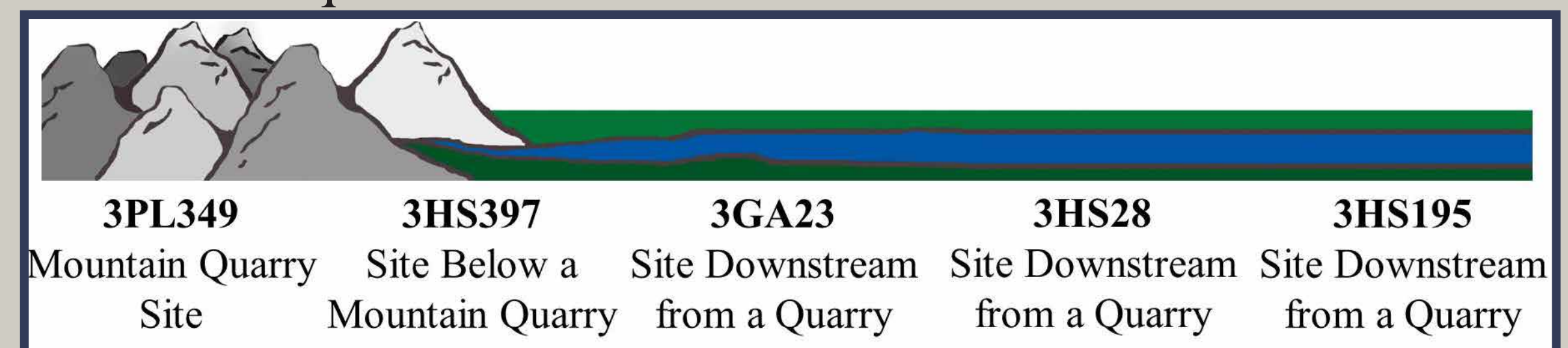
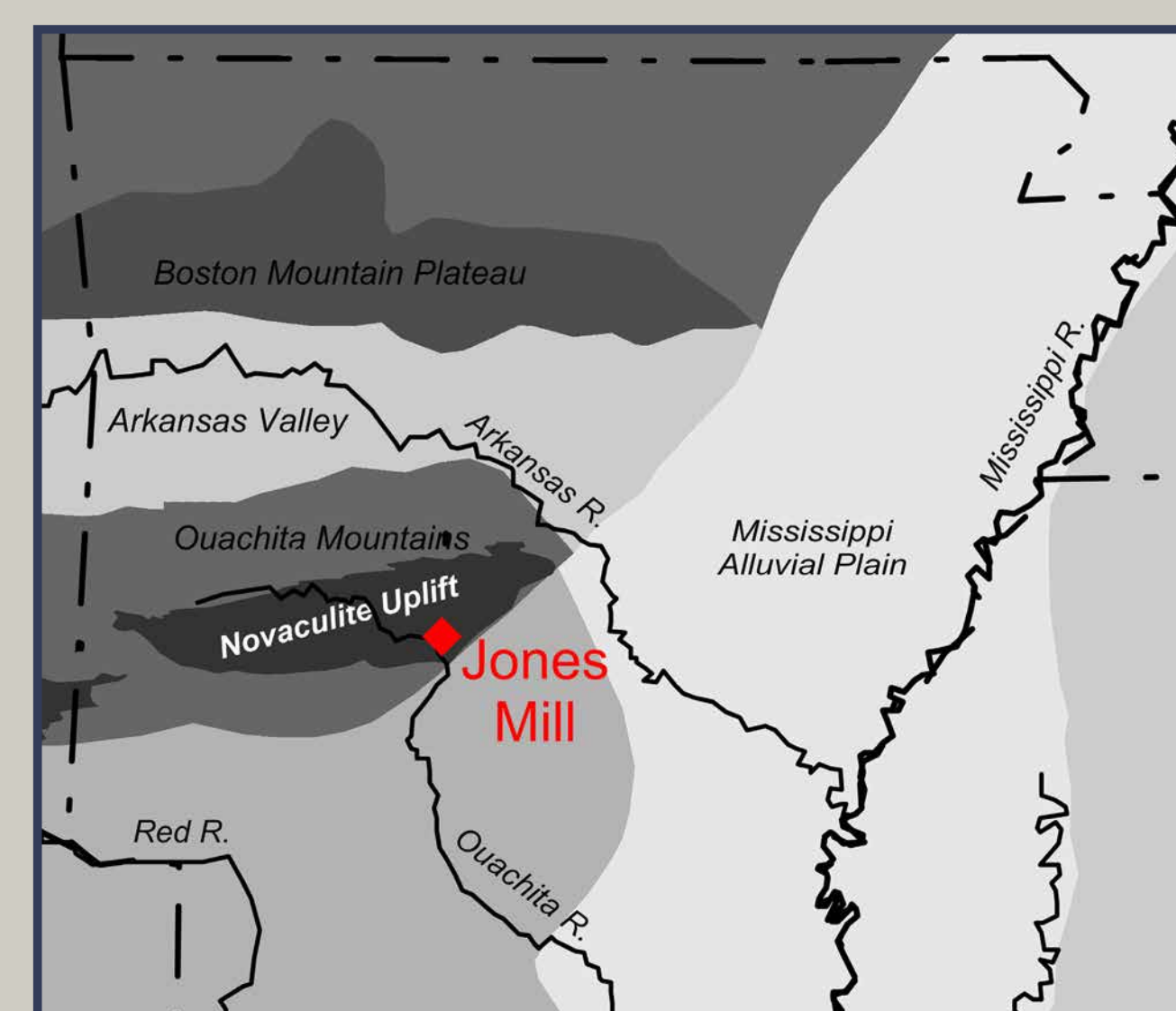


