K., Goheen, J.R., Schutzenhofer, M.R., Supp, S.R., Thibault, K.M., Brown, J.H., et al. (2016). Long-term monitoring and experimental manipulation of a Chihuahuan desert ecosystem near Portal, Arizona (1977–2013). Ecology 97, 1082–1082.

PREPRINTS

Ernest, S.K.M., Yenni, G.M., Allington, G., Bledsoe, E., **Christensen, E.M.**, Diaz, R., Goheen, J., Guo, Q., Heske, E., Kelt, D., et al. (2020). The Portal Project: a long-term study of a Chihuahuan desert ecosystem. bioRxiv. doi: https://doi.org/10.1101/332783

TEACHING/MENTOR EXPERIENCE

Instructor: New Mexico State University, *Fall 2023*

- Instructor of record for FWCE 471/571 "GIS for Natural Resources Scientists"
- Taught two hour-long lectures per week, and two two-hour labs per week for 14 graduate and undergraduate students

Teaching Assistant: University of Florida, *Fall 2017*
- Assisted Dr. Ernest in semester-long graduate-level course: WIS 6934 "Biodiversity: Ecological Patterns and Processes"
- Led hour-long class discussions on two occasions
- Led hour-long R-based workshop on computing biodiversity metrics

Workshop Instructor: Software Carpentry *2016-2018*
- Certified instructor for Software Carpentry workshops.
- Instructed 20-30 students in basics of Unix shell and R at workshops at the University of North Carolina, Chapel Hill and the University of Florida, Gainesville.

Teaching Intern*:* Besant Hill High School (formerly Happy Valley School), Ojai, CA, *Jan. 2007*
- Led classroom activities and assisted with curriculum planning in Chemistry, Algebra and Calculus at a private high school.

Chemistry Lab Teaching Assistant*:* Oberlin College*,* Oberlin, OH, *Fall 2006*
- Assisted professor in teaching laboratory experiments in weekly lab sessions.

Peer Tutor: Mathematics Department, Oberlin, OH, *Fall 2005-Spring 2006*
- Served as expert resource for homework assignments on a weekly basis for Calculus II

HONORS AND AWARDS

Presidential Doctoral Research Fellowship, Utah State University, *2012-2014*
- $20,000/yr stipend and waiver of resident tuition

QUANTITATIVE SKILLS AND TRAINING

Programming and Data Management
- 10+ years of experience programming in scripting languages such as R, Python, and MATLAB.
- Qualified instructor for Software and Data Carpentry (https://software-carpentry.org/) with experience instructing beginner workshops on the Unix shell, R, and GitHub.
- Proficient using GitHub for version control.
- Experience using SQL and Microsoft Access for database manipulation.
- Experience using ArcGIS for spatial data manipulation and analysis.

Additional Training
- Five-day workshop on Applied Hierarchical Modeling using JAGS and the R package 'unmarked.' Topics included occupancy models, n-mixture models, and distance sampling models. *July 2023, USGS Eastern Science Center in Laurel, MD.*

CONFERENCE ABSTRACTS

Christensen, EM, N. Kleist, D. Edmunds, J. Heinrichs, J. Saher, A. Whipple, S. Watkins, M. DeVivo, C.L. Aldridge. (2025, March). *Modeling transmission risk of chronic wasting disease in mule deer related to habitat characteristics in Wyoming.* Talk presented at The Wildlife Society Colorado and Wyoming chapters joint annual meeting, March 4-7, Fort Collins, CO, USA.

Christensen, EM, A.P. Monroe, B.C. Tarbox, C.L. Aldridge. (2025, February). *Simulating vegetation trajectories under restoration treatment scenarios.* Talk presented at the Society for Range Management annual meeting, February 9-13, Spokane, WA, USA.

Christensen, EM, McGowan, C., Lawson, A.J. (2023, November). *Sensitivity of population viability analyses to expert-elicited parameters.* Talk presented at The Wildlife Society annual meeting in Louisville, KY, USA.

Christensen, EM, Frid, L, Brown, J, Reeves, M, Bestelemeyer, B. (2022, February). *Simulations based on state and transition models to predict future land condition.* Talk presented at the Society for Range Management annual meeting (remote).

Christensen, EM, Bestelmeyer, B, Maxwell, C, Slaughter, A, James, D, Romig, K, Havstad, K. (2020, February). *Monitoring Plant Community Change and the Jornada Experimental Range: 100 Years of Quadrat Sampling.* Poster presented at the Society for Range Management annual meeting in Denver, CO, USA.

Christensen, EM, Harris, DJ, Diaz, R, Ernest, SKM. (2018, August). *Evidence of rapid transitions in long-term rodent community data.* Talk presented as part of an organized Symposium titled "From Theory to Application: Addressing Outstanding Challenges to Operationalizing Resilience" at the Ecological Society of America Conference in New Orleans, LA, USA.

Christensen, EM, Harris, DJ, Ernest, SKM. (2017, August). *Novel approach for the analysis of community dynamics: separating rapid reorganizations from gradual trends.* Talk presented at the Ecological Society of America Conference in Portland, OR, USA.

Christensen, EM, Ernest, SKM. (2016, July). *Transition between alternative states in a small mammal community.* Poster presented at the Gordon Research Conference: Unifying Ecology Across Scales in Biddeford, Maine, USA.

Christensen, EM, Ernest, SKM. (2015, August). *Investigating long-term stability of community structure in a desert ecosystem.* Poster presented at the Ecological Society of America Conference in Baltimore, MD, USA.

Christensen, EM, Ernest, SKM. (2014, July). *Identifying consumer-resource interaction at different time scales during a long-term study.* Poster presented at the Gordon Research Conference: Unifying Ecology Across Scales in Biddeford, Maine, USA.

BLOG POSTS

Christensen, E.M. "Erica Christensen: Why Study Rodents?" University of Florida: IFAS Blog. November 7, 2018. http://blogs.ifas.ufl.edu/wecdept/2018/11/07/erica-christensen-why-study-rodents/

Christensen, E.M. "Portal: Then and Now." The Portal Project Blog: long-term research in desert ecology. October 4, 2017. https://portalproject.wordpress.com/2017/10/04/portal-then-and-now/

Christensen, E.M. "Monsoon Season." The Portal Project Blog: long-term research in desert ecology. August 15, 2014. https://portalproject.wordpress.com/2014/08/15/monsoon-season/

Christensen, E.M. “Spring 2014 Plant Census.” The Portal Project Blog: long-term research in desert ecology. April 23, 2014. https://portalproject.wordpress.com/2014/04/23/spring-2014-plant-census/