

**Jon M. Krupnick**

Field Geologist (Bedrock Mapper), New Mexico Bureau of Geology and Mineral Resources, Socorro, New Mexico

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**PROFESSIONAL EXPERIENCE****Field Geologist (Bedrock Mapper)****February 2023 – Present**

New Mexico Bureau of Geology and Mineral Resources – Socorro, New Mexico

*Lava 7.5-minute and Crocker 7.5-minute quadrangles (1:24,000-scale) (In progress)*

- Lead author field mapping the geology of the Fra Cristobal Range, Rio Grande rift, Cutter Sag, and Jornada del Muerto
- Compilation, revision, and field checking of 1:24,000-scale bedrock mapping (Nelson et al., *in press*)
- Utilizing cosmogenic nuclide catchment-averaged erosion rates to study influence of tectonism vs. integration

*Navajo Peak 7.5-minute quadrangle (1:24,000-scale) (In progress)*

- Assisting with field and digital geologic mapping of Mesozoic stratigraphy and Quaternary deposits

*Carlsbad 30 x 60-minute quadrangle (1:100,000 scale) (In progress)*

- Lead author field mapping and compiling geology of Delaware Basin, Guadalupe Mountains, and Brokeoff Mountains
- Permian stratigraphy, Oligocene intrusives, Quaternary fluvial systems, and isolated Cretaceous features
- Development of the modern Pecos River drainage from the MIS-5 interglacial to the present

*Llaves 15-minute quadrangle (1:62,500 scale)*

- Literature review, field mapping, and linework of Permian through Eocene bedrock and diverse surficial deposits
- Interested in integration and river terrace correlations of Rio Gallina to the Rio Chama drainage
- Digitizing existing linework of French Mesa 7.5-minute quadrangle in accordance to GeMS standards

*Coyote Canyon 15-minute quadrangle (1:62,500 scale)*

- Mapping landslide complex coming off the southeastern end of the Chuska Mountains in northwest New Mexico
- In-situ and back rotated Cretaceous bedrock covered by mass wasting material and other surficial deposits
- Complex dominated by multiple generations of back-rotated slumps and earthflows

*Socorro 30 x 60-minute quadrangle (1:100,000 scale)*

- Mapping Permian stratigraphy, Cenozoic intrusives, and Quaternary cover along Chupadera Mesa escarpment
- Assisting with fieldwork to check existing linework and investigate margins of Pleistocene lacustrine deposits
- Compilation and simplification of multiple 7.5-minute (1:24,000 scale) geologic maps to 1:100,000 scale

*Outreach with EarthScope (IRIS Pascal), RESESS, and Geo-Launchpad interns*

- Gave lecture on geologic background of geology surrounding Trujillo Well in Magdalena, NM
- Helped lead and carry out seismic survey employing 48 geophones to gather subsurface data
- Led fieldtrip in Magdalena Mountains to look at Cenozoic volcanism
- Organized and led fieldtrip looking at rift flank sedimentation, normal faulting, and the great unconformity

**Contract Geologist****June 2021 – December 2022**

Wyoming State Geological Survey – Laramie, Wyoming

*West Half of Ramshorn 30 x 60-minute surficial quadrangle (1:100,000-scale)*

- Producing surficial map in Absaroka Mountains, Wind River Range, and Wind River Basin of northwest Wyoming
- Completing preliminary linework, field mapping, technical report, and creation of map in ArcGIS Pro
- Mapping terrain dominated by mass wasting, glaciation, fluvial systems, and hillslope processes

*Critical Minerals and Paleoplacers of Wyoming: Rare Earth Elements and Titanium*

- Researching, evaluating, and sampling heavy-mineral-sandstone placer deposits throughout Wyoming

- Precambrian–Eocene aged deposits with a focus on Cretaceous aged placer deposits in the Mesaverde Formation *Ragged Top Mountain 7.5-minute* and *King Mountain 7.5-minute quadrangles (1:24,000-scale)*
- Digital cartography, geology and map layout review, metadata configuration, sample preparation
- Plutonic and intrusive rock of Wyoming Craton and Colorado Province bisected by Cheyenne Belt shear zone *Oil Mountain 7.5-minute quadrangle (1:24,000-scale)*
- Produced bedrock map in Wind River Basin and Casper Arch of central Wyoming for STATEMAP program
- Mapped Jurassic–Eocene stratigraphy with interesting structure and Quaternary surficial deposits
- Technical report on natural resources and the influence of Laramide tectonism on sedimentation and structural trends
- Sampled for detrital zircon, palynology, pyrolysis, TOC, vitrinite reflectance, and bulk geochemical analysis *Rare Earth Elements in Heavy-Mineral-Sandstones of the Rock Springs Formation, Southwest WY*
- Literature review, field preparation, sampling, and technical report on Cretaceous shoreline placer deposits

