

# Geologic Integration of an Ancient Bedrock Quarry Analysis of Western North Carolina

Kinsey Shefelton<sup>1,2,5</sup>, Philip LaPorta<sup>1,2</sup>, Scott A. Ashcraft<sup>3</sup>, Margaret LaPorta<sup>2,4</sup>, Scott Minchak<sup>2</sup>

<sup>1</sup>*Lamont-Doherty Earth Observatory*, <sup>2</sup>*CINAQ*, <sup>3</sup>*NFS*, <sup>4</sup>*Pace University*, <sup>5</sup>*William & Mary*

Within the Dunsmore 7.5' Quadrangle, and the Ashe Formation on the southwestern edge of Asheville, NC, lies Seniard Mountain. Seniard Creek Burn, a forest fire scar and bulldozer line, is noticeable on the terrain, including via satellite. By revealing the landscape with the fire, an ancient, indigenous archaeological site, and its geologic structures, were revealed. Diagrams will carry the weight of the project outcomes with a 1:500 geologic contact map, archaeological illustrations, stereonet plots, and the beginnings of thin-section petrographic analyses. A summer field session was spent traversing the landscape searching for outcrops, contact and structure measurements, sample collection, and mineralogical/petrological observations. Twenty (20) outcrop stations were located and noted, with measurements gathered to support interpretations. So far, one contact between paragneiss and gneiss with interbedded schist is seen. Additionally, two boudinage aprons are present providing a significant portion of the geologic data and supporting data for artifact analysis. Interpretations of these data include five inferred fold axes observed across the project area, a minor fault, and multiple deformation events. Surface processes, i.e., ridges and channels, follow this local structural nature and the landscape's integrity, which is heavily saprolitized due to temperate, humid climatic conditions. It is plausible to correlate macroscale structure and mineralogic data with NC state maps and past dissertations, such as the Asheville 7.5' Quadrangle to the NE and the Skyland 7.5' Quadrangle to the east. The map scale used for this project allows for more detailed data plotting than for maps of a 1:24,000 scale. However, the comparison of lithologies, and structures mapped on the project map, are similar in interpretation and scale of structural deformation as indicated in adjacent areas. Seniard Creek Burn is a metamorphic mountainside wherein the dominant faulting, fracture, and folding structures and petrology illustrate the potential for ancient artifact production via stone extraction and flaking. The introduction of this fine-scale map provides refinement of the geology of the Ashe formation, benefiting the large-scale state mapping and the archaeologists at work.