

WESLEY RANCHER

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EDUCATION

University of Oregon

M.S. – Geography

Eugene, OR
September 2023 - May 2025 (Expected)

Ohio Wesleyan University

B.A. – Environmental Studies, Geography

Minor – Philosophy

GPA: 3.5/4.0

Delaware, OH
August 2019 - May 2023

RESEARCH EXPERIENCE

NASA Develop | Fort Collins, CO

Geospatial Analyst

June 2023 - August 2023
Advisor: Dr. Anthony Vorster

- Collaborated with a nonprofit (Grand Staircase Escalante Partners) to aid management efforts of invasive species along the Paria River, Utah
- Analyzed/ synthesized field data of native and invasive vegetation using ArcGIS Pro and R
- Peer reviewed literature investigating detection of flora using earth observations
- Processed and mosaiced high resolution LiDAR data in ArcGIS Pro to produce canopy height rasters
- Generated time series analyses in Google Earth Engine using various Landsat 8 and 9 spectral indices
- Gathered and implemented predictor variable data (remotely sensed and topographic) to map invasive species using a Random Forest algorithm in R
- Created species detection maps for *Tamarix ramosissima* (Tamarisk or salt cedar) using an R spatial random forest algorithm
- Produced map outputs in ArcGIS Pro to inform species distribution, percent cover of field data, remote sensing results, and species detection maps
- Contextualized and presented research process through PowerPoints and technical papers and impact posters
- Compiled R scripts and README documents into data repositories in GitHub to benefit future work

Honeybee Research Lab | Ohio State University

Research Assistant

September 2022 - December 2022

Advisor: Dr. Jamie Strange

- Reared ~25 colonies of bumblebees to understand lab setting captive rearing development
- Obtained new knowledge regarding conditions that lead to either successful or failed reproduction in the lab to inform species management in the field
- Developed protocol to study fat-body content before and after wintering for bee queens
- Established new colonies with individual queens and beeswax with successful egg reproduction
- Extracted venom and performed PCR analyses to identify differences between male and female bees
- Analyzed colony development by differentiating reproductive female cells from male cells to calculate colony size
- Collaborated with and aid PI, post-doctoral scholars, and graduate students in diverse research foci as well as collective lab projects

NSF-REU | University of Central Oklahoma

Research Assistant

June 2022 - July 2022

Advisor: Dr. Victor Gonzalez

- Researched the implications of climate change on bees' critical thermal limits
- Generated techniques for identifying different species of bees using sight, sound, and understanding of foraging/ nesting tendencies
- Determined protocol for testing desiccation, temperature acclimation, starvation, and thermal limit assays on two bee species

- Conducted field work in Lesvos, Greece which is high in diversity and richness of bee species
- Built two-way chambers with dram vials, parafilm, and mesh netting to test desiccation tolerance
- Performed statistical analyses using programs such as GraphPad and Minitab
- Discovered that environmental pressures such as temperature rise, arid climate, depleted food resources, etc. (mimicked through our experiments) are likely to negatively impact bee species
- Established well-rounded understanding of scientific processes for developing hypotheses, conducting fieldwork, and publication writing to contribute to ongoing and new research

CONFERENCE PRESENTATIONS

- 2023 – Nathan Rowley (PI), **Wesley Rancher** “Estimating supraglacial melt lake volume changes in West Central Greenland using multiple remote sensing methods” [poster] | Ohio Wesleyan Spring Symposium Delaware, OH
- 2022 – **Wesley Rancher**, Rylee Vigil, Isabella Garino-Heisey, Victor Gonzalez (PI) “Effects of desiccation on bees’ heat tolerance” [poster] | Ohio Wesleyan Connection Conference | Delaware, Ohio
- 2022 – **Wesley Rancher**, Victor Gonzalez (PI) “Effects of desiccation on bees’ heat tolerance” [talk] | IUSSI Sección Andina y del Caribe | Panama City, Panama

OTHER EXPERIENCE

Graduate Teaching Fellow | University of Oregon

September 2023 - Present

- Graduate employee for geography courses (Our Digital Earth)
- Manage weekly lab sections, host office hours, deliver material on concepts, grade assignments

TEHCNICAL SKILLS

- Google software, Microsoft software
- Google Earth Engine (proficient), R (proficient), Python (intermediate)
- ESRI software: ArcMap, ArcGIS Pro, ArcGIS Online
- Licensed Remote Pilot (UAV)
- Pix4D, DJIGO, Dual Red-Edge Sensor, LiDAR
- Spanish – professional working proficiency

COURSES & FIELDWORK (**Independent Study)

- Remote Sensing of the Env., Maps and GIS, Human Impacts on the Env., Conservation Biology, Philosophy of Science, Env. Ethics, Envi. and Nat. Resource Economics, Organisms and Their Env., Env. And Sustainability, Ecology and the Human Future, Statistics
- **Conducted remote sensing research of supraglacial melt lakes in Greenland
- **Obtained and compiled course material for FAA Remote Pilot License
- **Projected freshwater vulnerability to salinization for water bodies in Delaware County, OH using ArcGIS
- **Practiced flights with various UAVs and sensor types (MicaSense Dual RedEdge & LiDAR)

ACADEMIC ACHEIVEMENTS

NASA Develop SSAI Scholarship Recipient

2023

OWU Graduate – *Cum Laude*

2023

Dean’s List

Fall ’22, Spring ‘20, ‘22, ’23

Geography – *Robert E. Shanklin Distinguished Scholar*

2023

Philosophy – *Phi Sigma Tau*

2023

Our New Gold Digital Storytelling winner

2022