# 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

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## EDUCATION

PhD, Ecology — 2014 - 2019 (expected)

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

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**, Gill B, Turner KT, McKay JK. 2018. Drought frequency predicts life history strategies in *Heliophila*. *in review*. biorxv: 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. 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

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|---|---|
| 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

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| Research Mentoring to Advance Inclusivity in STEM, CSU ($1,160) | 2018 |
| Doctoral Dissertation Improvement Grant, NSF ($19,760)<br>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) | 2016 |

Title: Variation in developmental and physiological responses to a gradient of water availability in *Brachypodium*

## 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 × 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

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 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