

# William N. Weaver

www.WilliamWeaver.xyz

## EDUCATION

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**BA Double Major: Ecology and Evolutionary Biology; Environmental Studies**

May 2017

University of Colorado, Boulder

## EMPLOYMENT

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**University of Colorado, Boulder**

March 2018 – Present

Department of Ecology and Evolutionary Biology

*Professional Research Assistant*

- Developed computer vision and machine learning algorithms to fully automate basic morphological trait extraction from herbarium specimen vouchers.
- Designed, trained, and optimized convolutional neural networks and support vector machine algorithms.

**Cooperative Institute for Research in Environmental Science**

March 2018 – Present

Center for Limnology

*Associate Scientist I*

- Researched and implemented Gauss-peak spectral deconvolution methods as an alternative to high performance liquid chromatography for algal pigment analyses.
- Assisted with the development of mathematical models describing carbon assimilation and turnover in riparian consumers based on isotopic discrimination.

**Colorado State Senate – Denver, CO**

January 2017 – May 2017

*Policy Research Intern*

- Researched energy and environmental legislation for the 2017 Colorado legislative session, drafted bill packets, managed town halls and community outreach events, took minutes of Senate committee hearings, regularly interacted with constituents and legislators via phone, email, and in person.

**Cooperative Institute for Research in Environmental Science**

October 2015 – February 2018

Center for Limnology

*Laboratory Technician*

- Operated and maintained analytical equipment including segmented flow analyzer, ion chromatograph, and specialized gas chromatograph.
- Conducted water quality analyses testing amounts of chlorophyll, phosphorus, nitrogen, hardness, dissolved organic carbon, total suspended solids, dissolved metals, and ash-free dry mass. Safely handled hazardous acids, bases, and organic solvents.

*Field Technician*

- Collected field data including: water samples using a Van Dorn sampler, depth profile measurements using a YSI multiparameter sonde, secchi disk depths, stream flow measurements, macroinvertebrates, periphyton, and zooplankton.
- Operated a truck with trailer and motorboat.

**University of Colorado, Boulder**

September 2015 – February 2018

Faculty Laboratory – Dr. Stacey Smith

*Undergraduate Research Assistant*

- Used molecular phylogenies and comparative phylogenetic methods to infer patterns of trait evolution and species distributions for North American plant species. NSF funded project included in-house genetic sequencing and large-scale analysis of NEON population database and NCBI published sequences.
- **Project:** Testing Darwin's naturalization hypothesis: phylogenetic community structure among native and non-native species.

*Volunteer*

- Helped care for disadvantaged dogs by taking them on long walks, cleaning up after them, scratching behind their ears, and teaching them tricks to impress their new family.

**University of Colorado Boulder Libraries – Archives and Special Collections**

August 2013 – May 2016

*Preservationist*

- Assisted with preservation efforts required to maintain UCB's extensive collection of rare and irreplaceable media.
- Performed minor repairs on books and novel media.
- Constructed custom enclosures for vellum books, first edition texts, and newsprint.

**PUBLICATIONS**

Ng, J., **Weaver, W.N.**, and R.G. Laport. *In Press*. Testing Darwin's Naturalization Conundrum using phylogenetic relationships: generalizable patterns across disparate communities? *Diversity and Distributions*.  
dx.doi.org/10.1111/ddi.12861

**PRESENTATIONS****Ecological Society of America – New Orleans, LA**

Summer 2018

*Oral Presentation*

- LeafMachine: Using machine learning to automate phenotypic trait extraction from herbarium vouchers

**Ecological Society of America – Portland, OR**

Summer 2017

*Poster Presentation*

- Testing Darwin's Naturalization Hypothesis: Phylogenetic Community Structure Among Native and Non-Native Species

**Biological Sciences Initiative – University of Colorado, Boulder**

Spring 2017

*Poster Presentation*

- Testing Darwin's Naturalization Hypothesis: Phylogenetic Community Structure Among Native and Non-Native Species

**Botanical Society of America – Savannah, GA**

Summer 2016

*Poster Presentation*

- Testing Darwin's Naturalization Hypothesis: Phylogenetic Community Structure Among Native and Non-Native Species

**UROP-HHMI Bioscience Poster Session – University of Colorado, Boulder**

Spring 2016

*Poster Presentation*

- Testing Darwin's Naturalization Hypothesis: Phylogenetic Relatedness Among Native and Non-Native Plant Species.

**Ecology and Evolutionary Biology Symposium – University of Colorado, Boulder**

Spring 2016

*Poster Presentation*

- Testing Darwin's Naturalization Hypothesis: Phylogenetic Relatedness Among Native and Non-Native Plant Species.

**SKILLS AND EXPERIENCE**

## Mathematics Courses

- Calculus 1, 2, 3
- Linear Algebra
- Differential Equations

## Programming and Computer Skills

- Programming fluency in R, Matlab, and Python
- Programming proficiency in C++, VBA, and HTML
- Project-based experience with computer vision and machine learning architectures
- Skilled in Mathematica, Microsoft Office Suite, In-Design, and numerous IDEs

## Genetics

- Wet lab experience, including DNA extraction, multi-channel pipetting, polymerase chain reactions, gel electrophoresis, and NanoDrop

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**Relevant Coursework**

- Course work covering Colorado water rights, water management, natural resource management, political theory, climate change, grant writing, environmental economics, environmental public policy, limnology, environmental ethics, and environmental sociology.

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**GRANTS AND SCHOLARSHIPS**

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Biological Sciences Initiative Travel Grant (\$700)	Summer 2017
Biological Sciences Initiative Scholar (\$2,500)	2016 – 2017
Professional and Academic Conference Endowment Travel Grant for Botany Conference (\$1,000)	Summer 2016
Biological Sciences Initiative Travel Grant for Botany Conference (\$600)	Summer 2016
Undergraduate Research Opportunities Program Research Grant (\$2,400)	Summer 2016
Biological Sciences Initiative BURST Research Grant (\$2,500)	2015 – 2016
President Horace M. Hale Award (\$14,000)	2013 – 2017
Loach Engineering Scholarship	2013 – 2014
Dean's List	5 Semesters

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**PROFESSIONAL AFFILIATIONS**

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Ecological Society of America (ESA)	2016 – Present
Botanical Society of America (BSA)	2016 – 2018
Colorado Native Plant Society (CONPS)	2016 – 2017