# Louise Barton

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## EDUCATION

**University of Colorado-Boulder** — **Fall 2017-Spring 2018**
**Masters in Ecology and Evolutionary Biology**
Graduate teaching assistant

**University of North Carolina- Asheville** — **Spring 2014-Fall 2015**
**Bachelor of Science in Ecology and Evolutionary Biology**
University Research Scholar and McCullough Scholar

**College of Charleston** — **Fall 2009- Fall 2012**
**Bachelor of Science in Psychology (Biology minor)**

**University of Virginia: Semester at Sea** — **Spring 2011**
Merit scholar

## RELATED COURSEWORK

**University of Colorado**
Computation Biology (2019)
Phylogenetics (2019)
Quantitative Ecology and Evolution
Biometry
Genomics
Colloquium
Introduction to research
Plant Systematics
Lichen Biome
Plant animal interactions

**University of North Carolina-Asheville**
Tropical Ecosystems
Plant Physiology
Field Botany
Genetics
Entomology
Principles of Botany
Principles of Zoology
Introduction to GIS
Research Methods
Organic Chemistry
Physics I
Physics II
Biological Bio Chemistry
Flowering Plant Systematics
Evolutionary Biology
Lab Assistantship

**College of Charleston**
Ecology and Evolution
Cellular and Molecular Biology
Plant Taxonomy
General Chemistry
Quantitative Chemistry
General Chemistry II
Statistics
Environmental Science
Man and the Environment
Research Methods
Spanish I, II, and III

## PUBLISHED RESEARCH

In press: *Castanea* — Barton LK and Menges ES. How fire and pollinator visitation affect the reproductive success of *Asimina reticulata* (Annonaceae), the netted pawpaw

December 2015 — Barton LK. Growth Release in Overstorey Trees Following the Removal of Non-Native Invasive Species. UNC Asheville Journal of Undergraduate Research.

## PRESENTATIONS

Dec 2018 — University of Colorado, Boulder
Altitude as a diver of diversification and local adaptation in a highly coevolved plant-pollinator pair

Aug 2018 — Ecological Society of America, New Orleans
Whose your pawpaw? How fire and flower density affect pollinators and reproduction in *Asimina reticulata*

Sept 2016 — Archbold Biological Station
The Influence of Time-Since-Fire, Flower Density, and Pollinator Visitation on the Fecundity of *Asimina reticulata* (Annonaceae) in Florida Scrub

May 2016 — Florida Native Plant Society Annual Conference
Who's your pawpaw? How fire and flower density affect pollinators and reproduction in *Asimina reticulata*

Dec 2015 — McCullough Fellows Research Presentations
Growth Release in Overstory Trees Following the Removal of Non-native Invasive Species

Dec 2015 — UNCA Undergraduate Research Symposium
Growth Release in Overstory Trees Following the Removal of Non-native Invasive Species

April 2015 — UNCA Undergraduate Research Symposium
Chromosomal Sex Determination of Barn and Screech Owls from the WNC Nature Center

## RECENT RESEARCH EXPERIENCE

**Master's Research** *Kwazulu-Natal/Drakensberg, South Africa* **Dec 2017-March 2018**

- Completed reciprocal translocations to assess for local adaptation at high/low altitude sites
- extensive floral tube length measurement [40m spaced cline, 30 populations between 2000-3200m]
- ddRAD-Seq and STRUCTURE analysis to asses for gene flow between populations
- Principle investigators: Drs. Erin Tripp and Steven Johnson

**Contracted Botanist** *National Park Service: Blue Ridge Parkway, Asheville NC* **July 2016-18**

- Collect demographic data on *Geum radiatum (*Appalachian avens) and Liatris helleri, two federally-endangered species. Most sites occur on cliffs and required ladders, extensive scrambling, or rappelling.
- 30 days each summer
- Principle investigators: Drs. Chris Ulrey and Eric Menges

**Field Assistant** *Namaqualand, South Africa* **Oct 2016**

- Assisted PhD student, Florent Grenier, in collecting data on a long tongue fly pollination syndrome unique to the region. Fieldwork included strenuous hiking, fly and flower collections, and remote camping.

**Plant Ecology Research Intern** *Archbold Biological Station, FL* **Feb. 2016 – Oct. 2016**

- Conducted independent research on the breeding system and pollinator ecology of *Asimina reticulata,* the netted pawpaw, by assessing the interplay of time-since-fire, flower density, and pollinator visitation on fruit production and seed viability.
- Assisted in various field projects including: rare species searches and monitoring, population dynamics/demography of endangered plants, restoration of disturbed areas and reintroduction of listed species, community sampling, microhabitat analyses, biomass sampling, vouchering specimens, and prescription burns.
- Led re-introduction of *Ziziphus celata* (FL ziziphus) and microhabitat analyses/demography of *Liatris ohlingerae* (FL blazing star) – both federally-endangered species
- Mentored two high school interns throughout their NSF funded summer research projects.
- Advisors: Dr. Eric Menges and Stephanie Koontz

**Lab Technician** *University of North Carolina, Asheville NC* **July 2015- Feb. 2016**

- Completed genetic analyses of *Panax quinquefolius* (American ginseng) and *Spiraea virginiana,* and managed undergraduate research assistants in Dr. Jen Rhode Ward's genetics lab
- Trained new assistants and guided them through lab protocols
- Funding was provided by the North Carolina Biotechnology Center