# RECONSTRUCTING THE NOVACULITE REDUCTION SEQUENCE AT JONES MILL, ARKANSAS

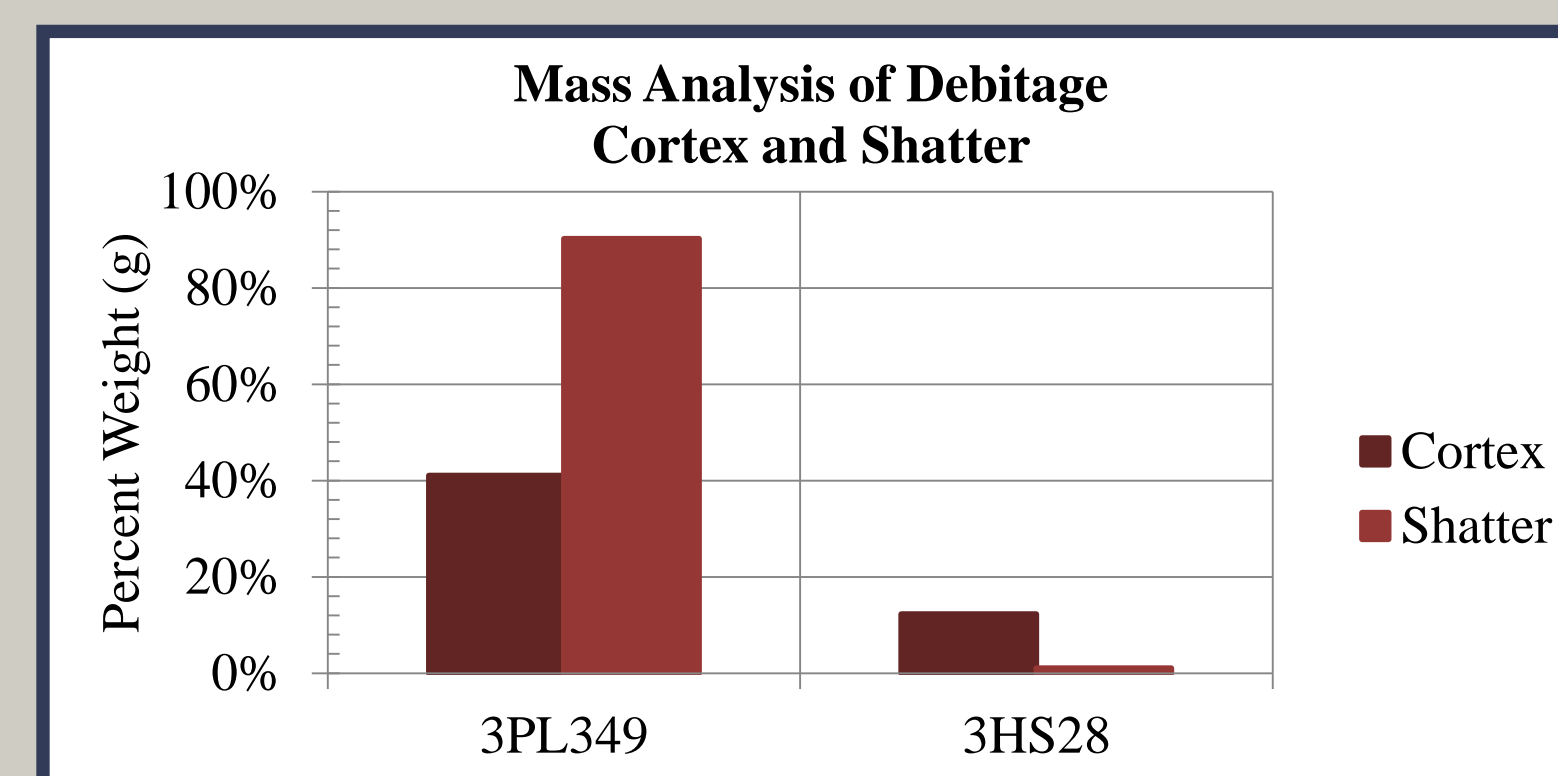
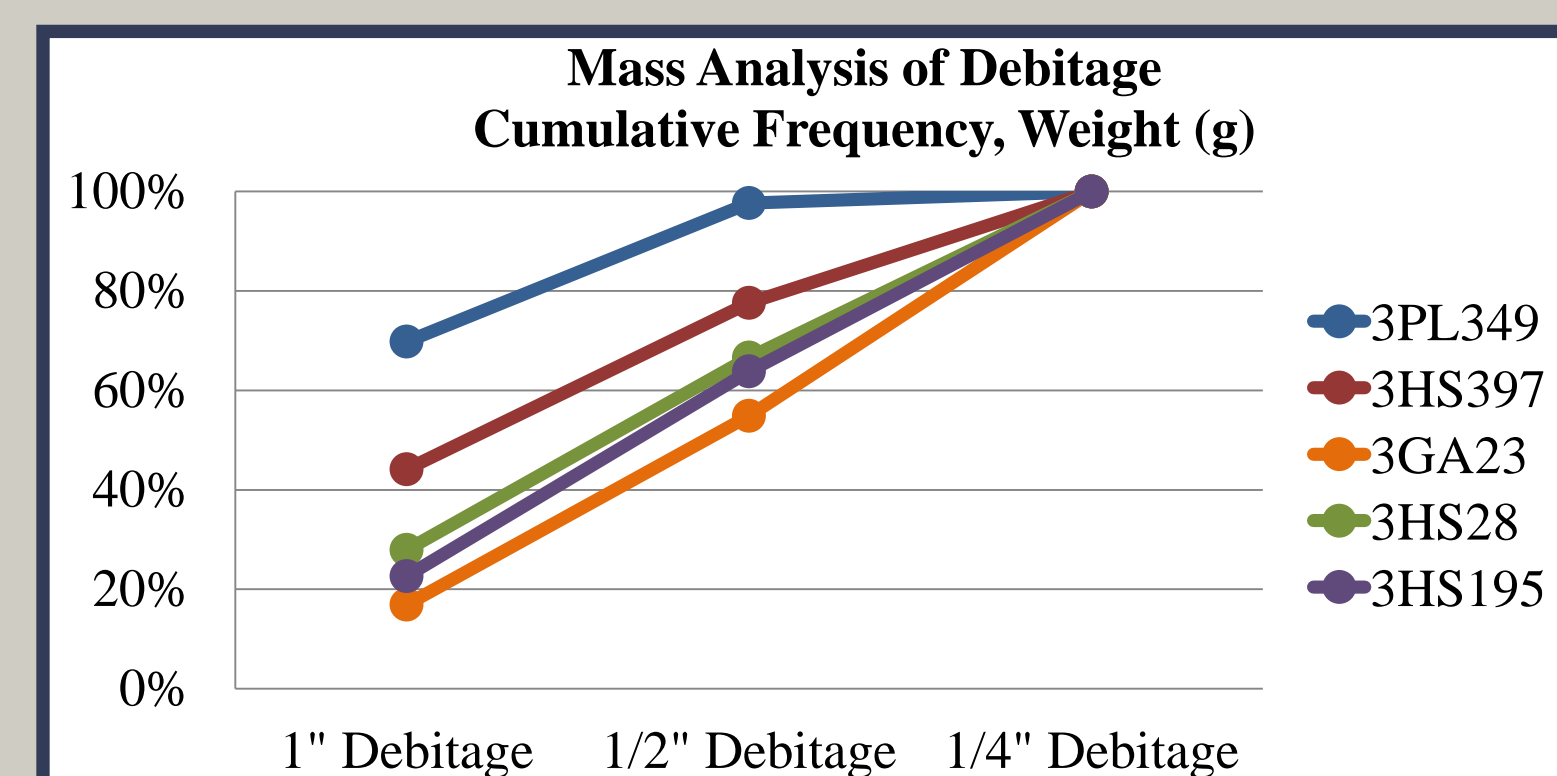
Mary Beth Trubitt and Vanessa N. Hanvey, Arkansas Archeological Survey

## FROM QUARRY TO HABITATION

The Jones Mill site, 3HS28, is located in the Ouachita River Valley of west-central Arkansas. The focus of the 2007-2008 excavations was to investigate Middle Archaic tool production and exchange. The site is downstream from major Arkansas Novaculite quarries.



Using a combination of debitage mass analysis and individual flake analysis (Ahler 1989; Bradbury and Carr 2004; Trubitt 2007), we compared novaculite reduction across space. The novaculite debitage analysis highlights the reduction in size as toolstone is moved away from quarries.



