



**North Carolina
Archaeological Society**

Newsletter

4619 Mail Service Center, Raleigh NC 27699-4619

<http://www.rla.unc.edu/ncas>

SUMMER 2011, Volume 21, Number 2

**Save the Date for the NCAS Fall Meeting
and North Carolina Archaeology Day!
Saturday, October 1, 2011
Jordan Lake's White Oak Recreation Area
Apex, North Carolina**

**NCAS Meeting: 9:00 AM
North Carolina Archaeology Day and Jordan
Lake Heritage Day: 10:00 AM-3:00 PM**

Please plan to join us for this free family event following the NCAS Fall Meeting. It will offer a variety of exhibits, demonstrations, entertainment, and activities related to archaeology and North Carolina's past. There will be fun things to do for all ages, so bring the entire family!

We are currently recruiting exhibitors and volunteers to make this event a success. NCAS members are invited to bring exhibits, provide demonstrations, or help with activities. If interested, please contact Theresa McReynolds Shebalin (temcre@yahoo.com; 919-749-5212).

Look for more details about North Carolina Archaeology Day and the NCAS Fall Meeting on the NCAS website (rla.unc.edu/ncas/) in July. Additional details will also be included in the fall newsletter.

Magnetic Testing of Metavolcanic Artifacts

February 26, 2011

William E. Covington

Early one evening this past May, just after dinner in the picnic shelter at the Topper dig in Allendale, South Carolina, dig director Dr. Al Goodyear and a group of volunteers gathered around a serving table to discuss the day's work. Somehow the subject got around to lithics; at Topper we primarily find chert artifacts because Topper is a chert quarry. However, every now and then a piece of metavolcanic (MV) (rhyolite) rock appears and we were speculating where it might have come from. There are a few MV sources in South Carolina, but the vast majority of MV comes from the North Carolina slate belt, especially from near the Morrow Mountain area located on the Pee Dee/Yadkin

River. If we were finding MV artifacts at Topper, then they may have originated several hundred miles north in North Carolina. It was a nice mind game to imagine how MV artifacts found their way south. Then Al Goodyear mentioned an oddity; he had recently been talking to a collector of Native American artifacts who told him that some of his MV artifacts were attracted to a magnet. This concept was new to Al, and when the collector showed him the proof, a spear point, which stuck to a magnet, the implications were quite interesting. Was all MV rock magnetic or did only certain quarries produce magnetic rock? If the latter were true, could we "fingerprint" MV artifacts

and state with some degree of certainty where the rock they were made of came from? This would tell us all sorts of things such as trade patterns and the mobility of Native American tribes. In addition, projectile points are generally identifiable by their unique designs, and by careful dating methods such as stratigraphy, one can date these artifacts. For example, a Morrow Mountain spear point dating to about 4,000 BC looks quite different from a Kirk corner notched spear point, which dates to about 6,500 BC. If the magnetic artifacts appeared only in certain time frames then the question to be asked is why? Perhaps magnetic MV rock is of poorer quality than non-magnetic rock. The Early Archaic and Paleo Native Americans were famous for choosing only the best rock with which to make their tools. Perhaps they used up the easily available good stone, leaving less desirable rock for later cultures. We just did not know the answers to these questions and we needed to develop a database to start the learning process. I happened to have a number of pieces of MV debitage in my truck; it is my custom when walking my dog to pick up flakes and pocket them. I brought the two dozen flakes over to the table and Al got a small magnet and started to test them. All of a sudden a small flake jumped off the table and stuck to the magnet. We were all amazed at the sight. In total, six or eight flakes proved to be magnetic, not all as strongly as the one which jumped, but the magnet elicited at least a quiver in all of them. So, we immediately proved that some MV rock was magnetic, and we closed the evening with the knowledge that there was a possible research project for some interested student or avocational archaeologist.

Perhaps a few words about myself would be appropriate. I am Bill Covington, retired Navy, Naval Academy class of 1962. After retiring and moving to Southern Pines, North Carolina with my family I undertook an effort to trace my ancestors who emigrated to Richmond County, N.C. just after the Revolutionary War. As part of that process I discovered various cousins who lived on farms throughout the county and all of these farms were scattered with Native American artifacts. My cousins invited me to walk their fields. So, my unprovenient collecting of artifacts started in about 1990, and over the next several years I managed to amass a nice collection of tools, pottery sherds, and a huge pile of debitage. Then I started volunteering at the Fort Bragg Cultural Resources office and it was while working with the Bragg archaeologists that I received what I term as an "enforced epiphany". The Bragg folks explained to me that collecting Native American artifacts simply to have them was not increasing the knowledge we had about Native Americans, and that I needed to first enter my sites into the State system and then record and curate the artifacts which I found. This I did for about five years. As a result, I now have a rather large collection consisting of two parts; one are those early artifacts which were simply picked up and put in a box; second are those artifacts which I have found on the five sites which I have formally entered into the State system, plus four more sites which I walked but which I do not feel merit entering into the system. All artifacts found were recorded and bagged by site. As an aside, all of these sites are located in Richmond County, N.C. So, I ended up with a pretty good cross section of what is representative of the Native American presence in the county, which ranges from Late Paleo (Hardaway-Dalton) to Woodland (small triangulars). I thought this collection would be ideally suited to conduct a magnetic analysis, an effort that I undertook

over a period of several months and recently completed. I have tried to keep Dr. Goodyear of USC, Derek Anderson of USC, and Doug Sain now studying for his doctorate at the University of Tennessee at Knoxville, up to speed on the results. The procedures, which I used in this study, are as follows:

- I used two fairly strong magnets, each taken from radio speakers.
- I divided the test into three segments:
 1. diagnostic artifacts, which are primarily projectile points;
 2. non-diagnostic artifacts which are primarily biface fragments, but all of which have recognizable, deliberate flaking; and
 3. flakes, not further identified as to complete flakes or flake fragments.

