Jared B. Meek

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Columbia University
Ecology, Evolution and Environmental Biology (E3B) Dept.

EDUCATION

Columbia University, New York, NY

- **PhD in Ecology, Evolution and Environmental Biology** **May 2025**
  - **GPA:** 4.00
  - **Relevant Coursework:** Statistical Modeling; Seminar in Race, Climate Change, and Environmental Justice; Programming and Data Science for Biologists; Introduction to Geographic Information Systems; Computational Phylogenetics

- **M.A. in Ecology, Evolution and Conservation Biology** **May 2020**
  - **GPA:** 4.15
  - **Relevant Coursework:** Fundamentals of Evolution; Fundamentals of Ecology; Statistics for Ecology and Evolutionary Biology; Principles and Applications of DNA Sequencing; Plant Physiology; Ecosystem Ecology & Global Change; Conservation Biology; History of Ecology & Environmentalism

Brigham Young University, Provo, UT **December 2017**

- **B.S. in Biodiversity and Conservation**, College of Life Sciences (Emphasis in Botany and Freshwater Ecology)
  - **GPA:** Major 3.87, Overall 3.83
  - **Relevant Coursework:** Evolutionary Biology; Conservation Biology; Plant Diversity; Plant Ecology; Plant Physiology; Plant Classification and Identification; Field Botany; Ecology; Aquatic Entomology; Animal Diversity; Limnology; Bioethics; Environmental Policies & Laws; Writing in the Natural Sciences; Physical and Organic Chemistry; Molecular Biology; Genetics; Statistics; Physics; Calculus

PROFESSIONAL & RESEARCH EXPERIENCE

Donal Danforth Plant Science Center, St. Louis, MO

- **Postdoctoral Researcher,** Kellogg Lab **Mar 2025 – Present**
  - Organized and annotated a dataset of 1,000+ chloroplast genomes from the Andropogoneae grass tribe
  - Inferred the first comprehensive chloroplast phylogeny of Andropogoneae
  - Analyzed diversification rate, biogeography, and evolution of grass floral structure

Columbia University, New York, NY

- **Dr. Deren Eaton's Plant Genomics Lab** **July 2018 – May 2025**
  - Mountain plant phylogeography: how mountain landscapes influence plant evolutionary processes
  - Focusing on the biogeography and conservation of multiple plant genera (*Pedicularis*, *Delphinium*, *Lupinus*) across disjunct mountain ranges (Hengduan Mountains of eastern Asia, Western Cordillera of North America)
  - Fieldwork in SW China (2018 - 2019) and western North America (2021 – 2022) to collect plant specimens for herbarium records and leaf tissue for next-generation DNA sequencing
  - Extensive genomic lab work involving extractions and ddRAD library prep for over 1,000 samples
  - Genomic sequence analysis (ddRAD, WGS) including de novo and reference-based assemblies, population genetics, species delimitation, demographic analyses, and divergence time estimates
  - Landscape genomics for 12 widespread and co-occurring montane species
  - Analyzed the effects of human-mediated gene-flow between highly endemic montane plant species to determine conservation priorities

- **Dr. Sara Kross' Conservation Lab** **October 2018 – December 2021**
  - Studied the trends in funding for conservation, climate change mitigation, and biodiversity projects across the world over the past ten years
  - Collaborated with an interdisciplinary group of departments across Columbia University to access conservation funding data
  - Helped create a machine-learning model in Python to sort and assess a large dataset of ~80,000 grants

New York Botanical Garden, Bronx, NY

- **Center for Conservation Strategy**, Dr. Brian Boom **March 2019 – January 2021**
  - Utilized databased plant observance records (GBIF) to re-assess plant species currently placed in IUCN's "Data Deficient" category in an effort to accelerate urgent conservation efforts
  - Created a computational pipeline in R for efficient re-assessment of any taxa with observance/collection records available on the Global Biodiversity Information Facility (GBIF)