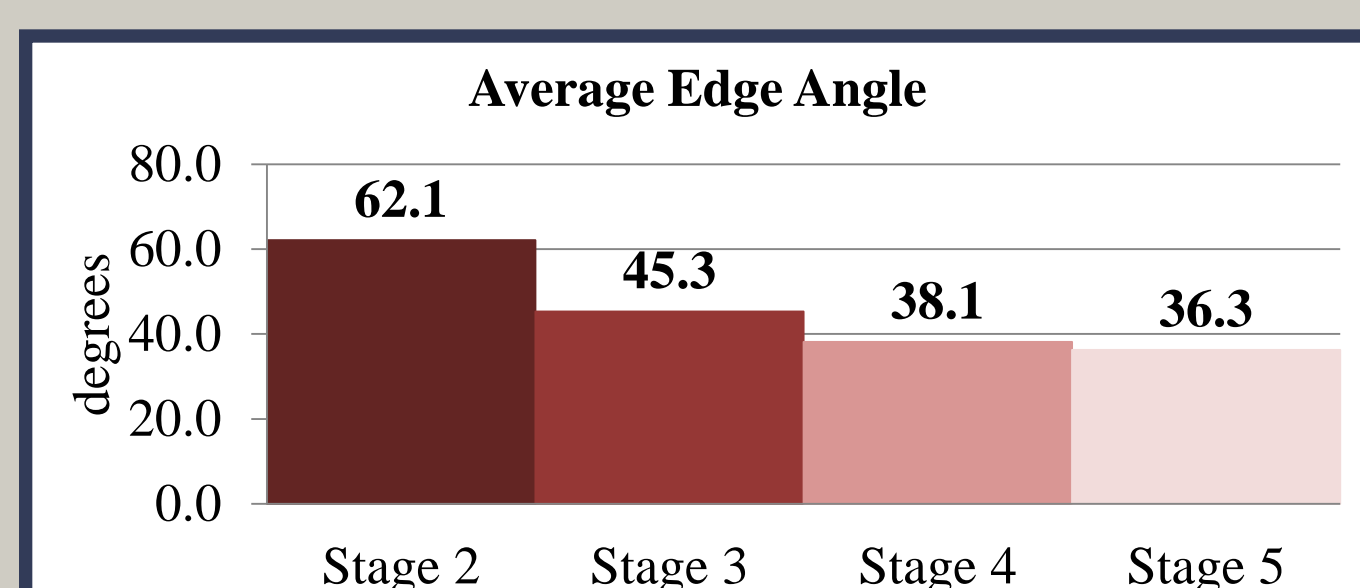
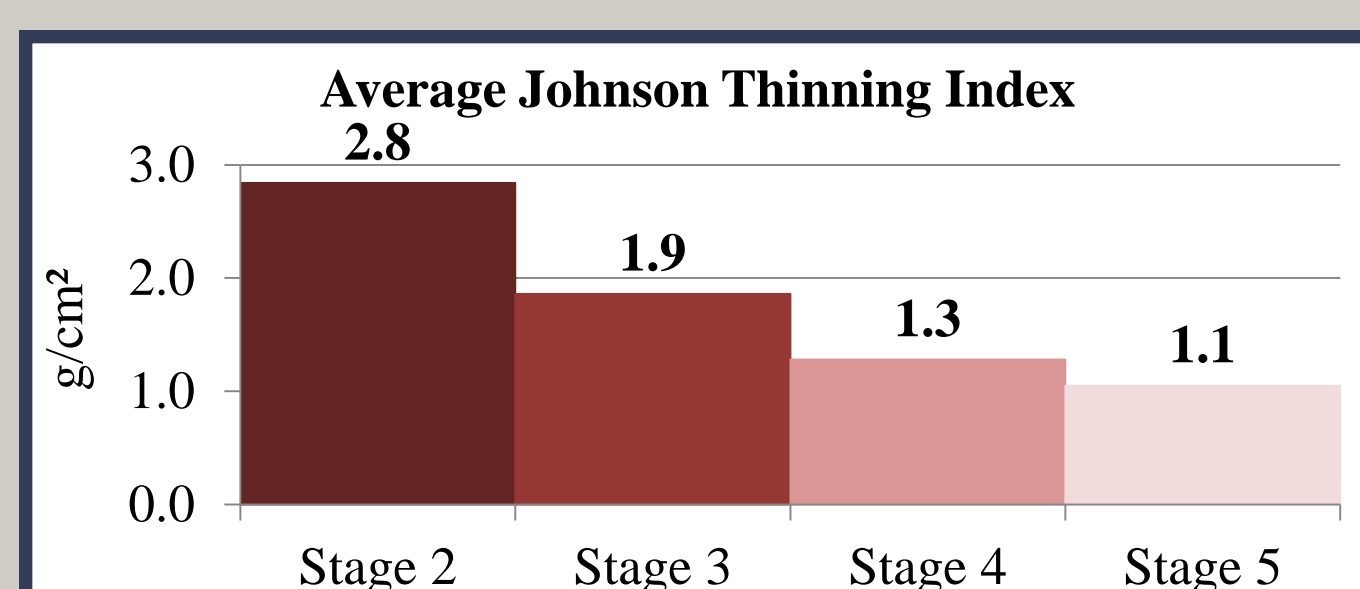
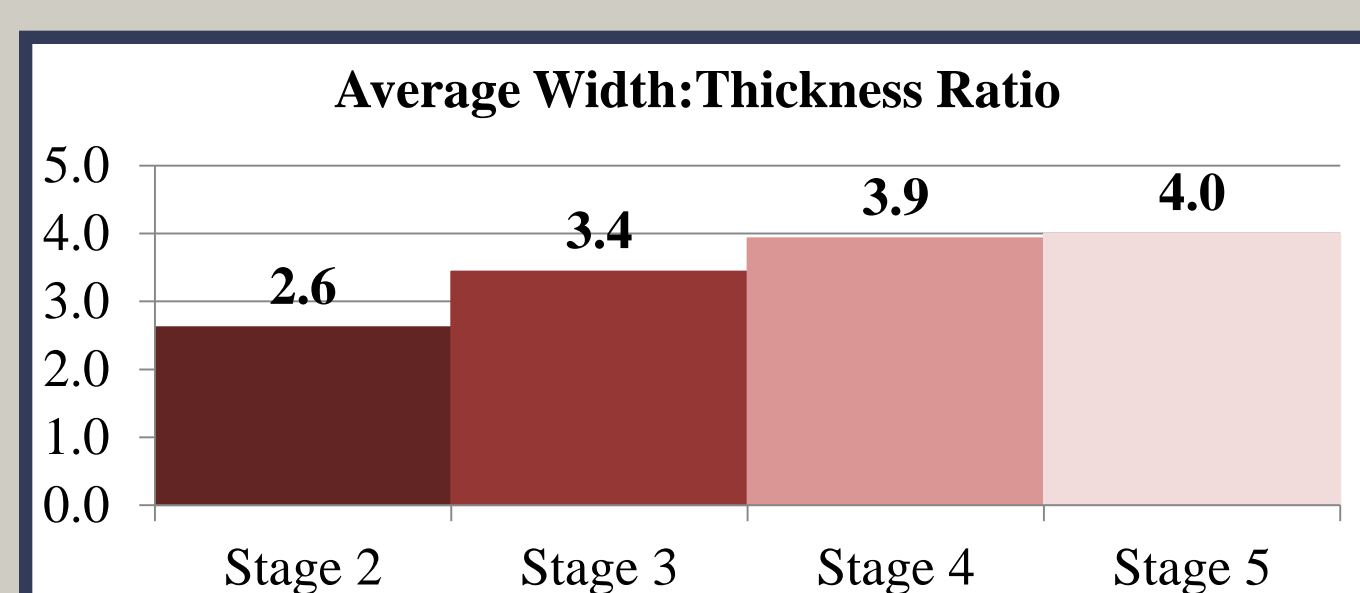
Larger/heavier pieces of debitage characterize quarry sites like 3PL349 and workshops located next to quarries like 3HS397, as compared to habitation sites on the Ouachita River like 3HS28, 3GA23, and 3HS195. Higher proportions of cortex and shatter are also found at quarries.

