

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

Llaves 15' quadrangle

- Literature review, field mapping, and linework of Permian through Eocene bedrock and diverse surficial deposits
- Digitizing existing linework of French Mesa 7.5' quadrangle in accordance to GeMS standards

Coyote Canyon 15' quadrangle

- 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

Socorro 30' x 60' quadrangle

- Mapping Permian stratigraphy, Tertiary intrusive and Quaternary cover along Chupadera Mesa escarpment
- Assisting with fieldwork to check existing linework and investigate margins of Pleistocene lacustrine deposits

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' surficial quadrangle

- Producing surficial map in northwest Wyoming for STATEMAP program
- 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' bedrock quadrangle and King Mountain 7.5' bedrock quadrangle

- Digital cartography, reviewed geology and map layout, metadata, sample preparation
- Plutonic and intrusive rock of Wyoming Craton and Colorado Province bisected by Cheyenne Belt shear zone

Oil Mountain 7.5' quadrangle

- Produced bedrock map in 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 tectonics on sedimentation and structural trends
- Sampled for detrital zircon, palynology, pyrolysis, TOC, vitrinite reflectance, and geochemical analysis

Rare Earth Elements in Heavy-Mineral Sandstones of the Rock Springs Fm., 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**

Special pre-degree graduate student in geology

- Using NMT Employee Tuition Waiver to take Tectonics (GEOL 5054) fall 2023

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

Bachelor of Science in Earth and Environmental Science

- Thesis 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 throughout Idaho, Michigan, Minnesota, Montana, Wisconsin and Wyoming

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

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

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

- Conducting geologic mapping and research for the New Mexico Bureau of Geology and Mineral Resources

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

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

Advisor: Frank J. Pazzaglia

- 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
- Created paleogeographic reconstruction to analyze sedimentation trends and aid in communication of project goals

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, 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 and managed timeline for independent study with a team of my classmates
- Directed use of Vibracoring and Russian Peat Borer for collection of 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 Professor 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*Published*

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.

In Preparation

Lichtner, D.T., Krupnick, J.M., Webber, P.M., Critical Minerals and Paleoplacers of Wyoming: Rare Earth Elements and Titanium: Wyoming State Geological Survey Open File Report 2023 (In preparation)

Lichtner, D.T., and Krupnick, J.M., 2023, Rare Earth Elements in Heavy-Mineral Sandstones of the Rock Springs Fm., Southwest Wyoming: Wyoming State Geological Survey Open File Report 2023 (In preparation)

TECHNICAL SKILLS

Licenses & qualifications

• ASBOG Geologist-In-Training (G.I.T.) • First Aid and CPR Certified (pending re-certification) • PADI 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 • Inkscape (graphics software) •

Lab

• trim/tile/slab rock saws • 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

• Tectonics • Hydrogeology • Fluvial & tectonic geomorphology • Surficial processes • Structural geology & tectonics • Remote sensing of terrestrial and aquatic ecosystems • Paleomagnetism & cyclostratigraphy • Mineralogy • Conservation & biodiversity • Earth history • Limnology • Ecology • Paleoecology & 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 • white water rafting & canoeing • drawing •

COMMUNITY INVOLVEMENT

• Socorro Search and Rescue • New Mexico Tech Intramural Soccer (captain) • Kappa Alpha Literary Society • New Mexico Tech Intramural kickball

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