Brigham Young University, Provo, UT

- **Stanley L. Welsh Herbarium**, Dr. Robert Johnson **January – December 2017**
  - Morphological species delimitation of endemic *Lupinus* (Fabaceae) in Washington and Oregon, U.S.A.
  - Collected, dried, and mounted plant specimens for reference, storage, and intercollegiate loans
  - Databased herbarium specimens for geo-referencing and conservation data
- **Dr. Riley Nelson's Entomology Lab** **September 2015 – December 2017**
  - Studied the efficacy of large-scale river restoration methods; Middle Provo River, Utah
  - Assessed the biogeography and abundance of *Pteronarcys californica* (Pteronarcyidae); Provo River, Utah
  - Managed students developing an online identification guide of freshwater insects in the Western U.S.
- **Dr. Sam St. Clair's Desert Ecology Lab** **April – August 2017**
  - Studied effects of *Bromus tectorum* invasion on wildfire intensity in desert ecosystems; Rush Valley, Utah
  - Identified terrestrial insects collected from pitfall traps in desert ecosystems; Rush Valley, Utah
- **J. Reuben Clark Law School**, Dr. Brigham Daniels **March – December 2016**
  - Traveled throughout Rwanda, Uganda, Central Europe and Scandinavia as part of BYU's "Parks of the World" study abroad program, which studied the intersections of climate change and national park management strategies from the Equator to the Arctic
  - Wrote and published research on the impacts of climate change on national parks throughout the world
- **Dr. Leigh Johnson's Plant Systematics Lab** **January – April 2016**
  - Used next-gen sequencing and phylogenetic methods for species delimitation of *Navarretia* (Polemoniaceae)
- **Dr. Byron Adams' Evolutionary Biology Lab** **January – December 2015**
  - Studied effects of climate change on freeze-thaw cycles of *Tardigrada* from Antarctica's McMurdo Dry Valleys
- **Dr. Richard Gill's Plant Ecology Lab** **January – April 2015**
  - Conducted chemical analysis on soil carbon responses to changing CO_2 levels in Texas prairie soils

ACADEMIC PUBLICATIONS

Meek, J. B. & Eaton, D. A. Using temporal genomics to quantify gene flow and plant dispersal in a human-dominated landscape. *Applications in Plant Science*. (*Forthcoming Summer 2025)*

Meek, J. B., Ree, R., & Eaton, D. A. Phylogeography and conservation of endemic *Pedicularis* in the Hengduan Mountains of China. (*Manuscript in prep.)*

Meek, J. B., Cook, D., & Eaton D. A. Towards a comprehensive phylogeny of North American *Delphinium* (Ranunculaceae). (*Manuscript in prep.)*

Eichert, A., Sproul, J., Tolman, E.R., Birrell, J., **Meek, J.**, Heckenhauer, J., Nelson, C. R., Dudchenko, O., Jeong, J., Weisz, D., Aiden, E. L., Hotaling, S., Ware, J. L., Frandsen, P. B. (2024). An unusually large genome from an unusually large stonefly: a chromosome-length genome assembly for the giant salmonfly, Pteronarcys californica (Plecoptera: Pteronarcyidae). *Journal of Heredity*. https://doi.org/10.1093/jhered/esae044

Franco, F. F., Amaral, D. T., Bonatelli, I. A., **Meek, J. B.**, Moraes, E. M., Zappi, D. C., ... & Eaton, D. A. (2024). A historical stepping-stone path for an island-colonizing cactus across a submerged "bridge" archipelago. *Heredity*, 1-13. https://doi.org/10.1038/s41437-024-00683-4

Meek, J., Birrell, J., Mulford, T., Shiozawa, D. K., & Nelson, C. R. (2023). Aquatic insect communities remain impaired following large-scale river restoration. *Western North American Naturalist*, *83*(2), 207-219. https://doi.org/10.3398/064.083.0206

Levin, M. O., Kalies, E. L., Forester, E., Jackson, E. L., Levin, A. H., Markus, C., McKenzie, P. F., **Meek, J. B.**, & Hernandez, R. R. (2023). Solar Energy-driven Land-cover Change Could Alter Landscapes Critical to Animal Movement in the Continental United States. *Environmental Science & Technology*, *57*(31), 11499-11509. https://doi.org/10.1021/acs.est.3c00578

Levin, M. O., **Meek, J. B.**, Boom, B., Kross, S. M., & Eskew, E. A. (2022). Using publicly available data to conduct rapid assessments of extinction risk. *Conservation Science and Practice*, *4*(3), e12628. https://doi.org/10.1111/csp2.12628

Meek, J. B., Hoffberg, S. L., Molina-Velez, K., Ree, R. & Eaton, D. A. (2020). Phylogeography and conservation of *Pedicularis* (Orobanchaceae) in the Hengduan Mountains of SW China and Tibet. *Columbia Academic Commons.* https://doi.org/10.7916/d8-5yjr-kk29

Birrell, J. H., **Meek, J. B.**, & Nelson, C. R. (2019). Decline of the Giant Salmonfly *Pteronarcys californica* Newport, 1848 (Plecoptera: Pteronarcyidae) in the Provo River, Utah, USA. *Illiesia*, *15*(5), 53-97.

