

MARTHA W. ZILLIG

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EDUCATION

Ph.D. Ecology, Graduate Group in Ecology, **University of California, Davis**, 2021

B.A. Biology, Magna Cum Laude, **Carleton College**, Northfield, Minnesota, 2013

PROFESSIONAL EXPERIENCE

Visiting Assistant Professor of Statistics and Data Science

2023 – Present

St. Olaf College, Northfield, MN

- Teaching: Designed and taught courses in statistics, data science, and environmental studies
- Research: Assessing abundance estimation with statistical models and management techniques of wildlife populations using emerging technology
- Mentorship:
 - Mentorship of six statistics and data science undergraduate students through the Center for Integrative Research, including a publication in review with multiple student co-authors
 - Mentorship of six undergraduate research assistants, assisting with research on camera trap data collection, data cleaning, and statistical model development
 - Academic advisor for student's individual major in Bioinformatics

Postdoctoral Researcher

2022 – 2023

University of Montana, Department of Forestry and Conservation

Advisor: Paul Lukacs

- Research: Development of quantitative methods to estimate demographic rates of wildlife populations using camera trap data, simulation studies employing random walk algorithms
- Teaching: Instructor of upper-level course Conservation of Wildlife Populations
- Mentorship: Mentorship of undergraduate research technicians, served as quantitative advisor for two wildlife biology masters students

Statistical Consultant

2021

The Nature Conservancy

- Estimated density of unmarked Island Foxes (*Urocyon littoralis*) from camera trap data using novel statistical methods, and developed conservation monitoring strategy currently in use

Postdoctoral Researcher

2021-2022

Joint position with University of California, Davis and Oregon State University

Advisor: Erica Fleishman

- Research and development of drone-based telemetry platform for tracking birds in remote locations

Ph.D in Ecology

2016-2021

University of California, Davis, Graduate Group in Ecology

Advisor: Erica Fleishman

Dissertation Research: Elevational movement ecology and habitat associations of birds across the Great Basin

- Research: Elevational movement and vegetation associations of bird communities in the Great Basin Desert and species-level response to climate change. Identified elevational movement patterns consistent with tracking of resources during both the breeding season and across decades.
- Teaching: Instructor of R Data Analysis and Visualization in Science (2018-2020)
- Mentorship: Leading in statistical programming and literacy, including running two clubs focused on engaging ecology graduate students with programming and statistics

Leader in statistical and programming literacy

2017-2023

University of California, Davis and University of Montana

- Founder and leader of University of Montana R Users Group (2022—2023)
- Instructor of R-DAVIS, a graduate level introduction to R (2019–2020)
- Co-leader, Davis R Users Group, UC Davis (2017—2021)
- Founder, statistical modeling group, Graduate Group in Ecology (Winter 2019–Fall 2022)
- Data Carpentries certified instructor

Federal Aviation Administration-Certified Drone Pilot

2020-present

- Applications of drones to tracking wild animals

B.A. Biology, Carleton College

2009-2013

Undergraduate Thesis Research: The continuum of sex determination: transition between sex determining mechanisms in non-avian reptiles

Advisor: Mark McKone

PEER-REVIEWED PUBLICATIONS

*Undergraduate co-authors

Moqanaki, E., Stenglein, J. L., Stauffer, G.E., Storm, D.J., Ladwig, D., Wildey, E., **Zillig, M.W.**, Lukacs, P. Incorporating habitat selection does not account for nonrandom camera deployment in a design-based viewshed density estimator. In review *Remote Sensing in Ecology and Conservation*.

Lewis, D., **Zillig, M.W.**, Robbins, M.M., and Brodie, J. Fruit trait clustering supports a megafauna seed dispersal syndrome in an African tropical forest. In review *Biotropica*.

Zillig, M.W., Lukacs, P.M., Stenglein, J., Hachfeld, E.*, and Moqanaki, E. Remote cameras and timelapse photography successfully captures population decline in known population of white-tailed deer (*Odocoileus virginianus*). In prep.

Zillig, M.W., Groszklos, G., Brenner, L., Bolas, E.C., Stenglein, S., Stauffer, G., and Lukacs, P. Limitations of N-mixture models for estimating animal abundance from camera trap data. In review *Ecological Modeling*.