Starting with the diagnostic artifacts, I used the first magnet to get an initial indication as to whether or not the artifact was attracted to the magnet. After testing 100 artifacts, I tested the positives again with a second magnet and then took pictures of the positives. This continued over the days until I had completed the testing of the diagnostic artifacts. I then did the same testing on the non-diagnostic artifacts, double testing, photo, etc.

For the flake testing, I had a five-gallon bucket of debitage, which I tested only once, took no photographs but retained the positives.

Over all, the positives from each category have been maintained separately, as have the artifacts, which did not test positive. The totals of each category and grand totals are as follows:

- Diagnostics: measured 2,085, tested positive 105, 5% rate;
- Non-diagnostics: measured 2,242, tested positive 274, 12% rate;
- Debitage: measured 3,200, tested positive 876, 27% rate;
- Grand Total: measured 7,527, tested positive 1,255, 16.6% rate.

Observations: Obviously, the percentage of positives increased dramatically from diagnostics to non-diagnostics, to debitage. I might note that the size of the artifact generally decreased through these categories, with diagnostics being the largest tested and debitage being the smallest tested. The positive rate may have been influenced by both the power of the magnet and/or the size of the tested artifact. That is, very large artifacts may be too heavy to be influenced by the magnet. The smallest of the flakes seemed to be the most influenced by the magnet. I should mention, and Derek Anderson suggested this, that this testing is free, immediate readout, non-destructive, and anybody can do it. It is like a light switch, either on or off, with a bit of slack written in because some of these artifacts are very slightly magnetic and it takes a moment or two to confirm that.

Early on, Dr. Goodyear suggested to me that he thought the Paleo and Early Archaic artifacts would not test positive; that these people used the very best rock they could find to make their artifacts, such as flow banded rhyolite and fine grained apheritic MV rock. This has proven to be the case as not one flow banded rhyolite artifact tested positive, nor has any fine grained apheritic MV tested positive. There were several

exceptions to the Paleo/EA artifact rule, notably a Hardaway-Dalton and Big Sandy PP, which tested positive, but the remaining positive diagnostic artifacts were primarily Middle Archaic and Late Archaic, thus suggesting that poorer quality MV tends to contain magnetically attractive materials.

This study is very limited in that only one county was sampled. The majority of the sites from which the artifacts were obtained lie about 30 miles south of the major MV quarries which are located in the Uwharries along the Pee Dee/Yadkin river. Very preliminary information from Derek Anderson suggests that perhaps eight of the quarries in the Uwharries have MV rocks which test magnetically positive, and there are at least five more quarries elsewhere which also test positive. Thus, more work remains: testing of MV artifacts/debitage/quarry samples should be conducted both north as well as south of Richmond County, even extending into South Carolina. It remains to be seen whether or not one will be able to state whether a projectile point which tests magnetically positive can be identified with a specific quarry source; however, this study is an initial step in that direction.



Diagnostic artifacts tested magnetically positive.



Probable Hardaway-Dalton, tested magnetically positive.



3200 flakes tested for magnetic response.



4000 diagnostic and non-diagnostic artifacts tested for magnetic response.

Additional thoughts from Al Goodyear

In the latest issue of SCIAA's magazine *Legacy*, I discuss the origin of the magnet discovery, namely one Mike Stephens who works in an office supply store in Columbia showed it to us, much to our surprise to say the least! Some metavolcanic cobbles from the SC portion of the Pee Dee river bed test positive no doubt fluviially transported down the Pee Dee from the Uwharries area. We also have lithic material from the Uwharries that also tests positive. Bill Covington's work is impressive for the huge numbers of artifacts he has tested leaving little doubt that much of the magnetic tool stone in Richmond County is coming locally from the river sources.

**NCAS Newsletter
Publication Schedule**

All NCAS members are encouraged to submit articles and news items to Dee Nelms, Associate Editor, for inclusion in the *Newsletter*. Please use the following cut-off dates as guides for your submissions:

Spring Issue - February 28	Fall Issue - August 31
Summer Issue - May 31	Winter Issue - November 30

NCAS Officers

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Editor: R.P. Stephen Davis, Jr., Research Laboratories of Archaeology, CB# 3120 Alumni Building, University of North Carolina, Chapel Hill NC 27599-3120.

Associate Editor: Dee H. Nelms, Office of State Archaeology, NC Division of Historical Resources, 4619 Mail Service Center, Raleigh NC 27699-4619.

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