archeological quarry sites in the central Piedmont of North Carolina were visited. From each quarry, hand specimens were collected and petrographic thin sections were examined in an attempt to establish a basis for distinguishing the quarries. If material from each quarry were sufficiently distinctive, then quarry sources could potentially be matched with Fort Bragg lithic artifacts. A companion study is investigating chemical characteristics of the same quarry samples. In the next phase of the study, thin sections of selected artifacts will be studied for comparison to the quarry information.

Procedure

74 samples from 12 quarries and quarry groups were examined. 31 of these samples are from five quarry groups in the Uwharrie Mountains region; 20 of these were collected and described previously by Daniel and Butler (1996). 43 specimens were collected from seven additional quarry sites in Chatham, Durham, Person, Orange, and Cumberland Counties.

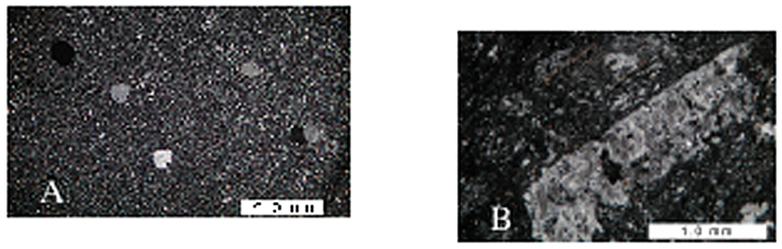


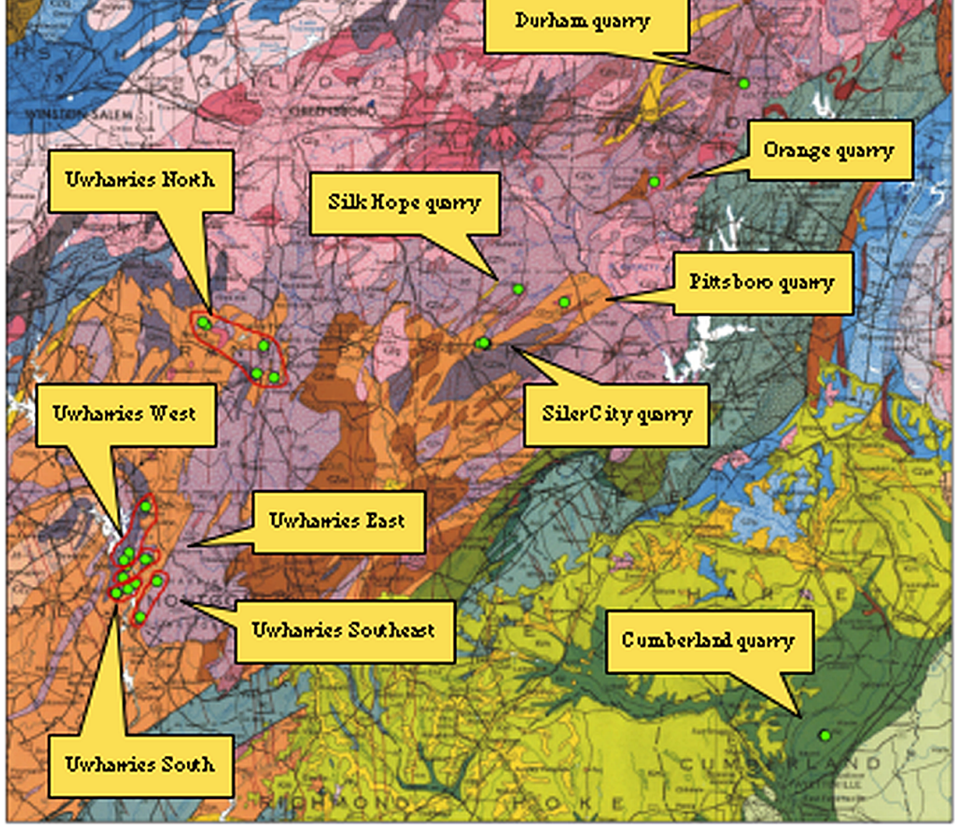
Figure 1. Relict igneous phenocrysts. A. Quartz (β forms) and plagioclase, Uwharries East. B. K-feldspar, Silk Hope. C. Euhedral and resorbed quartz, with plagioclase, in porphyry, Orange County. Crossed polars.

