

J Grey Monroe

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USDA-NIFA National Needs Fellow
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Graduate Degree Program in Ecology
Colorado State University
Fort Collins, CO 80523

<https://greymonroe.github.io>

EDUCATION

PhD, Ecology 2014 - 2019
Colorado State University, Fort Collins
Advisor: John K. McKay
Dissertation: Causes and consequences of plant climate adaptation

BSc Biology, *cum laude* 2008 - 2012
Appalachian State University
Advisor: Matt Estep
Concentration: Evolution of centromeres in the *Andropogoneae*

EMPLOYMENT

Post-doctoral researcher 2019
Max Planck Institute for Developmental Biology
Department of Molecular Biology - Adaptation to changes, Tübingen, Germany

R Developer 2018 - 2019
Max Planck Institute for Biogeochemistry
Department of Biogeochemical Processes, Jena, Germany

R Programmer and Data Analyst 2017 - 2018
United States Geological Survey
John Wesley Powell Center for Analysis and Synthesis, Fort Collins, CO

CO-OP in Plant Breeding and Genetics 2016 - 2017
Cargill
Specialty Seeds and Oil Innovation Center, Fort Collins, CO

Research Assistant 2013 - 2014
Duke University, Durham, NC
Herman Staats Lab, Pathology Dept

PUBLICATIONS

Lawrence C, Beem-Miller J, Hoyt A, **Monroe JG**, 29 others. An open source database for the synthesis of soil radiocarbon data: ISRaD version 1.0. *in review*. Earth System Data Science

- Monroe JG**, Gill B, Turner KT, McKay JK. 2018. Drought frequency predicts life history strategies in *Heliophila*. *in review*. biorxiv: <https://doi.org/10.1101/493270>
- Monroe JG**, Powell T, Price N, Howard A, Evans K, Mullen JL, Lovell JT, McKay JK. 2018. Drought adaptation in *Arabidopsis thaliana* by extensive genetic loss-of-function. *eLife*. doi: 10.7554/eLife.41038
- Endriss SB, Vahsen ML, Bitume EV, **Monroe JG**, Turner KG, Norton AP, Hufbauer RA. 2018. The importance of growing up: juvenile environment influences dispersal of individuals and their neighbors. *Ecology Letters*. 22:45-55
- Dittberner H, Korte A, Mettler-Altman T, Weber A, **Monroe JG**, de Meaux J. 2018. Natural variation in stomata size contributes to the local adaptation of water-use efficiency in *Arabidopsis thaliana*. *Molecular Ecology*. DOI 10.1111/mec.14838.
- Price N, Moyers BT, Lasky JR, **Monroe JG**, Mullen JL, Lopez L, Oakley CG, Lin J, Agren J, Schrider DR, Kern AD, McKay JK. 2018. Combining population genomics and fitness QTL to identify the genetics of local adaptation in *Arabidopsis thaliana*. *PNAS*. 115:5028-5033
- Monroe JG**, Markman DW, Beck WS, Felton AJ, Vahsen ML, Pressler Y. 2018. Eco-evolutionary Dynamics of Carbon Cycling in the Anthropocene. *Trends in Ecology and Evolution*. 33:213-225.
- Monroe JG**, Allen ZA, Tanger P, Mullen JL, Lovell JT, Moyers BT, Whitley D, McKay JK. 2017. *TSPmap*, a tool making use of traveling salesperson problem solvers in the efficient and accurate construction of high-density genetic linkage maps. *BioData Mining*. DOI 10.1186/s13040-017-0158-0.
- Rockenbach K, Havrid JC, **Monroe JG**, Triant DA, Taylor DR, Sloan DB. 2016. Positive Selection in Rapidly Evolving Plastid-Nuclear Enzyme Complexes. *Genetics* 204:1507-1522.
- Monroe JG**, McGovern C, Lasky J, Beck J, Grogan K, McKay JK. 2016. Adaptation to warmer climates by parallel functional evolution of *CBF* genes in *Arabidopsis thaliana*. *Molecular Ecology* 15:3632-3644.
- Mojica JP, Mullen J, Lovell JT, **Monroe JG**, Paul JR, Oakley CG, McKay JK. 2016. Genetics of water use physiology in locally adapted *Arabidopsis thaliana*. *Plant Science* 251:12-22.
- Zhu M, **Monroe JG**, Suhail Y, Villiers F, Mullen J, Pater D, Hauser F, Jeon BW, Bader JS, Kwak JM, Schroeder JI, McKay JK, Assman SM. 2016. Molecular and Systems Approaches towards Drought-tolerant Canola Crops. *New Phytologist* 210:1169-1189.

