Justin G. Tirrell

UNDERGRADUATE STUDENT · POPULATIONS ECOLOGY

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Education

Utah State University *Logan, Utah*

B.S. IN BIOLOGY–MINORS IN PHILOSOPHY & CHEMISTRY *Aug. 2014 - May. 2020*

- Investigated dynamics of plant/animal populations using mathematical, statistical, and computational techniques
- Pursued a study of ethics in scientific, environmental, social, and economic contexts
- Competent in laboratory/field techniques for chemistry, microbiology, and ecology
- Inducted into the philosophy honor society (Phi Sigma Tau)
- USU Honors Program

Skills

Chemistry	Acid-Base Extraction, Distillation, Vacuum Filtration, Recrystallization, Gel Electrophoresis TLC, GC, IR Spec.
Microbiology	Acid-fast Stain, Spore Stain, Asceptic Technique, Streak Plate, Pour Plate, Smear Preparation
Development	Automating Processes, Programmatic Simulations Modeling, Creating Convenience Functions in Bash
Programming	R, C++, JAVA, Python, LaTeX, Elisp, BASH, Javascript
Utilities	Emacs, Ruby Gem, GitHub, Git, ssh, vnc, cron, nmap
Systems	Raspberry pi, Linux

Experience

Lab Manager *Logan, Utah*

SEEDSCAPE ECOLOGY GROUP *Jun. 2019 - present*

- Prepared a full inventory of lab supplies, maintaining relevant inventory data in a computer system
- Created static documentation detailing the packages and data tables contained in the NEDD code simulation model
- Organized and oversaw the calibration of pipettes and scales as well as the processing of returns and exchanges

Systems Modeller *Logan, Utah*

SEEDSCAPE ECOLOGY GROUP *Jan. 2018 - present*

- Investigated patterns of seed dispersal within Tropical ecosystems by creating spatially explicit programmatic models to simulate known behavioural patterns of seed predators and dispersers
- Undertook advanced curriculum to develop proficiency in creating both mathematical and simulations models for dynamic populations
- Presented research proposals, progress reports, and special topics workshops to the Lab Group during weekly collaborations
- Collaborated with internationally based researchers to develop a research proposal investigating the impact of seed traits on dispersal potential
- Shared my research with the local research community twice yearly at University-hosted research symposiums

Undergraduate Teaching Fellow *Logan, Utah*

GENERAL ECOLOGY, USU ECOLOGY PROGRAM *Aug. 2019 - Dec. 2019*

- Provided feedback and instruction to students struggling with the coursework
- Evaluated student presentations at a course-sponsored poster symposium
- Assisted interested students in engaging with University research programs

Undergraduate Teaching Fellow *Logan, UT*

THEORETICAL ECOLOGY, USU ECOLOGY PROGRAM *Aug. 2019 - Dec. 2019*

- Tutored graduate students in mathematical, computational, and theoretical concepts central to the course's objectives
- Maintained weekly office hours to assist students with coursework and core concepts

Research Technician *Logan, Utah*

ADLER RESEARCH GROUP *April. 2019 - August. 2019*

- Executed the setup, data collection, take-down, and data entry for a Greenhouse experiment in collaboration with the USDA
- Practiced using calipers and TDR sensors to obtain plant growth data from competing plants at a USDA field site
- Assisted in taking apart the field experiment

Brain Tracing Specialist

UNDERGRADUATE RESEARCH, KAPHEIM RESEARCH LAB

- Generated digital object data from layers of cross-section images of *N. melanderi* bee brains
- Collaborated with members of the Kapheim Lab during weekly lab meetings
- Presented results at the Fall Student Research Symposium

Logan, UT

Aug. 2017 - Dec. 2017

Coachman & Tour Guide

MACKINAC ISLAND CARRAIGE TOUR COMPANY

- Delivered guided tours of Mackinac Island while driving a team of horses through streets crowded with pedestrian traffic
- Accountable for the health and safety of two-three draft horses, carriage passengers, and pedestrian/cyclist traffic
- Groomed and harnessed a team of horses each morning and evening

