

## MADISON R. BULLOCK

Biological Sciences, 2901 Main Street, Lubbock, TX 79409 | (816) 686-6186 | madbullo@ttu.edu

### EDUCATION

Texas Tech University | Lubbock, TX

**Ph.D. (Biology)**

Expected 2026

*Dissertation:* “Lessons from Plants Past: Herbaria uses in the advancement of plant conservation.”

*Advisor:* Dr. Matthew G. Johnson

*Advisory Committee:* Dr. Sara Fuentes-Soriano, Dr. Dylan W. Schwilk, Dr. Nicholas G. Smith, Dr. Natasja van Gestel

San Francisco State University | San Francisco, CA

**M.S. (Ecology, Evolution, and Conservation Biology)**

August 2021

*Thesis:* “Exploring evolutionary adaptations of leaf heteroblasty in subspecific taxa of Hawaiian *Chenopodium oahuense*.”

*Advisor:* Dr. Jason T. Cantley

*Advisory Committee:* Dr Kevin Simonin, Dr. Colleen Ingram

University of Missouri – Columbia | Columbia, MO

**B.S. (Fisheries and Wildlife Sciences)**

May 2018

*Minor:* Animal Sciences

### RESEARCH EXPERIENCE

Texas Tech University

**Research Assistant, Johnson Lab/Center for Biotechnology and Genomics**

2022 – Present

Extract DNA from plant tissue samples, perform quality control on extracted DNA via fluorescence quantification and gel electrophoresis, prepare DNA for library sequencing, maintain general function of lab and herbarium through routine equipment maintenance, organization, and inventory, collaborate with fellow lab mates and faculty on wet lab components of various projects, train undergraduates and lab members on lab protocols.

LRC Systems

**GlobalViral Junior Fellow**

2018 – 2021

Studied the benefits and bounds of chimerism in a model invertebrate species through comparing survival of monogenetic and chimeric colonies, researched a newly described endangered Hawaiian plant taxon’s ability to exist and persevere in a harsh, xeric habitat via phylogenetic, population genetic, and morphological analyses.

University of Missouri – Columbia

**Research Assistant, College of Veterinary Medicine**

2014 – 2017

Received and extracted DNA from blood and saliva samples, ran commercial tests for various genetic diseases and traits, maintained specimen databases, collaborated with faculty on various research projects, established social media correspondence for fundraising efforts.

### TEACHING EXPERIENCE

Texas Tech University

**Teaching Assistant, Department of Biological Sciences**

Fall 2021

BIOL 4301: Field Botany and Natural History Collections

Assisted in the presentation of lecture information, facilitated class discussion on assigned scientific literature via discussion questions and external knowledge, provided office hours for student questions and space to work on semester herbarium curation projects, reviewed weekly reflective journals and provided feedback.

San Francisco State University

**Teaching Assistant, Department of Biology**

Fall 2018, Spring 2019

BIOL 150: The World of Plants

Prepared weekly lab lecture presentations and activities, hosted weekly office hours for student questions assistance, supervised bimonthly lab field trips covering real-world application of lecture information, created and proctored weekly quizzes on information learned from in the previous week's lecture, administered and provided feedback on three semester assignments: a lab report based on data collected from a field trip, a literature review on a botanically-related topic, and a presentation on said chosen topic.

#### LEADERSHIP, COMMUNITY SERVICE, AND PROFESSIONAL AFFILIATIONS

Society of Herbarium Curators (SHC)	2023 – Present
Biology Graduate Student Representative Committee	2022 – Present
Texas Tech Annual Biological Sciences Symposium Planning Committee	2022 – Present
Texas Tech University Association of Biologists (TTUAB)	2021 – Present
• President	2023 – Present
• Vice President/SORC Representative	2022 – 2023
• Recycling Chair	2021 – 2022
West Texas Association for Botany	2021 – Present
• President	2023 – Present
• SORC Representative	2023 – Present
Botanical Society of America (BSA)	2020 – Present
American Association for the Advancement of Science (AAAS)	2018 – Present

#### PUBLICATIONS

**Bullock, M. R.**, & Cantley, J. T. (2022). Exploring evolutionary adaptations of leaf heteroblasty in subspecific taxa of Hawaiian *Chenopodium oahuense*. *American Journal of Botany*, 109(9), 1346–1359.  
<https://doi.org/10.1002/ajb2.16058>

#### PRESENTATIONS AS PRESENTER

**Bullock, M. R.** & Johnson, M. G. (2023, July). *It's a Small World After All: Applying library miniaturization and microhaplotypes to plant population genomic research*. Oral paper presented at the annual meeting of the Botanical Society of America, Boise, ID.

**Bullock, M. R.**, Slimp, M., Hale, H., Coker, C., Bailey, Z., & Johnson, M. G. (2022, August). *Herbaria uses in ecosystem health assessments: Impacts of land use and climate change on flora in the Guadalupe Mountains over 50 years*. Oral paper presented at the annual meeting of the Texas Oklahoma Regional Consortium of Herbaria, Fort Worth, TX.

