

# 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>

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## EDUCATION

PhD, Ecology 2019 (expected)

Colorado State University, Fort Collins

Advisor: John K. McKay

Dissertation: The biology, genetics, and evolution of climate adaptation in plants

BSc Biology, *cum laude* 2012

Appalachian State University

Advisor: Matt Estep

Concentration: Evolution of centromeres in the *Andropogoneae*

## EMPLOYMENT

R Developer and Data Analyst 2017

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**, 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*. Manuscript in press.

**Monroe JG**, Allen ZA, Tanger P, Mullen JL, Lovell JT, Moyers, 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

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|---|------|
| 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 AND WORKING GROUPS

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|--|------|
| 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

- Monroe JG.** 2017. Plant adaptation to climate: environments, phenotypes, genes (**invited**). Duke University 2017. Durham, NC
- Monroe JG.** 2017. Plant adaptation to climate: environments, phenotypes, genes (**invited**). Appalachian State University 2017. Boone, NC
- Monroe JG.** 2017. Next-Generation Drought Detection and Whole Genome Sequences to Study Adaptation in *Arabidopsis thaliana* (poster). Dupont-Pioneer Drought Tolerance Symposium 2017. Fort Collins, CO.
- Monroe JG.** 2017. Plant adaptation along historic drought frequency gradients. Evolution 2017. Portland, OR.
- Monroe JG.** 2017. The evolution of an important life history trait predicted by remote sensed drought frequency. Front Range Student Ecology Symposium. Fort Collins, CO.
- Monroe JG.** 2017. Using Nature to Nurture: uncovering the evolution of drought tolerance in wild plants. Three Minute Thesis Competition. Fort Collins, CO.
- Monroe JG.** 2016. Evolution of drought tolerance explored using global drought frequency map (poster). Graduate Student Showcase. Fort Collins, CO.
- Monroe JG.** 2016. A global map of drought frequency using the Vegetative Health Index (poster). Genomics of Adaptation to Human Contexts. Fort Collins, CO.
- Monroe JG.** 2016. Adaptation to warmer climates by parallel molecular evolution. Evolution 2016. Austin, TX.
- Monroe JG.** 2015. Patterns of locally adaptive altered function and divergence in cold response genes along a temperature gradient in *Arabidopsis thaliana*. Guild of Rocky Mountain Ecologists and Evolutionary Biologists. Boulder, CO.
- Monroe JG.** 2015. Evolution of the ABA signaling pathway in the Brassicaceae (poster). Evolution 2015. Sao Paulo, Brazil.
- Monroe JG.** 2015. Environmental variability and the evolution of locally adaptive drought responses. MicroMOPRH Phenotypic Plasticity Workshop. Harvard Arnold Arboretum. Boston, MA.
- Monroe JG.** 2015. Teaching plasticity by experiment: "EnvironMentoring" of a high school student (lightening talk) National Evolutionary Synthesis Center Plasticity and Novel Environments Working Group. Durham, NC.

## TEACHING

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

## ACADEMIC SERVICE

Assistant organizer	
BSURE Undergraduate Summer Mentorship Program	2017
Co-organizer	
Drought Tolerance in Agriculture and Natural Ecosystems Symposium DuPont-Pioneer and Colorado State University	2017
Assistant Organizer	
Front Range Student Ecology Symposium Graduate Degree Program in Ecology and Colorado State University	2015, 2017
Peer Review	
Evolution, New Phytologist, Theoretical and Applied Genetics, Evolutionary Applications	

## SOFTWARE DEVELOPMENT

- J Grey Monroe.** soilcarbon: R package for interacting with 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>