Early stage reduction occurred at quarries and adjacent workshops and later stage reduction took place at habitation sites further away.

## NOVACULITE REDUCTION

Stratum III contains a buried Middle Archaic deposit. Two AMS dates funded by the Arkansas Archeological Society bracket this component at Jones Mill to cal. 6000-4300 B.C.

A sample of the Stratum III biface fragments, core remnants, and finished projectile points was examined (*center photo*). Reduction stage was assessed using Callahan's (1979) categories. Increasing biface thinness (using width:thickness ratio as well as Johnson Thinning Index [Johnson 1981; Beck et al. 2002]) and decrease in edge angle characterizes the reduction trajectory from Stage 2 to Stage 5.



Most of the artifacts in the sample were identified as Stage 3 bifaces (46%). Relatively few (16%) were identified as Stage 2 bifaces or cores, Stage 4 thin bifaces (19%), or Stage 5 hafted points (20%).

Relatively few pieces had identifiable cortex or weathering rind (11% of sample overall). Cortex is more frequently seen on Stage 2 bifaces (37%) but not present at all on Stage 4 or 5 bifaces.

Novaculite was brought to Jones Mill as Stage 2 cores and bifaces, but most of the pieces discarded at the site were broken Stage 3 bifaces.



Examples of biface reduction stages from Stratum III at Jones Mill.