Meek, J. & Nelson, C. R. (2018). Provo River Restoration: Success or Failure? *Brigham Young University of Undergraduate Research.* Online at http://jur.byu.edu/?p=23164.

Meek, J. & Daniels, B. (2017). National Parks and the Threats They Face: A World Survey. *Brigham Young University Journal of Undergraduate Research.* Online at http://jur.byu.edu/?p=21909.

ACADEMIC PRESENTATIONS

International Botanical Congress 2024, Madrid, Spain: Phylogeography and conservation of *Pedicularis* (Orobanchaceae) in the Hengduan Mountains biodiversity hotspot (talk)

New Phytologist next generation scientists 2024, Duke University: Towards a comprehensive phylogeny of North American *Delphinium* (Ranunculaceae) (poster)

Botany 2023, Boise, ID: Phylogeny of North America larkspurs (*Delphinium*; Ranunculaceae) (virtual talk)

Botany 2022, Anchorage, AK: Parallel phylogeography of mountain endemics: do infrageneric species share geographic history? (talk)

Botany 2020, Virtual: Mountain phylogeography and conservation: a case study in *Pedicularis* (Orobanchaceae) (talk)

Student Conference on Conservation Science – New York 2019, American Museum of Natural History: Phylogeography and conservation of endemic *Pedicularis* in the Hengduan Mountains (talk)

Botany 2019, Tucson, AZ: Phylogeography and conservation of endemic *Pedicularis* (Orobanchaceae) in the Hengduan Mountains of China (poster)

Evolution 2019, Providence, RI: Phylogeography and conservation of endemic *Pedicularis* (Orobanchaceae) in the Hengduan Mountains of China (poster); https://tinyurl.com/tumucut

iDigBio 3rd Annual Digital Data Conference 2019, Yale University: Teaching Digital Botany: Making Change by Making Connections (poster w/ Dr. Hilary Callahan, Barnard College)

2019 Mormon Scholars in the Humanities Conference, "Ecologies", Southern Utah University: Can Latter-day Saint Theology Solve our Ecological Crisis? (paper + talk)

Entomological Society of America 2017, Denver, CO: Efficacy of restoration efforts in the Provo River, Utah with respect to aquatic insect diversity and abundance (talk)

INVITED LECTURES

Barnard College Plant Diversity, Fall 2022

BYU Biology Undergraduate Alumni Symposium, Fall 2022

GRANTS & FUNDING

Botanical Society of America

- **2022:** BSA Graduate Student Research Award, for the proposal: Towards a comprehensive phylogeny of North American *Delphinium* (Ranunculaceae) ($1,500)

USDA ARS Poisonous Plant Research Laboratory

- **2020:** Applying phylogenomics to native *Delphinium* species in the Intermountain West to understand chemotype differentiation ($15,000)

Columbia University

- **2024:** Conference Travel Grant, E3B Department ($750)
- **2024:** Conference Matching Travel Grant, Graduate School of Arts & Sciences ($400)
- **2023:** Conference Travel Grant, E3B Department ($200)
- **2022:** Conference Travel Grant, E3B Department ($900)
- **2022:** Conference Matching Travel Grant, Graduate School of Arts & Sciences ($300)
- **2022:** Student Travel Grant, Arts & Sciences Graduate Council ($500)
- **2021:** PhD Student Fieldwork Grant, E3B Department ($3,000)
- **2020:** Alfred Russell Wallace Award for Outstanding MA Thesis, E3B Department ($250)
- **2019:** MA Student Research Grant, E3B Department, Comparative phylogeographic methods to inform conservation of endemic *Pedicularis* (Orobanchaceae) in the Hengduan Mountains of China ($1,500)
- **2019:** Conference Matching Travel Grant, Graduate School of Arts & Sciences ($750)
- **2019:** Student Travel Grant, Arts & Sciences Graduate Council ($375)
- **2019:** Dolores Zohrab Liebmann Graduate Fellowship; finalist for Columbia University

BYU Office of Research and Creative Activities Grant

- **2017**: Efficacy of restoration efforts in the Provo River, Utah ($1,500)
- **2016**: Effects of climate change on national parks from the Equator to the Arctic ($1,500)

Udall Foundation Undergraduate Scholarship

- **2016**: Federal scholarship awarded to undergraduate students leading in environmental studies or Native American tribal law and health ($7,000)

TEACHING & WORK EXPERIENCE

Columbia University, Center for Undergraduate Global Engagement, New York, NY

- **Teaching Assistant,** Public Lands in the American West **June 2022**
  - Coordinated instructional field trips across federal (NPS, USFS, BLM, USFWS) and state public lands along the Front Range of Colorado; planned logistics and ensured travel safety of all students around Rocky Mountain National Park and various public land areas near Estes Park, CO
  - Held office hours, provided instructional feedback on student papers, graded quizzes and presentations