Mohl, E., Ahlstrom, B., Ardolf, M.*, Kosiearadzki G.*, Song, S.*, Boehm Vock, L.F., **Zillig, M.W.**, Palermo, M., Abed, R., Gines, M., Juneau, K., and Dugan-Henriksen, P. Latitudinal clines in dormancy and thermal requirements contribute to predictable variation in germination phenology of common milkweed. In review *American Journal of Botany*.

Zillig, M.W., Brooks, W., and Fleishman, E. 2024. Shifts in elevational distributions of montane birds in an arid ecosystem. *Ecography*. e06780.

Hendrix, A.N., Fleishman, E., **Zillig, M.W.**, and Jennings, E.D. 2023. Relations between abiotic and biotic environmental variables and occupancy of delta smelt (*Hypomesus transpacificus*) in autumn. *Estuaries and Coasts*. 46:149-165.

Zillig, M.W., Fogarty, F., and Fleishman, E. 2022. Associations of birds with floristics and physiognomy differ across five biogeographic subregions of the Great Basin. *Ornithological Applications*. 125:1-15.

Fogarty, F.A., **Zillig, M.W.**, and Fleishman, E. 2021. Evaluating the ability of occurrence models to predict nest locations and associated vegetation. *Ibis*, 164:519-534.

Mahood, A.L., Fleishman, E., Balch, J.K., Fogarty, F.A., Horning, N., Leu, M., **Zillig, M.W.**, and Bradley, B.A. 2021. Cover-based allometric estimates of aboveground biomass of a non-native, invasive annual grass (*Bromus tectorum* L.) in the Great Basin, USA. *Journal of Arid Environments* 193:104582.

Horning, N., Fleishman, E., Erts, P.J., Fogarty, F.A., and **Zillig, M.W.** 2020. Mapping of land cover with open-source software and ultra-high resolution imagery acquired with unmanned aerial vehicles. *Remote Sensing in Ecology and Conservation* 6:487–497.

Williamson, M.A., Fleishman, E., Mac Nally, R.C., Chambers, J.C., Bradley, B.A., Dobkin, D.S., Board, D.I., Fogarty, F.A., Horning, N., Leu, M., and **Zillig, M.W.** 2020. Fire, livestock grazing, topography, and precipitation affect occurrence and prevalence of cheatgrass (*Bromus tectorum*) in the central Great Basin, USA. *Biological Invasions* 22:663–680.

Carter, S.K., Fleishman, E., Leinwand, I.F., Flather, C.H., Carr, N.B., Fogarty, F.A., Leu, M., Noon, B.R., **Wohlfeil, M.**, and Wood, D.J.A. 2019. Quantifying ecological integrity of terrestrial systems to inform management of multiple-use public lands in the United States. *Environmental Management* 64:1–9.

Fogarty, F.A., **Wohlfeil, M.**, and Fleishman, E. 2018. Response to Horns et al. 2018: Using opportunistic citizen science data to estimate avian population trends. *Biological Conservation* 221:151–159.

Savoca, M., **Wohlfeil, M.**, Ebeler, S., and Nevitt, G. 2016. Marine plastic debris emits a keystone infochemical for olfactory foraging seabirds. *Science Advances* 2(11):e1600395.

TEACHING EXPERIENCE

INSTRUCTOR OF RECORD

St. Olaf

Data Science 1 (SDS 164) 2023 – Present

Statistics 1 (SDS 172) 2023 – Present

Principles of Statistics (STATS 110) 2023-2024
Conservation Biology (BI/ES 226) 2024-2026
Biodiversity Foundations [with Lab] (BIO150) Fall 2026
Pyroecology (ENVST 381) Spring 2026

University of Montana

Conservation of Wildlife Populations (WILD 470) 2022

University of California, Davis

R-DAVIS: R Data Analysis and Visualization in Science (ECL 250) 2018-2021

TEACHING ASSISTANT

University of California, Davis

Ecological Principles and Applications (ECL 200A) 2017

Environmental Analysis (ESP 001) 2017

Public Lands Management (ESP 172) 2018

STUDENTS MENTORED

All students listed completed directed research of at least one semester in length

St. Olaf (2023-Present)