**Field Assistant****October 2021 & April 2022**

Colorado State University – Fort Collins, Colorado

- Two, week long, sampling campaigns in southern Colorado and northern New Mexico assisting a M.S. student
- Collected stream samples for d18O isotope analysis as modern analog for Miocene terrestrial carbonate formation

**Undergraduate Student Grader****August 2020 – December 2020**

Lehigh University – Bethlehem, Pennsylvania

- Evaluated work of 32 students in *Science of Environmental Issues*, provided academic feedback in a timely manner

**EDUCATION****New Mexico Institute of Mining and Technology** – Socorro, New Mexico**August 2023 – Present**

Graduate student pursuing Masters of Science in Geology

**Lehigh University** – Bethlehem, Pennsylvania**August 2017 – May 2021**

Bachelor of Science in Earth and Environmental Science

- Research title: *Grain Size Control on Rock-Magnetic Cyclostratigraphy within Glacial Delta Sediments, Sciota, PA*

**Lehigh University Geology Field Camp** – Bethlehem, Pennsylvania**June 2019**

- 6 credit course camping and mapping throughout Idaho, Michigan, Minnesota, Montana, Wisconsin and Wyoming

**The Asheville School** – Asheville, North Carolina**August 2013 – May 2017**

- Award for excellence in AP Environmental Science, Award for excellence in senior thesis, Class Arborist

**RESEARCH EXPERIENCE****Graduate Student (M.S.)** – Socorro, New Mexico**August 2023 – Present**

Advisor: Veronica B. Prush, Ph.D.

- Masters student in Crustal Mechanics working group at New Mexico Institute of Mining and Technology
- Mapping and researching Quaternary geomorphology within Fra Cristobal Range of central New Mexico
- Mapping *Lava 7.5-minute* and *Crocker 7.5-minute quadrangles (1:24,000-scale)* for STATEMAP program
- Precambrian plutonic and metamorphic, Cambrian–Eocene sedimentary, Quaternary volcanics and clastic deposits

**Field Geologist (Bedrock Mapper)** – Socorro, New Mexico**February 2023 – Present**

Supervisor: Matthew Zimmerer, Ph.D.

- Conducting geologic mapping and research for the New Mexico Bureau of Geology and Mineral Resources
- Ancestral Pecos River deposits of Gatuña Formation and subsequent terrace chronology
- Late Laramide deformation in Sacramento Mountains, compressional deformation of an Oligocene (?) sill
- Influence of tectonism & drainage integration on <sup>10</sup>Be & <sup>36</sup>Cl TCN-derived catchment-averaged erosion rates

**Contract Geologist – Laramie, Wyoming****June 2021 – April 2023**

Supervisors: Derek Lichtner, Patricia Webber, James Mauch

- Conducting geologic mapping and research for the Wyoming State Geological Survey

**Independent Senior Research – Saylorsburg, Pennsylvania****September 2020 – May 2021**

Advisor: Frank J. Pazzaglia, Ph.D.

- Title: *Grain Size Control on Rock-Magnetic Cyclostratigraphy within Glacial Delta Sediments, Sciota, PA*
- Analyzed glacial history, measured section, produced stratigraphic column, created & analyzed grain size time series
- Researched what minerals and grain sizes carry the magnetic signal encoded in stratigraphic sections
- Coordinated the collection of geospatial drone imagery for digital elevation models and SfM photogrammetry

**Environmental Initiative Research Fellowship – South Mountain, Pennsylvania****June 2020 – September 2020**

Advisor: Robert K. Booth

- Title: *Feeding Habits of Spotted Lanternfly Throughout their Life Cycle in a Forest Ecosystem Bethlehem, PA*
- Wrote grant proposal, received funding, and managed \$5,000 budget & timeline for project on the Spotted Lanternfly
- Addressed effects on native ecosystems and how the Lanternfly may sequester toxins to prevent predation
- Field work mapping an 80-acre-plot; identified 500+ trees related to the invasion; analyzed for species preference
- Presented findings at the Environmental Initiative fall symposium and as a guest lecturer in undergraduate classes