Geology

All quarries are within the Carolina terrane, and the Uwharries quarries sample the Tillery, Cid and Uwharrie Formations (Stromquist and Sundelius, 1969). Rocks include both metavolcanic and metasedimentary types. Compositionally, most metavolcanic rocks are dacitic, and include flows, tuffs, breccias, and porphyries. Metasedimentary rocks are metamudstone and fine metasandstone.

The Uwharrie quarries are divided into five groups: Uwharries North, South, East, West, and Southeast. The groupings are based primarily on macroscopic petrography and follow the results of Daniel and Butler (1996). Each of the Uwharrie quarry groups represents three to six individual quarries in relatively close proximity. Rock specimens are all various felsic metavolcanic rocks, but groups may be distinguished based upon mineralogy and texture. See Table.

The remaining quarries include three from Chatham County (Pittsboro, Silk Hope, and Siler City), and one each from Orange, Person, Durham, and Cumberland Counties. Rocks from the Pittsboro, Durham, and Person quarries are dominantly fine-grained metasedimentary rocks. The Silk Hope and Orange County quarries are meta-igneous. The Cumberland County (Cape Fear) quarry is from a deposit of alluvial cobbles, and the Siler City quarry is a mixture of metasedimentary and metavolcanic types.



METAVOLCANIC ROCKS

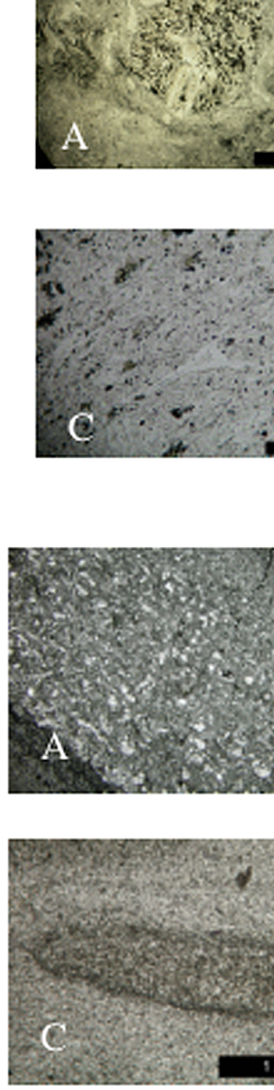
GROUP/QUARRY	PHENOCRYSTS	META. MINERALS	TEXTURES	ROCK TYPES
UWHARRIES EAST (TILLERY FM): *Hattaway, Shingle Trap, Sugarloaf Mts.*	PLAGIOCLASE + QUARTZ	GREEN BIOTITE; STILPNOMELANE	QUARTZ – EPIDOTE - CHLORITE ***CLUSTERS***	DACITE FLOWS, CRYSTAL-LITHIC TUFFS
UWHARRIES WEST (CID FM): *Wolf Den, Falls Mts.*	PLAGIOCLASE; K-FELDSPAR	GREEN BIOTITE, NO STILPNOMELANE	***SPHERULITES***, NO FLOW BANDING	DACITE, RHYODACITE
UWHARRIES SOUTH (TILLERY FM): *Morrow & Tater Top Mts.*	***NONE***	STILPNOMELANE	***SPHERULITES***, BANDING, CLEAVAGE	DACITE, FELSITE
UWHARRIES NORTH (UWHARRIE & TILLERY FMS): *Dutch and Caraway Mts.*	PLAGIOCLASE, QUARTZ	***GARNET***, BROWN BIOTITE, STILPNOMELANE	EPIDOTE – CALCITE – PYRITE ***CLUSTERS***; PUMICE LAPILLI	DACITE TUFFS AND FLOWS
UWHARRIES SOUTHEAST (UWHARRIE FM): *Horse Trough & Lick Mts.*	QUARTZ + PLAGIOCLASE	***ACTINOLITE***, EPIDOTE, SPHENE	SPHERULITES, ***QUARTZ AMYGDULES***, BANDING	DACITE FLOWS AND PORPHYRIES
SILK HOPE (CHATHAM CO.)	PLAGIOCLASE; K-FELDSPAR	***PIEDMONTITE***	VOLCANIC ROCK FRAGMENTS, ***GLASS SHARDS***, FLOW BANDS	ANDESITIC (?) LAPILLI AND CRYSTAL-LITHIC TUFF AND BRECCIA
ORANGE COUNTY	(***COARSE***) QUARTZ + PLAGIOCLASE	CALCITE, ***LOW-T FELDSPAR CLOTS***	NO BANDING, ***SAUSSURITIZATION***	DACITE PORPHYRY, CRYSTAL-LITHIC TUFF