**Bullock, M. R.**, Slimp, M., Hale, H., Coker, C., Bailey, Z., & Johnson, M. G. (2022, July). *Herbaria uses in ecosystem health assessments: Impacts of land use and climate change on flora in the Guadalupe Mountains over 50 years*. Oral paper presented at the annual meeting of the Botanical Society of America, Anchorage, AK.

**Bullock, M. R.**, Williams, T. M., Martine, C. T., Haase, B., & Cantley, J. T. (2021, July). *Exploring the potential evolutionary adaptation of leaf heteroblasty in Hawaiian *Chenopodium oahuense* ssp. *ilioensis**. Oral paper presented at the annual meeting of the Botanical Society of America, Virtual.

**Bullock, M. R.**, Simonin, K. A., & Cantley, J. T. (2020, July). *Morphological adaptations within a young adaptive radiation of Hawaiian *Chenopodium* (Amaranthaceae)*. Poster presented at the annual meeting of the Botanical Society of America, Virtual.

#### PRESENTATIONS BY MENTEES

##### *Transformative Undergraduate Experiences Symposium 2023 (Lubbock, TX)*

Mackey, A., Reyes, S., Williams, L., Ogbiede, J., **Bullock, M.**, & Johnson, M. (2023, October). *Physco killer - Testing for evidence of cryptic species in the moss *Physcomitrium pyriforme**. Impact talk presented at the Transformative Undergraduate Experiences Symposium. Lubbock, Texas.

Salazar, J., **Bullock, M. R.**, Bailey, Z., & Johnson, M. G. (2023, October). *Responses of Leaf Stomata to 50 Years of CO<sub>2</sub> Increase Using Herbarium Specimens*. Impact talk presented at the Transformative Undergraduate Experiences Symposium. Lubbock, Texas.

##### *Botany 2023 (Boise, ID)*

Hosaka, M. J., **Bullock, M. R.**, Price, S., Johnson, M. G. (2023, July). *Characterizing Temporal Changes in Microbial Diversity in Herbarium Specimens from Guadalupe Mountains National Park*. Poster presented at the annual meeting of the Botanical Society of America, Boise, ID.

Mackey, A., Reyes, S., Ogbiede, J., Williams, L. D., **Bullock, M. R.**, Patel, N., Medina, R. A., Goffinet, B., & Johnson, M. G. (2023, July). *Testing for evidence of cryptic species in the widespread moss *Physcomitrium pyriforme**. Poster presented at the annual meeting of the Botanical Society of America, Boise, ID.

Salazar, J., **Bullock, M. R.**, Bailey, Z., & Johnson, M. G. (2023, July). *Responses of Leaf Stomata to 50 Years of CO<sub>2</sub> Increase Using Herbarium Specimens*. Poster presented at the annual meeting of the Botanical Society of America, Boise, ID.

##### *Texas Tech Annual Biological Sciences Symposium 2023 (Lubbock, TX)*

Hosaka, M. J., **Bullock, M. R.**, Price, S., Johnson, M. G. (2023, May). *Characterizing Temporal Changes in Microbial Diversity in Herbarium Specimens from Guadalupe Mountains National Park*. Poster presented at the Texas Tech Annual Biological Sciences Symposium, Lubbock, TX.

Mackey, A., Reyes, S., Ogbiede, J., Williams, L. D., **Bullock, M. R.**, Patel, N., Medina, R. A., Goffinet, B., & Johnson, M. G. (2023, May). *Testing for evidence of cryptic species in the widespread moss *Physcomitrium pyriforme**. Poster presented at the Texas Tech Annual Biological Sciences Symposium, Lubbock, TX.

Salazar, J., **Bullock, M. R.**, Bailey, Z., & Johnson, M. G. (2023, May). *Responses of Leaf Stomata to 50 Years of CO<sub>2</sub> Increase Using Herbarium Specimens*. Poster presented at the Texas Tech Annual Biological Sciences Symposium, Lubbock, TX.

##### *Texas Tech Undergraduate Research Conference 2023 (Lubbock, TX)*

Hosaka, M. J., **Bullock, M. R.**, Price, S., Johnson, M. G. (2023, April). *Characterizing Temporal Changes in Microbial Diversity in Herbarium Specimens from Guadalupe Mountains National Park*. Poster presented at the annual Texas Tech University Undergraduate Research Conference, Lubbock, TX.

Mackey, A., Reyes, S., Ogbiede, J., Williams, L. D., **Bullock, M. R.**, Patel, N., Medina, R. A., Goffinet, B., & Johnson, M. G. (2023, April). *Testing for evidence of cryptic species in the widespread moss *Physcomitrium pyriforme**. Poster presented at the annual Texas Tech University Undergraduate Research Conference, Lubbock, TX.