**Independent Study – Island Beach State Park, New Jersey****October 2019 – May 2020**

Advisor: Frank J. Pazzaglia

- Title: *Evidence for Shoreline Transgression at Island Beach State Park, New Jersey*
- Conducted research on shoreline advancement related to beach morphology following storm events
- Developed project, managed timeline, and did fieldwork for independent study with a team of my classmates
- Directed use of Vibra-Core and Russian Peat Borer for collection of store-related sand lenses in salt marsh samples

**PRESENTATIONS****New Mexico Geological Society Spring Meeting (poster presentation)**

- Presentation: *A Cryptic Miocene Occurrence of an Ultramafic Dike in the Interior of the San Juan Basin: Composition, Age, and Tectonic Interpretations*

**Undergraduate Research Symposium, Spring 2021: Lehigh University Earth and Environmental Sciences**

- Presentation: *Grain Size Control on Rock-Magnetic Cyclostratigraphy Within Glacial Delta Sediments, Sciota, PA*

**Guest lecturer for Terrestrial Ecosystems course at Lehigh University, Fall 2020**

- Presentation: *Feeding Habits of Spotted Lanternfly Throughout their Life Cycle in a Forest Ecosystem, Bethlehem, PA*
- Presented work and discussed project from an ecosystem modeling perspective with Dr. Benjamin Felzer and his class

**Environmental Initiative Symposium, Fall 2020: EI-STEPS Summer Research Internship Program**

- Presentation: *Feeding Habits of Spotted Lanternfly Throughout their Life Cycle in a Forest Ecosystem, Bethlehem, PA*

**Undergraduate Research Symposium, Spring 2020: Lehigh University Earth and Environmental Sciences**

- Presentation: *Evidence for Shoreline Transgression at Island Beach State Park, New Jersey*

**PUBLICATIONS**

Koning, D.J., Jochems, A.P., **Krupnick, J.M.**, McLemore, V.T., Neudorf, C.M., Ricci, J., and Attia, S., 2025, Geologic Map of the Socorro 30x 60-Minute Quadrangle, Socorro, Torrance, and Valencia Counties, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map OF-GM 317, 218 p., scale 1:100,000, <https://doi.org/10.58799/OF-GM-317>.

- Kelley, S.A., **Krupnick, J.M.**, and Aby, S.B., 2024, Geologic map of the Llaves 15-minute quadrangle, Rio Arriba County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Digital Geologic Map OF-GM 316, 42 p., scale 1:62,500, <https://doi.org/10.58799/OF-GM-316>.
- Hobbs, K.M., and **Krupnick, J.M.**, 2024, Geologic Map of the Coyote Canyon 15-Minute Quadrangle, Navajo Nation and McKinley County, New Mexico: New Mexico Bureau of Geology and Mineral Resources Open-File Geologic Map OF-GM 314, 78 p., scale 1:62,500, <https://doi.org/10.58799/OF-GM-314>.
- Lichtner, D.T., **Krupnick, J.M.**, Doorn, C.J., and Webber, P.M., 2023, Critical-Mineral-Bearing Paleoplacers in the Basal Cambrian Flathead Sandstone and other Radioactive Conglomerates, Wyoming: Geochemistry and Mineralogy: Wyoming State Geological Survey Open File Report 2023-2, 58 p., <https://doi.org/10.15786/24279697>
- Lichtner, D.T., **Krupnick, J.M.**, Webber, P.M., and Doorn, C.J., 2023, Upper Cretaceous fossil beach placers of Wyoming—Geochemistry, mineralogy, and economics: Wyoming State Geological Survey Report of Investigations 80, 97 p., <https://doi.org/10.15786/24279688>.
- Mauch, J.P., Wittke, S.J., and **Krupnick, J.M.**, 2023, Preliminary surficial geologic map of the west half of The Ramshorn 30' x 60' quadrangle, Fremont and Park counties, Wyoming: Wyoming State Geological Survey Open File Report 2023-1, 34 p., scale 1:100,000, <https://doi.org/10.15786/22770890>.
- Webber, P.M., Lynds, R.M., Stotter, S.V., and **Krupnick, J.M.**, 2022, Preliminary investigation of the critical mineral potential of the central Laramie Mountains, Wyoming: Wyoming State Geological Survey Report of Investigations 79, 86 p. <https://doi.org/10.15786/21222374>
- Lichtner, D.T., and **Krupnick, J.M.**, 2022, Preliminary geologic map of the Oil Mountain quadrangle, Natrona County, Wyoming: Wyoming State Geological Survey Open File Report 2022-3, 34 p., scale 1:24,000.