Columbia University, Ecology, Evolution and Environmental Biology (E3B) Department, New York, NY

- **Teaching / Research Assistant,** Field Botany/Plant Systematics **September – December 2019 & 2021**
  - Facilitated field trips for 20+ students by helping plan logistics and personally driving students to various field trip locations around New York City and the broader Tri-State Area in a 15-passenger van
  - Aided in classroom instruction and lab training, including use of field guides and identification manuals
  - Held office hours and taught students through active learning (e.g., plant collection and identification)
- **Teaching Assistant,** Programming and Data Science for Biologists **January 2021 – May 2021**
  - This virtual class focused on computational skills for biologists, with a focus on the Python programming language and development of novel software packages for biological applications
  - Analyzed and graded student's code using GitHub

- **Teaching Assistant,** Forest Ecology **September – December 2020**
  - Co-instructor for a virtual class that introduced the fundamentals of forest ecology
  - Forest structure, function, environmental gradients, dendroclimatology, ecohydrology, fire ecology, forest development and management, forest pests and pathogens
  - Developed labs and lectures that used data collected from forest ecosystems near New York City to teach these concepts

Columbia University, School of International and Public Affairs, New York, NY **May – August 2020 & 2021**

- **Teaching Assistant,** Principles of Ecology and Urban Ecology
  - Aided in virtual instruction of two summer courses for the MPA in Environmental Science and Policy program
  - Developed class materials, labs, and debates about current events concerning the social implications of ecological science
  - Held office hours and graded student assignments weekly

Barnard College, Biology Department, New York, NY

- **Digital Botany Teaching Assistant** **September 2018 – May 2020**
    - Ecology (BIOLBC2272)
    - Plant Diversity Lab (BIOLBC2841)
    - Global Power of Botany (BIOLX2851)
  - Partnered with the Mellon Foundation and the New York Botanical Garden to develop an undergraduate botany course, which focused on botanical research in the 21st century, including physical (i.e. field collection/herbarium research) and digital methods (i.e. online databases, GBIF, BIEN, R, GitHub)
  - Assisted in classroom and lab instruction, including field trips to the New York Botanical Garden, New York City parks, and the Arthur Ross Greenhouse
  - Developed digital labs in the R programming language (statistics, diversity indices, phylogenies, and species distribution models)
  - Used online databases and GitHub to teach the students computational skills, along with the basics of command-line programming for Mac and Windows operating systems
  - Instructed students on proper field methods for plant collection
  - Held office hours, graded assignments, and advised students on personal and group projects

Brigham Young University, Honors Program & Biology Department, Provo, UT

- **Teaching Assistant,** Principles of Biology (BIO 100) **September 2016 – December 2017**
  - Taught students the principles of cell biology, ecology, and evolution over three semesters
  - Mentored students in their first exposure to field-based scientific research and writing methods
  - Held weekly office hours to provide feedback and edits on homework and research papers
- **Teaching Assistant**, Environmental Humanities (UNIV 291) **September 2015 – December 2016**
  - Assisted in interdisciplinary teaching between the natural sciences and humanities over three semesters
  - Wrote and formatted test questions for midterm and final examinations
  - Held weekly office hours to grade, edit, and provide feedback on students' essays, short writing assignments, and scientific research papers

ADDITIONAL WORK EXPERIENCE

Botanical Society of America

- **Social Media Liaison** **September 2019 – August 2021**
  - Created original content for BSA's Twitter account, focusing on student outreach and engagement
  - Hosted weekly plant identification challenges, helping to connect BSA members (experts, early-career scientists, and students) to each other and to larger botanical institutions (e.g. botanical gardens, research companies)

U.S. Forest Service: Manti-La Sal National Forest, Price, UT **May – August 2016**

- **Field Technician**
  - Performed fieldwork in the Manti-La Sal National Forest in southeastern Utah; contracted through Brigham Young University
  - Identified and measured a variety of alpine and desert plant species; collected and pressed specimens for herbarium collection
  - Established new sage-grouse habitat monitoring sites and repeated ecological studies on previously established sites, including photo point and riparian green line studies

FIELD EXPEDITIONS

Virginia, USA: *Delphinium* **July 2023**
Alaska, USA: *Pedicularis*, *Delphinium*, *Aconitum* **July 2022**
Western North America (CA, WA, OR, ID, MT, WY, UT, AZ, CO, NM): *Delphinium*, *Aconitum* **May, July 2021**
Hengduan Mountains, China: *Pedicularis* **July 2019**
Hengduan Mountains, China: *Pedicularis* **July 2018**
Washington & Oregon, USA: *Lupinus*, *Delphinium* **June 2018**
Washington & Oregon, USA: *Lupinus*, *Delphinium* **June 2017**

