

# J Grey Monroe

November 18, 2018

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>

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## EDUCATION

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

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

## EMPLOYMENT

R Developer 2018  
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

**Monroe JG**, Powell T, Price N, Howard A, Evans K, Mullen JL, Lovell JT, McKay JK. 2018. Drought adaptation in nature by extensive genetic loss-of-function. *bioRxiv*. doi: <https://doi.org/10.1101/372854>

Endriss SB, Vahsen ML, Bitume EV, **Monroe JG**, Turner KG, Norton AP, Hufbauer RA. The importance of growing up: juvenile environment influences dispersal of individuals and their neighbors. *Ecology Letters*. in press

- 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)	2017
Title: The evolution of plant drought tolerance and gene function across historic drought frequency gradients	
Evo-Devo-Eco Network Grant, Harvard University (\$3,000)	2016
Title: Variation in developmental and physiological responses to a gradient of water availability in <i>Brachypodium</i>	

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

## PRESENTATIONS

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 University (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) Durham, NC	2017
Department of Biology. Appalachian State University (invited) Boone, NC	2017
Dupont-Pioneer Drought Tolerance Symposium Fort Collins, CO	2017
Evolution Portland, OR	2017
Front Range Student Ecology Symposium Fort Collins, CO	2017
Three Minute Thesis Competition Fort Collins, CO.	2017
Graduate Student Showcase Fort Collins, CO	2016
Genomics of Adaptation to Human Contexts Fort Collins, CO	2016
Evolution Austin, TX	2016
Guild of Rocky Mountain Ecologists and Evolutionary Biologists Boulder, CO	2015
Evolution Sao Paulo, Brazil	2015
MicroMOPRH Phenotypic Plasticity Workshop. Harvard Arnold Arboretum (invited) 2015 Boston, MA	
National Evolutionary Synthesis Center Plasticity and Novel Environments Working Group (invited) Durham, NC	2015

## **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 Applications, Scientific Reports, PLoS One

## 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>