## ABSTRACTS

- Hobbs, K.M., **Krupnick, J.M.**, (2024), Evolution of the Chuska Mountain Front, Navajo Nation, New Mexico: Constraints from Geomorphic Relationships, Mapping, and Geochronology. Geological Society of America Abstracts with Programs. Vol. 56, No. 4 2024, doi: 10.1130/abs/2024CD-399538
- Krupnick, J.M.**, Hobbs, K.M., Martin, L., (2023), A Cryptic Miocene Occurrence of an Ultramafic Dike in the Interior of the San Juan Basin: Composition, Age, and Tectonic Interpretations. 2023 New Mexico Geological Society Annual Spring Meeting, doi:10.56577/SM-2023.2912

## TECHNICAL SKILLS

### *Licenses & qualifications*

• ASBOG Geologist-In-Training (G.I.T.) • First Aid and CPR Certified (pending recertification) • PADI Junior Open Water Scuba Certified •

### *Office*

• ArcGIS Pro • ArcMap • technical writing • Excel • science communication • ENVI (geospatial analysis software) • Rstudio • Matlab • Acycle (cyclostratigraphy & time series analysis) • Gaia GPS • Adobe Illustrator • Inkscape (graphics software) •

### *Lab*

• trim/tile/slab rock saws • heavy liquid separation • petrographic microscope • x-ray fluorescence spectrometer (XRF) • x-ray diffraction (XRD) • sieves •

### ***Field***

• Field safety • Garmin GPS • Brunton Compass • Jacob Staff • Vibracore • best practice sample collection • drone operation • all-terrain-vehicle operation • intermediate Spanish • Geiger counter •

## **RELEVANT COURSEWORK**

### ***Graduate Level Courses***

Cross section analysis for geological applications (balanced and restored cross sections) • Geochronology and thermochronology • Subduction tectonics • Fluvial & tectonic geomorphology • Graduate Seminar (professional development) • Computational methods • math for earth science graduate students •

### ***Undergraduate Level Courses***

• Hydrogeology • Surficial processes • Structural geology & tectonics • Remote sensing of terrestrial and aquatic ecosystems • Paleomagnetism & cyclostratigraphy • Mineralogy • Conservation & biodiversity • Earth history • Limnology • Ecology • Paleocology & landscape history (palynology) • Wetland ecology • Calculus • Statistics • Physics • Cellular and Molecular Biology • Genetic Biology • Chemistry • Spanish •

## **ACTIVITIES AND INTERESTS**

• Hiking & exploring • whitewater kayaking • camping & backpacking • outdoor safety • repelling & rock climbing • caving • scuba diving • whitewater rafting & canoeing • drawing • soccer • basketball •

## **COMMUNITY INVOLVEMENT**

• Socorro Search and Rescue (March 2023–present) • New Mexico Tech Intramural Soccer (captain fall 2023) • Kappa Alpha Literary Society (spring 2018 to present) • New Mexico Tech Intramural basketball (winter 2024) • New Mexico Tech Intramural kickball (Fall 2023) •

## **OTHER WORK EXPERIENCE**

### **Whitewater Raft Guide and Rafting Center Employee**

**June 2018 – August 2018**

Nantahala Outdoor Center (NOC) – Bryson City, North Carolina

- Ensured a professional, safe and fun environment while leading 2 daily river trips as a whitewater raft guide
- Shared ecological, geological, and historical knowledge of the region with guests from across the world

### **Camp Counselor and Kayak Instructor**

**July 2017 – August 2017**

Camp La Junta – Hunt, Texas

- Served as a cabin counselor to 8–10 year old campers and advocated for campers best experience
- Created an engaging environment for campers to progress their skills and waterfront safety on the Guadalupe River

### **Dishwasher, busser, host**

**June 2014 – November 2016**

Asheville Sushi & Hibachi – Asheville, North Carolina

- Part time work (weekends, holidays, and summer) at local sushi restaurant throughout highschool