Mackinac Island, MI

May 2017 - Aug. 2017

Route Manager

VENTURE PEST CONTROL

- Delivered practiced sales approaches to supply Venture with pest control routes to service
- Gained a conflict resolution skill set by navigating the concerns of homeowners

Atlanta, GA

Apr. 2017

Seasonal Camping Outfitter

CABELLA'S: WORLD'S FOREMOST OUTFITTER

- Provided advice to improve the buying decisions being made by customers
- Introduced customers to the Cabella's Club Card service
- Assisted with stocking and tagging inventory

Ammon, ID

Nov. 2017 - Dec. 2017

Houseman/Standby Laundry Driver

HOLLAND AMERICA & PRINCESS CRUISELINES: DENALI WILDERNESS LODGE

- Assisted in the preparation of guest rooms by exchanging dirty linens with clean ones
- Delivered clean linens to different properties on an as needed basis

Denali, AK

January 2016 - May 2016

Teaching Assistant

MACROECONOMICS, USU HUNTSMAN SCHOOL OF BUSINESS

- Evaluated student performance in discussions
- Graded coursework for the class

Logan, UT

January 2016 - May 2016

Extracurricular Activity

USU Biology Nerd-Herd

CORE CONTRIBUTOR

- Produced the content for the Apocalypse-Game outreach initiative
- Provided targeted rewrites for code produced from the 2019 Nerd Herd Hack-a-thon
- Assembled and coded Raspberry Pi Zero systems to collect image data for phenology studies
- Attended weekly lectures and workshops on LaTeX, JavaScript, BASH, Regex, Pygame, and Modelling Biological Systems

Logan, Utah

Aug. 2018 - PRESENT

USU Science Council

HEAD OF PROFESSIONAL DEVELOPMENT

- Organized the Research Mingle events to connect students with research programs in the College of Science
- Orchestrated collaborative weekly meetings with members of the Professional Development Committee
- Solicited donations from local area businesses to support activities during Science Week

Logan, Utah

Aug. 2010 - Jan. 2020

USU BioMath Collaboration

COLLABORATOR

- Met periodically with members of USU faculty to investigate the occurrence of abnormal population dynamics events
- Attended lectures which explored mathematical models for "Hydra Effects"

Logan, Utah

Aug. 2018 - present

The Family Place (DayCare)

VOLUNTEER CAREGIVER

- Played, danced, and created with kids at the Daycare
- Volunteered 2 hours each week to watching kids from struggling families
- Led group activities for art, check-in, and sensory activities

Logan, UT

May 2019 - Mar. 2020

USU Future Health Professions (HOSA)

STUDENT VOLUNTEER

- Attended tours of the USU Cadaver lab led both by students and faculty

Logan, Utah

Aug. 2019 - present

USU Student Disability Resource Center *Logan, UT*
Volunteer Note-Taker *Jan. 2019 - May. 2020*
- Prepared and submitted notes for Physics for Scientists and Engineers (II) and Intro to Computer Science (II)
- Created a linux cronjob to partially automate the submission of my notes to the DRC

DefCon435 *Logan, UT*
Avid Attendee *July. 2019 - present*
- Attended monthly lectures and workshops learn about information security

Ethics Bowl *Logan, UT*
Core Team Member *Aug. 2015 - May. 2016*
- Collaborated weekly with a team of undergraduates from diverse academic backgrounds
- Studied ethical case studies, preparing to either defend or oppose the case resolution on a coin flip
- Competed at the Wasatch Regional Intercollegiate Ethics Bowl
- Observed the National Intercollegiate Ethics Bowl in DC

SAEL (Society for the Advancement of Ethical Leadership) *Logan, UT*
Active Participant *Jan. 2016 - Aug. 2018*
- Participated in book discussions for *Brave New World*, *Behind the Beautiful Forevers*, *Eating Animals*, and *Weapons of Math Destruction*
- Joined the SAEL Leadership in Spring 2018, seeking to assist the club in continuing operations for an additional year

