

VALORIE MARIE

Ecosystems Modeler

She / Her

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Boise, Idaho, USA

My research interests are in marine ecosystems. I have always wanted to explore the deep open waters and map the ocean floor. I pride myself on being a quick study, adaptable, and detail oriented. Currently, my research focus is on post-wildfire sagebrush recovery using UAS (Unoccupied Aerial Systems) imaging to reconstruct 3D point clouds and orthomosaics. I can use my terrestrial restoration ecology knowledge and apply it to marine systems. I have a background in graphic design, experience conducting ecological field work, and my current work includes processing remotely sensed imagery.

EDUCATION

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| BS | Biology: Ecology, Evolution, & Behavior emphasis Minor in Geospatial Information Analysis Boise State University, Boise, ID 3.992 GPA | Aug 2019 - Present |
| AS | Graphic Design & Communications Southeastern Community College West Burlington, IA | Dec 2012 |
| AA | Southeastern Community College West Burlington, IA | Dec 2011 |

RESEARCH EXPERIENCE

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| Remote Sensing Technician , Caughlin Lab, BSU Advisor: Trevor Caughlin | Jan 2021 - Present |
| <ul style="list-style-type: none">• Evaluated RGB & multi-spectral UAS spatial data into final products using Agisoft (program that does photogrammetric processing of digital images).• Digitized sagebrush features, creating polygons and maps using QGIS.• Collected plant demographic data, including allometric and survival measurements, in a long-term common garden experiment.• Presented at ESA, and two other scientific conferences, relaying the comparison of orthomosaics, digital surface models, and dense point cloud products from four sites (See Presentations).• Data storage management of setting consistent folder structures, detailed backups for intermediate project processing, and collecting final products with analyses. | |

- Research profiled in a statewide magazine (cover & page 7): [The Researcher newsletter: Idaho NSF EPSCoR: Sept. 2021](#)

Biological Field Technician, United States Geological Survey (USGS) Summer 2021
Project Lead: Cara Applestein, Advisor: Trevor Caughlin

- Collected estimates of shrub & native forb densities in post-wildfire landscapes using randomized sampling and standardized monitoring protocols during 10-12 hour days.
- Recorded recruits & fecundity for native plants seed dispersal estimates.
- Tablet inputs of plot coverage percentages, substrate type, and GPS map locations.
- Fecundity counts on native flowering forbs in the Idaho Botanical Garden.

GRANTS AND AWARDS

GEM3 ‘Summer Authentic Research Experience’ Award Summer 2021
Sponsored by the National Science Foundation (NSF) Idaho EPSCoR Program

Worked with unoccupied aerial systems (UAS) and structure from motion in monitoring outcomes of ecological restoration efforts in Idaho’s sagebrush ecosystems. Presented poster at ICUR “*Drone imaging for the future; the better option for local scientific advancement*” (\$4,000).

PUBLICATIONS

Conference Presentations

3) **Marie, V.**, Clifton, S., Roser, A., Olsoy, P., Zaiats, A., and Caughlin, T.,
“*Comparison of Image Processing Methods for Better Point Clouds of Sagebrush*,”
ESA: Ecological Society of America Virtual Annual Meeting 2021, Aug. 2-6, 2021.
– *Lightning talk and poster presentation.*

2) **Marie, V.**, Clifton, S., Roser, A., Olsoy, P., Zaiats, A., Forbey, J., Delparte, D. and
Caughlin, T., “*Drone imaging for the future; the better option for local scientific
advancement.*,” ICUR: Virtual Idaho Conference on Undergraduate Research, July
21-22, 2021. – *Lightning talk and poster presentation.* ([Scholarworks](#))

1) **Marie, V.**, Clifton, S., Roser, A., Olsoy, P., Zaiats, A., and Caughlin, T.,
“*Comparison of Image Processing Methods for Better Point Clouds of Sagebrush*,”
Boise State University Undergraduate Research Showcase 2021, Apr. 23, 2021.
– *Lightning talk and poster presentation.*

RELEVANT COLLEGE EXPERIENCE

Vertically Integrated Projects (Trevor Caughlin’s Lab, Jan. 2021 – Present)

Assisted with drone flights collecting imagery, then processed the imagery and GPS data in Agisoft. Created products used in QGIS to create maps of the terrain.

Stream Ecology

Collected macroinvertebrate samples, performed water quality tests, and used electrofishing equipment to capture fish data from three streams. Term paper as a response to a 'Request For Proposal' to build a factory on a pristine stream in Idaho based on my recommendation of which of the three sampled streams fit the parameters needed.

Genetics

Learned the molecular structure and function of chromosomes, the inheritance patterns of genetic diseases and development, and the principles of population, quantitative and evolutionary genetics.

Foundations of Ecology & Evolution

Studied organism & habitat interactions, the natural energy & matter cycles, and life's evolutionary diversity, spread, & abundance.

Communication in Biological Sciences

Critical reading and summarizing of scientific literature. Written and oral communication.

Photography / Digital Layout / Advanced Graphic Design / Typography / Marketing

Trained in print & web design for marketing & media applications. Four years of graphic design in high school & three years in college before changing career paths.

SKILLS

Agisoft Metashape Pro: Use of photogrammetry to process aerial images and align with ground control points to produce orthomosaics, dense point clouds, & digital surface models.

QGIS: Worked with raster data to create maps of vegetation height models & high-resolution imaging. Used learned techniques to result in complementary products to be used on posters.

RStudio: Ran statistical analyses while learning basic level inputs.

Word & Excel: Confident usage of the programs to use for documentation and organization.

Adobe Photoshop, InDesign, & Illustrator: Raster image editing & altering, layout design for print & web, and vector graphics editing.

PADI (Professional Association of Diving Instructors): Open Water Diving Certificate, Completed: Aug. 15, 2021.

OTHER

Interests/Hobbies:

Backpacking, camping, learning about the ocean, astronomy, gaming, photography, artistic makeup & the Marvel Universe.

USA Citizenship

REFERENCES

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