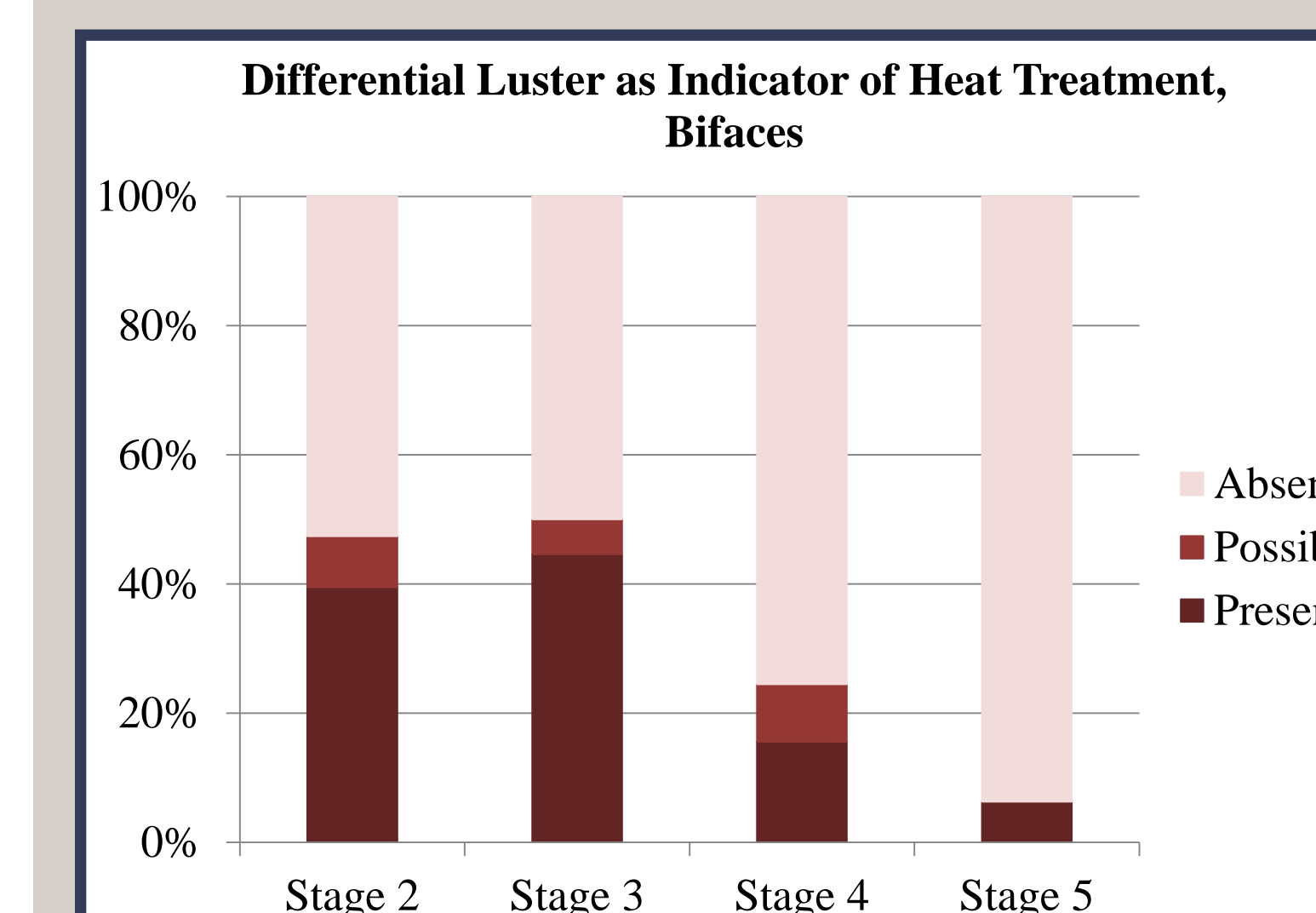
## ABSTRACT

The Jones Mill Archeological Project aims to understand the spatial and social organization of Arkansas Novaculite tool production and mechanisms for the movement of novaculite down the Ouachita River during the Middle Archaic period.

In this poster, we use analyses of three datasets (debitage, biface fragments, and projectile points) from the Jones Mill site to reconstruct the novaculite reduction sequence. Specifically, we address issues of what stages of biface reduction were done at the site, when heat treatment was done, and whether there were changes between the Tom's Brook and Crystal Mountain components (6000 - 4300 B.C.).

## HEAT TREATMENT

Because Arkansas Novaculite exhibits such variability in color and texture at quarries, we use the presence of differential luster instead of color or gloss as indication of heat treatment.



Some 7% of the >1/2" flakes and 39% of the bifaces were coded as showing differential luster. Differential luster is more commonly seen on Stage 2 and 3 bifaces.

Heat related failures (crenulated, expansion fractures, or potlids) and breaks along material cracks or flaws are the most common fracture patterns on Stage 2 bifaces. This indicates that heat treatment was done on Stage 2 or early Stage 3 bifaces.