Salazar, J., **Bullock, M. R.**, Bailey, Z., & Johnson, M. G. (2023, April). *Responses of Leaf Stomata to 50 Years of CO<sub>2</sub> Increase Using Herbarium Specimens*. Poster presented at the annual Texas Tech University Undergraduate Research Conference, Lubbock, TX.

#### *Botany 2022 (Anchorage, AK)*

Ogbeide, J., **Bullock, M. R.**, Patel, N., Goffinet, B., Medina, R. A., Johnson, M. G. (2022, July). *Developing a Restriction Digest Marker to Identify Cryptic Species within *Physcomitrium pyriforme**. Lightning talk presented at the annual meeting of the Botanical Society of America, Anchorage, AK.

#### PRESENTATIONS BY COLLABORATORS

Johnson, M. G., **Bullock, M. R.**, Jackson, C. J., Schwilk, D. W., Miller C., Wickett, N., Baker, W. J., Faist, A. M., Hunter, L., & Handy, S. M. (2023, July). *The next phase of Angiosperms353: improved targets, mixed DNA, and bioinformatics resources*. Oral paper presented at the annual meeting of the Botanical Society of America, Boise, ID.

Slimp, M., **Bullock, M. R.**, Mentag, R., Khayi, S., Fokar, M., & Johnson, M. G. (2023, July). *Ecological Bastion and Iconic Cultural Food: Conservation Genomics of the Argan Tree*. Oral paper presented at the annual meeting of the Botanical Society of America, Boise, ID.

Price, S., Jaeger, S., **Bullock, M. R.**, LoPresti, E. F., & Johnson, M. G. (2023, July). *Possible cryptic species in widespread *Abronia fragrans* complex species*. Oral paper presented at the annual meeting of the Botanical Society of America, Boise, ID.

Eludini, P. O., **Bullock, M. R.**, Johnson, M. G., & Schwilk, D. W. (2023, July). *Woody cover negatively affects diversity of the aboveground plant community and soil seedbank in central Texas*. Poster presented at the annual meeting of the Botanical Society of America, Boise, ID.

Johnson, M. G., Chen, Y., Price, S., **Bullock, M. R.**, Slimp, M., & Patel, N. (2022, July). *Analysis of Target Capture Data for Phylogenetics and Population Genetics*. Workshop taught and presented at the annual meeting of the Botanical Society of America, Anchorage, AK.

Cantley, J. T., **Bullock, M. R.**, Williams, T. M., Haase, B., & Martine, C. T. (2022, July). *Exploring evolutionary processes promoting adaptive divergence across populations of Hawaiian *Chenopodium oahuense* (Amaranthaceae)*. Oral paper presented at the annual meeting of the Botanical Society of America, Anchorage, AK.

#### RELATED EXPERIENCE

Texas Tech University

##### **Herbarium Curation Assistant, E. L. Reed Herbarium**

2022 – Present

Coordinate undergraduate herbarium research, mentor undergraduate student herbarium digitization, refile specimens into their appropriate collection locations as needed, reorganize herbarium in concordance with currently accepted taxonomic classification.

San Francisco State University

##### **Lab Assistant, Genomics/Transcriptomics Analysis Core**

2018 – 2021

Tested and calibrated lab equipment in accordance with regulations and standard operating procedures to create a safe and productive work environment, recorded daily inventory of lab supplies and ordered items in low stock to ensure positive experience and efficiency of users.

Boyce and Bynum Pathology Laboratories

##### **Specimen Processor III, Processing Department**

2017 – 2018

Received, unpacked, and processed all specimens for quality control before dividing them into the appropriate laboratory departments for testing, collected,

transcribed, and entered demographic and specimen data into the laboratory information system with accuracy and precision.

#### AWARDS AND FELLOWSHIPS

TTUAB Community Service Award, Texas Tech University (\$1,000)	July 2023
TTU Graduate Student Research Support, Texas Tech University (\$1,500)	February 2023
TTUAB Community Service Award, Texas Tech University (\$250)	June 2022
Helen DeVitt Jones Graduate Fellowship, Texas Tech University (\$15,000)	August 2021
Instructionally Related Activities Research Award, San Francisco State University (\$500)	December 2019
Boundaries of Life Fellowship, San Francisco State University (\$21,000)	August 2018
Donald P. Duncan Scholarship, University of Missouri – Columbia (\$500)	August 2017
Bright Flight Scholarship, University of Missouri – Columbia (\$6,000)	August 2014
CAFNR Award, University of Missouri – Columbia (\$4,000)	August 2014
Elsa “Elsie” Kemble Memorial Scholarship, University of Missouri – Columbia (\$2,000)	August 2014
Bright Flight Scholarship, University of Missouri – Columbia (\$6,000)	August 2014
Chancellor’s Award, University of Missouri – Columbia (\$28,800)	August 2014