Honors & Awards

International

   2014   **Semifinalist,** Fountainhead Essay Contest (ARI) *Idaho Falls, Idaho*

Presentation

Poster: Seed size as a driver for rodent mediated mortality on BCI *Logan, UT*
USU Spring Student Research Symposium *Apr. 2019*

Poster: Effects of post dispersal seed predation on Panamanian trees *Logan, UT*
USU Fall Student Research Symposium *Sep. 2012*

Oral: Effects of post-dispersal seed predation on *A. humilis* *Logan, UT*
USU Theoretial Ecology Course Presentation *Sep. 2012*

Oral: Role of seed predators in mediating equilibrium growth rates of tropical plants *Logan, UT*
Joint Meeting of the Adler & Beckman Research Groups *Oct. 2018*

Oral: Introduction to Git *Logan, UT*
Joint Meeting of the Adler & Beckman Research Groups *Sep. 2018*

Simulation: Role of prey abundance in mediating clumping of Panama palms *Logan, UT*
Poster: USU Biology Spring Student Research Symposium *Apr. 2018*

Poster: Using brain imaging data to investigate origins of sociality *Logan, UT*
USU Biology Fall Student Research Symposium *Nov. 2017*

Competition

Project: LED Multiplexed Cube *Logan, UT*
Hack USU: Coding Entrepreneurship Competition *Nov. 2019*

Achievement: Solved three of ten coding challenges *Logan, UT*
Lucid Coding Competition *Oct. 2019*

Application: Medical Collaboration Tool built on Django *Salt Lake City, UT*
Hack the U: Coding Entrepreneurship Competition *Oct. 2019*

Application: Educational Outreach Tool written in JavaScript *Logan, UT*
USU Bio-Nerd-Herd Day of Code *May. 2019*

Application: An Elisp interpreter written in JavaScript   *Logan, UT*
Hᴀᴄᴋ USU: Cᴏᴅɪɴɢ Eɴᴛʀᴇᴘʀᴇɴᴇᴜʀsʜɪᴘ Cᴏᴍᴘᴇᴛɪᴛɪᴏɴ   *Nov. 2018*

Attendance: National Ethics Based Debate Tournament   *Logan, UT*
Iɴᴛᴇʀᴄᴏʟʟᴇɢɪᴀᴛᴇ Eᴛʜɪᴄs Bᴏᴡʟ   *Feb. 2016*

Participation: Regional Ethics Based Debate Tournament   *Logan, UT*
Wᴀsᴀᴛᴄʜ Fʀᴏɴᴛ Rᴇɢɪᴏɴᴀʟ Eᴛʜɪᴄs Bᴏᴡʟ   *Nov. 2015*

Participation: Ethics in Business–Debate Tournament   *Logan, UT*
SAEL Eᴛʜɪᴄs Bᴏᴡʟ   *Nov. 2015*

Writing

Building Fluency in R   *Wordpress Blog*
SᴇᴇᴅSᴄᴀᴘᴇ Eᴄᴏʟᴏɢʏ Bʟᴏɢ   *Mar. 2018*
- A description of resources available for learning to use R Statistical Software

Finding Freedom: Github   *Wordpress Blog*
SᴇᴇᴅSᴄᴀᴘᴇ Eᴄᴏʟᴏɢʏ Bʟᴏɢ   *Apr. 2018*
- A description of resources available for learning to use Git and Github

Running Processes on Remote Servers   *Wordpress Blog*
SᴇᴇᴅSᴄᴀᴘᴇ Eᴄᴏʟᴏɢʏ Bʟᴏɢ   *Jan. 2020*
- A simple guide for using running files on remote servers
- Provides instructions and screencasts for Windows, Linux, and Mac users

Training

2019   **Applied Improv for Science Communication**, Dr. Tim Essington   *Logan, Utah*
2017   **The Core Impact Trainings**, Impact Training   *Bluffdale, UT*
2015   **A3 Toyota Problem Solving**, Icon Fitness Solutions   *Logan, UT*
2014   *7 Habits* **Signature Training**, Aggie Smart Start Scholarship Program   *Logan, UT*