Biface Fracture Patterns by Reduction Stage:

	incipient fracture plane	crenated/expansion/potlid	hinging	lateral snap	perverse snap	reverse	impact	haft snap
Stage 2	32%	32%	26%	24%	16%	0%	0%	0%
Stage 3	20%	18%	27%	47%	23%	4%	0%	0%
Stage 4	13%	13%	7%	49%	29%	2%	7%	0%
Stage 5	4%	4%	8%	17%	17%	0%	25%	25%

Fracture pattern categories after Johnson 1981. Frequency of occurrences tallied for each stage, but percentages do not add up to 100% because some bifaces had multiple fractures recorded.

The majority of Stratum III dart points are characterized as Johnson type circa 6100-5500 cal. B.C. and Big Sandy or White River Side Notched circa 5200-4500 cal. B.C.

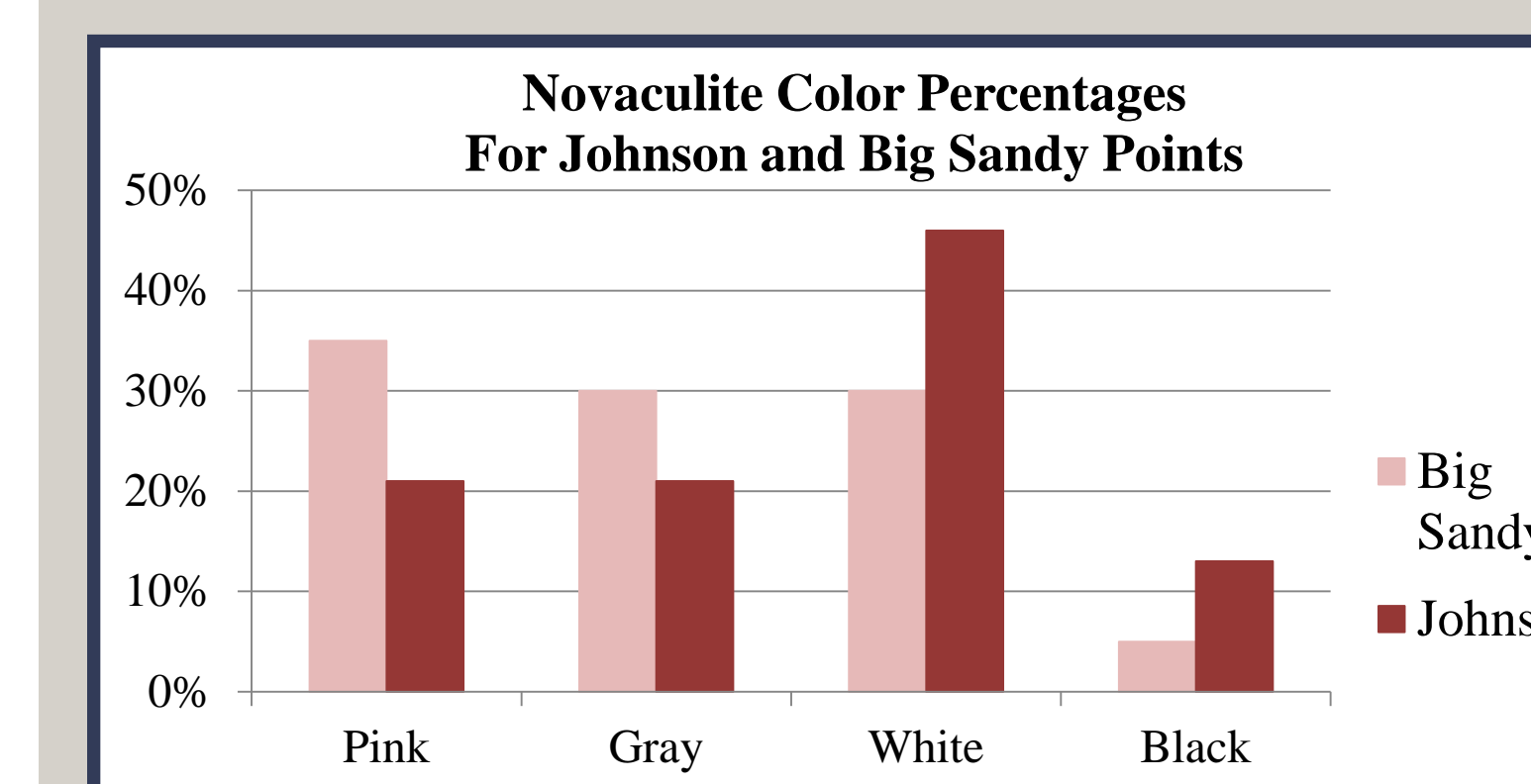
In earlier article, Trubitt (2009) noted a color preference towards pink and gray novaculite for Big Sandy points versus white and black novaculite for Johnson points. This pattern holds for the analyzed collection of dart points from the 2008 excavations at Jones Mill, although not as strongly as originally thought.