METASEDIMENTARY ROCKS

PITTSBORO (CHATHAM CO.)	BEDDING, LAMINAE, GRADED BEDS, RIPPLES, X-BEDS	MUDSTONE, SILTSTONE, SANDSTONE
DURHAM COUNTY	PLAGIOCLASE; ROCK FRAGMENTS, EPIDOTE VEINS, LAYERING	DACITE TUFF, TUFFACEOUS SANDSTONE
PERSON COUNTY	BEDDING, GRADED BEDS, TRACE FOSSILS(?), PUMICE(?), MICROFAULTS	MUDSTONE, SILTSTONE, SANDSTONE, TUFF

HETEROGENEOUS ASSEMBLAGES

SILER CITY (CHATHAM CO.): crystal-lithic tuff and metasedimentary rocks
CAPE FEAR (CUMBERLAND CO.): aplite, greenstone, and (meta-) gabbro, basalt, andesite/diorite, lapilli tuff, and heterolithic tuff breccia



Results

The table summarizes the re
the quarries (Siler City and Cumber
in sourcing lithic artifacts, the other

Each of the seven metavolc
distinctive. Relict minerals (Figure
phenocrysts. Relict volcanic text
banding, amygdules, inferred glass

The three metasedimentary
3) including laminations, ripples, a
fossils are present. Individual
distinguishable, although the Pittsb
contain more obvious volcanic mate

Metamorphic textures inclu
(Figure 4) include chlorite, biotite
stilpnomelane, and piedmontite.

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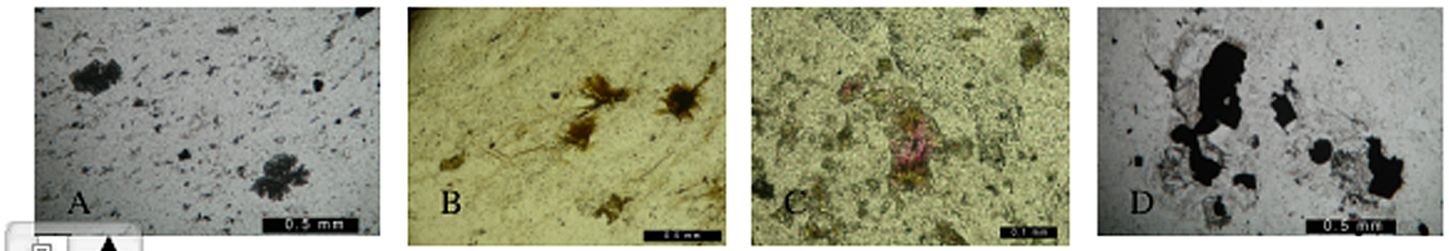

Figure 4. Metamorphic minerals.
A. Garnet, Uwharries North.
B. Stilpnomelane, Uwharries East.
C. Piedmontite, Silk Hope. D. Pyrite-calcite-epidote cluster (after an amygdule?), Uwharries North. Plane-polarized light.