Undergraduate Students: Emma Coen-Pesch, Elise Hachfeld, Mitch Ardolf, Sam Song, Grace Kosieradzki, Grace Nelson, Hannah Hampton, Gracia Larsen-Schmidt, Sophie Kormann, Ollie Blundred, Signe Aleckson, Elliot Norton-Bower, Kenna Brant, Sofie Hamilton, Eugene Kiepee

University of Montana (2022-2023)

Undergraduate Student: Marian Cook

Masters Student: Diandra Lewis, served as quantitative advisor for Diandra's Masters in Wildlife Biology

Oregon State University (2022-Present)

Masters Student: Emir Gocke, serving as quantitative advisor for Emir's Masters in Fisheries and Wildlife Science

UNIVERSITY SERVICE

St. Olaf (2023-Present)

- Received a Professional Development grant to run a R Workshop for faculty and staff
 - Planned and implemented the workshop during June of 2026
 - Workshop focused on introduction to R and pedagogy of R in the classroom
- Writing in the Statistics and Data Science Major Curriculum Development Workshop
 - Developed curriculum for writing in the major requirement for the new Statistics and Data Science major
- Assisted with proposal and then implementation of new Statistics and Data Science Major
- Organized weekly Colloquium speaker for MSCS department
- Advised first-year students

SCIENTIFIC PRESENTATIONS

Zillig, M.W. October 2024. Counting Creatures: The Statistical Science behind Wildlife Ecology. MSCS/Biology joint research seminar, St. Olaf College.

Zillig, M.W. August 2021. Elevational shifts of Great Basin birds over the past two decades. North American Ornithological Conference.

Zillig, M.W. August 2020. Elevational movements of songbird species within the breeding season: how resource availability and climate drive movement patterns. Ecological Society of America.

Zillig, M.W. August 2020. Effects of resource availability and climate on elevation movements of passerine species within the breeding season. North American Ornithological Conference.

Wohlfeil, M.E. March 2019. Potential mechanism responsible for within-season movements of birds in the Great Basin. 2019 Wildlife Professional Development Conference. University of California, Davis.

Wohlfeil, M.E. February 2018. Potential mechanism responsible for within-season movements of birds in the Great Basin. Tenth Annual Graduate Student Symposium in Ecology. University of California, Davis.

Wohlfeil, M.E., and Fleishman, E. May 2017. Potential mechanisms responsible for within-season elevational movements of passerine species. Great Basin Bird Conference, Reno, Nevada.

Savoca, M.S., **Wohlfeil, M.E.,** Ebeler, S.E., and G.A. Nevitt. February 2014. Marine plastic debris as an olfactory trap for procellariiform seabirds. Seventh Annual Graduate Student Symposium in Ecology. University of California, Davis.

Wohlfeil, M.E. January 2013. The continuum of sex determination: transitions between sex determining mechanisms in non-avian reptiles. Senior Thesis Presentation, Carleton College, Northfield, Minnesota.

GRANTS

2026 Professional Development Grant: R Workshop for Faculty and Staff Development \$6800

2025 Minimum Viable Product Challenge Grant. University of Minnesota. \$3000

2024 – 2026 Collaborative Undergraduate Research and Inquiry (CURI) Grant. St. Olaf \$2000

2019 William J. Hamilton III Memorial Fund Scholarship. Hamilton Community Foundation. \$2000

2018 Frances M. Peacock Scholarship for Native Bird Habitat. The Garden Club of America. \$4500

2018 Summer Award for Upper Level Division and Graduate Students. Charles Redd Center for Western Studies, Brigham Young University. \$3000

2018, 2020 Graduate Group in Ecology Fellowship. University of California, Davis. \$12,000 (2018), \$12,700 (2021)

2017, 2018, 2019 Henry A. Jastro Research Fellowship. College of Agricultural and Environmental Sciences, University of California, Davis. \$2000 (2017), \$3000 (2018), \$2000 (2019)

OUTREACH

Kids into Discovering Science (KiDS)

2017-2021

Graduate student-run nonprofit teaching place-based ecology to underrepresented, elementary-age children

- President, 2018 – 2021
- Weekly teaching volunteer in fifth grade classroom
- Coordinator and volunteer of Field Day, a field trip that culminated the program each year
- Responsible for organization of the program, management of volunteers, and coordination of Field Day