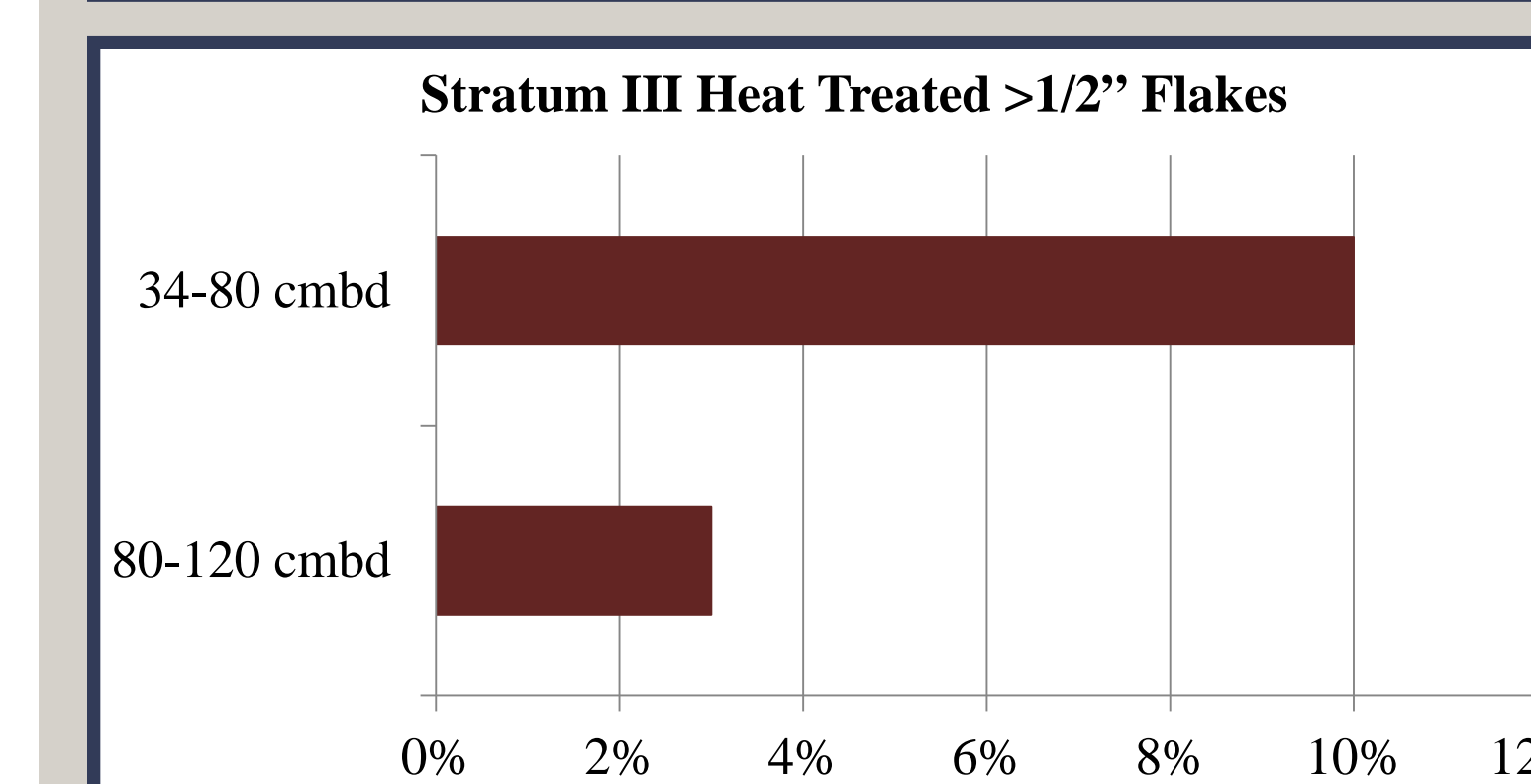
Big Sandy Point Type



Johnson Point Type



Does this color preference indicate increased heat treatment later in Stratum III? For the biface sample, the frequency of differential luster was only slightly higher in the upper part of Stratum III (above 80cm) as compared with the lower part (below 80cm). This division is a little more apparent for the >1/2" flakes.



## CONCLUSIONS

- Early stage reduction took place at or near quarries, later stages at habitation sites.
- Novaculite was brought to the Jones Mill site as Stage 2 cores and bifaces.
- Heat treatment was done on Stage 2 or early Stage 3 bifaces at Jones Mill.
- Heat treatment was a critical point in the manufacturing process, which often lead to breakage.
- Heat treatment increased through time within the Middle Archaic sequence at Jones Mill.