PROFESSIONAL MEMBERSHIPS

Botanical Society of America **April 2019 – Present**
Society for Conservation Biology, North America Chapter **April 2019 – Present**
- Religion and Conservation Biology Working Group

Society for the Study of Evolution **April 2019 – 2020**
Sigma Xi **March 2019 – 2020**
Torrey Botanical Society **January 2019 - 2020**

COMMUNITY OUTREACH

Environmental Justice & Urban Ecology Research Program **January – August 2021**
- Helped plan and organize a 6-week summer research program for high school students in the Washington Heights neighborhood of New York City
- Established partnerships with Washington Heights Expeditionary Learning School and New York Restoration Project to implement this program within the students' neighborhood in Highbridge Park
- Selected field sites, developed program proposals, wrote grants, and secured permits for a successful program

Letters to a Pre-Scientist **September 2019 – April 2020**
- Pen pal with low-income elementary school student; shared experiences and information about what it's like to be a scientist, encouraging them to envision a future in a STEM career

Read Ahead **November 2018 – May 2019**
- Mentor at New York City elementary school, helping disadvantaged students develop social-emotional skills through reading, drawing and other classroom activities

VOLUNTEER WORK

Ecology, Evolution, and Environmental Biology Department, Columbia University **October 2022 – May 2023**
- **PhD Representative**
  - Represent PhD students at faculty meetings
  - Coordinate with faculty and staff to schedule and prepare student events

Arts & Sciences Graduate Council, Columbia University **September 2018 – April 2020**

- **E3B MA Representative**
  - Represented the Master's students from the Ecology, Evolution and Environmental Biology Department
  - Attended monthly interdepartmental meetings to advocate for graduate student needs and concerns
  - Enabled availability of funds for fellow students to present research at academic conferences

LDS Earth Stewardship

- **Advisory Board Member** **September 2024 – Present**
- **Board Member & Membership Committee Chair** **March 2015 – September 2024**
  - Leading a local chapter of LDS Earth Stewardship in New York and the Northeast U.S.
  - Expanding membership into 12 local chapters across the U.S., Europe, Africa, and Asia
  - Promoted environmental stewardship among members of The Church of Jesus Christ of Latter-day Saints
  - Partnered with The Nature Conservancy's Utah chapter to increase membership, outreach, and programs

Scouts BSA **2004 – Present**

- Eagle Scout since 2008; planted trees and installed irrigation at a foster care facility in Keller, TX for my Eagle Project
- Active as a leader and merit badge counselor in a New York City scout troop

Southern Utah Wilderness Alliance **January 2015 – May 2018**

- Met with Congress in Washington, D.C. to ask for land preservation in Utah through "America's Red Rock Wilderness Act"

Alaska Anchorage Mission of The Church of Jesus Christ of Latter-day Saints **May 2012 – May 2014**

- Conducted service projects in multiple Alaskan communities; developed communication and leadership skills; assigned to organize conferences and training meetings, as well as oversee the training of 150+ church volunteers throughout the state

NEWS/WRITING

Liahona, Salt Lake City, UT

- 3 Ways to Be a Good Steward of the Earth, According to a Young Adult Biologist **March 2021**
- https://www.churchofjesuschrist.org/study/liahona/2021/03/digital-only-young-adults/3-ways-to-be-a-good-steward-of-the-earth-according-to-a-young-adult-biologist?lang=eng

The Daily Herald, Provo, UT **March 2017**

- Bears Ears a spiritual treasure Zinke should honor

KRCL, Salt Lake City, UT **March 2016**

- RadioActive Interview
- https://krcl.org/blog/radioactive-march-14-2016/

National Public Radio, Salt Lake City, UT **December 2015**

- Independent Mormon Groups Back Climate Action
- https://www.kuer.org/post/independent-mormon-groups-back-climate-action#stream/0

LDS Earth Stewardship **November 2015**

- A Climate Petition to the United Nations Framework Convention on Climate Change

SKILLS & INTERESTS

- **Skills:** Plant and aquatic insect collection and identification, herbarium databasing, next-generation sequencing and genomic library preparation (RADseq, 3RAD), scientific writing
- **Computational:** Python, R, git, bash, QGIS, Google Earth Engine
- **Interests:** Reading, creative writing, conservation, backpacking, camping, music (guitar/banjo)