FELLOWSHIPS

Vice President of Research Fellowship, CSU (\$4,000)	2017 - 2018
USDA-NIFA National Needs Fellowship (\$138,000)	2015 - 2018
Program in Molecular Plant Biology Fellowship, CSU (\$39,000)	2014 - 2015

GRANTS

Research Mentoring to Advance Inclusivity in STEM, CSU (\$1,160)	2018
Doctoral Dissertation Improvement Grant, NSF (\$19,760) Title: The evolution of plant drought tolerance and gene function across historic drought frequency gradients	2017
Evo-Devo-Eco Network Grant, Harvard University (\$3,000) Title: Variation in developmental and physiological responses to a gradient of water availability in <i>Brachypodium</i>	2016

AWARDS AND HONORS

Graduate Degree Program in Ecology Travel Award, CSU (\$500)	2018
Graduate Degree Program in Ecology Travel Award, CSU (\$500)	2017
Ralph Baker Graduate Student Award for Research Excellence, CSU (\$500)	2017
NSF Graduate Research Fellowship (Honorable Mention)	2016
Ralph Baker Graduate Student Award for Research Excellence, CSU (\$500)	2016
PMPB Research and Scholarly Excellence Award, CSU (\$10,000)	2015
NSF Graduate Research Fellowship (Honorable Mention)	2015
GDPE Research and Scholarly Excellence Award, CSU (\$2,500)	2014
Frontiers and Techniques in Plant Science Workshop Scholarship, Cold Spring Harbor Laboratory (\$750)	2014

WORKSHOPS, WORKING GROUPS AND TRAINING

Research Intern, Drought Physiology group International Rice Research Institute, Los Banos, Philippines	2018
Genotype \times Environment Interactions Workshop, participant Wageningen University, Wageningen, Netherlands	2015
microMORPH Phenotypic Plasticity Workshop, invited participant Harvard University Arnold Arboretum, Boston, MA	2015
Plasticity and Novel Environments Working Group, invited participant National Evolutionary Synthesis Center, Durham, NC	2015
Frontiers and Techniques in Plant Science, invited participant Cold Spring Harbor Laboratory, Cold Spring Harbor, NY	2014

PRESENTATIONS

International Center for Tropical Agriculture (invited) Palmira, Colombia	2019
International Plant and Animal Genome Conference (invited) San Diego, California	2019
Max Planck Institute of Plant Breeding (invited)	2018

Cologne, Germany	
Department of Biology, University of Cologne (invited)	2018
Cologne, Germany	
Max Planck Institute of Developmental Biology (invited)	2018
Tubingen, Germany	
Lasky Lab, Department of Biology, Pennsylvania State Univeristy (invited)	2018
State College, PA	
Emerging Technologies to Prevent Future Famines Symposium (invited)	2018
Fort Collins, CO	
Breeding and Strategic Innovation Seminar, International Rice Research Institute (invited)	2018
Los Banos, Philippines	
Department of Biology, Australian National University (invited)	2018
Canberra, Australia	
Population Biology Seminar, Duke University (invited)	2017
Durham, NC	
Department of Biology. Appalachian State University (invited)	2017
Boone, NC	
Dupont-Pioneer Drought Tolerance Symyposium	2017
Fort Collins, CO	
Evolution	2017
Portland, OR	
Front Range Student Ecology Symposium	2017
Fort Collins, CO	
Three Minute Thesis Competition	2017
Fort Collins, CO.	
Graduate Student Showcase	2016
Fort Collins, CO	
Genomics of Adaptation to Human Contexts	2016
Fort Collins, CO	
Evolution	2016
Austin, TX	
Guild of Rocky Mountain Ecologists and Evolutionary Biologists	2015
Boulder, CO	
Evolution	2015
Sao Paolo, Brazil	
MicroMOPRH Phenotypic Plasticity Workshop. Harvard Arnold Arboretum (invited)	
2015	

Boston, MA
 National Evolutionary Synthesis Center Plasticity and Novel Environments Working
 Group (invited) 2015
 Durham, NC

TEACHING

Guest lecturer
 Drought Tolerance Breeding Workshop, CSU 2018
 Guest lecturer
 Ecosystem Ecology, CSU 2017
 Teaching Assistant
 Molecular and General Genetics, CSU 2017
 Assistant Instructor
 Software Carpentry Workshop, CSU 2016
 Guest lecturer
 ECOL 592: Principles of Data Visualization Using R and ggplot2, CSU 2016

MENTORSHIP

Karter Johansen - theoretical population genetics of poly-allelic adaptation 2017
 Colorado State University
 Tyler Powell - reverse genetics of adaptive loss-of-function alleles 2017
 Colorado State University
 Julio Flores - awarded scholarship for research on plant ecotoxicology 2014-2015
 Poudre High School

ACADEMIC SERVICE

Lecturer: Implicit Bias
 CSU Research Mentoring to Advance Inclusiveness in Science 2018
 Assistant organizer
 BSURE Undergraduate Summer Mentorship Program 2017
 Co-organizer
 Drought Tolerance in Agriculture and Natural Ecosystems Symposium 2017
 DuPont-Pioneer and Colorado State University
 Assistant Organizer
 Front Range Student Ecology Symposium 2015, 2017
 Graduate Degree Program in Ecology and Colorado State University
 Peer Review
 Evolution, New Phytologist, Theoretical and Applied Genetics, Evolutionary Ap-
 plications, Scientific Reports, PLoS One, Molecular Ecology, Nucleic Acids Research

SOFTWARE DEVELOPMENT

J Grey Monroe. ISRaD: R package for interacting with International Soil Radiocarbon Database

J Grey Monroe. genemodel: Gene Model Plotting in R. R package version 1.1.0.
<https://CRAN.R-project.org/package=genemodel>

J Grey Monroe., Zachary Allen, Paul Tanger, Brook Moyers and Jack Mullen (2016).
TSPmap: A Method Making Use of Traveling Salesperson Problem Solvers in the
Construction of Genetic Linkage Maps. R package version 0.0.0.9000.
<https://github.com/mckaylab/tspmap>