**Research Assistant** *University of North Carolina, Asheville NC* **March 2014- Feb. 2016**

- Assisted with population demographic research on *Panax quinquefolius*
- Installed and maintained native plant meadows and collected data on pollinator visitation
- Surveyed disturbed forests for research on local invasive and non-native species to better understand affective control mechanisms, effects on native communities, and the effects of historic land use on invasibility. Personal Interview: http://news.unca.edu/features/homegrown-research
- Assisted in ginsenoside extraction from *Panax quinquefolius*
- Funding provided by UNC Asheville Undergraduate Research Program
- Advisors: Drs. Jonathan Horton, David Clarke, and Jen Rhode Ward

**Undergraduate Researcher** *University of North Carolina, Asheville NC* **April - Dec. 2015**

- Completed original research using dendroecological techniques to access growth release in overstory trees following the removal of a non-native invasive species
- Funding provided by personal grant from the McCullough Institute for Conservation, Land Use and Environmental Resiliency
- Advisor: Dr. Jonathan Horton

## TEACHING EXPERIENCE

**CU-Boulder**: Plant Anatomy, General Biology I (semester and summer sessions), and General Biology II.

> **Pedagogy Workshops (9hrs)**: Using dialogue in the classroom, blooms taxomy, web grading, planning and managing stem labs, adapting to international and domestic undergraduates in your classroom, teaching large stem classes, dealing with procupines, achieving authority in the class room, discrimination and harassment

**UNC-A:** Botany lab LA, AVID biology tutor (botany, ecology & evolution, cell & molecular, and zoology), bug camp instructor, and biology after school instructor

## RELEVANT EXPERIENCE

**Analysis and Modeling of Demographic Data for Plants** *Archbold Biological Station* **Nov 14-16th 2016**

- Completed 3-day workshop led by Pedro Quintana-Ascencio and Eric Menges on using R to model structured populations of Florida endemic plants.

**Greenhouse Manager** *University of North Carolina, Asheville NC* **April 2014– Feb. 2016**

- Cared for live collections: general plant care and pest control

**Biology Club President** *University of North Carolina, Asheville NC* **Aug 2014- Dec 2015**

- Coordinated and taught Super Saturdays, weekly biology classes for local 3rd to 5th grade students
- Event leader for middle school Science Olympiad Bio Processes Lab
- Arranged guest lectures on special topics, promoted university-community involvement, and led field trips

**USDA Forest Service Intern** *Bent Creek Experimental Forest, Asheville NC* **April-Sept. 2015**

- Forestry aid in silviculture-vegetation research

**Herbarium Assistant** *University of North Carolina, Asheville NC* **March 2015- June 2015**

- Revitalized vouchers along side Dr. Jim Petranka in preparation for entry into SERNEC

**Herbarium Volunteer** *Las Cruces Biological Station (OTS), Costa Rica* **Dec 2014- Jan 2015**

- Mounted herbarium specimens for the Organization for Tropical Research and created a map of potentially hybridizing *Phytelephas* (Tagua palm)

## RELAVENT SKILLS/TECHNIQUES

**Field/Collection:** Field data collection/management, cross-pollination, scent trapping, pollinator observation, cross-pollinations, south-eastern woody and herbaceous plant identification, dichotomous key (plant and insect), specimen vouchering/pinning, plot installation and maintenance, line-transect and point-intercept sampling, measurements of plant growth and fecundity, fruit collection and seed germination, Garmin/Trimble GPS, compass orienteering, soil sampling and use of moisture probes, rare plant searches, densiometer, increment boring, DBH measurements, tree core processing and ring analyses, growth chamber, biomass sampling, prescription burning, LiCor 6400 photosynthesis meter, Scholander-type pressure chamber, Li-Cor LI250 light meter, anemometer, Li-Cor 3100C leaf area meter, repelling, off road ATV and truck operation

**Laboratory**: Plant DNA extraction (CTAB and DNeasy methods), Nanodrop spectrophotometry, PCR amplification, gel electrophoresis, gel imaging system, Carestream software, microsatellite analyses, conservation genetics, GelAlEx, reflux extraction protocol

**Bioinformatics**: Samtools suite, BWA, Trimmomatic, Mega, Blast, Sequin, genome assembly, Conda, Linux

**Data Analysis/Programming**: R, Bash, SPSS Statistics 22, Microsoft Access, SAS Enterprise, Sigma Plot, ArcMap 10.3.1, JX2 and Cofecha software, LandFlux, ImageJ, Microsoft Office (Word, Excel-plus add-ins, and PowerPoint)

**Other:** Experimental design, leadership, organization, working long days in the field under strenuous conditions, multi-weather endurance, writing of grants/manuscripts, Red Cross CPR/First aid, PADI open water

## REFERENCES


**Dr. Erin Tripp**
Graduate advisor/PI, University of Colorado Boulder
erin.tripp@colorado.edu

**Dr. Stephanie Mayers**
Senior Instructor and plant labs coordinator, University of Colorado Boulder
stephanie.mayer@colorado.edu

**Dr. Eric Menges**
Plant lab director. Archbold Biological Station
emenges@archbold-station.org

**Dr. Chris Ulrey**
Botanist of the Blue Ridge Parkway

**Dr. Jennifer Rhode Ward**
Associate Professor. University of North Carolina- Asheville
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**Dr. Jonathan Horton**
Professor. University of North Carolina- Asheville
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**Dr. David Clarke**
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