

**PRELIMINARY ANALYSIS AND REPORT ON USE-WEAR LITHICS**

**Shoofly Village**

**1984**

**Under the Direction of**

**Charles L. Redman**

**Submitted by**

**Dawn-Starr Crowther**

**August 1984**

**SHOOFLY CHAPTER  
ARIZONA ARCHAEOLOGICAL SOCIETY  
P. O. BOX 1613  
PAYSON, AZ 85547-1613**

**KEY TO USE-WEAR ANALYSIS SHEET**

1. UNIT DESIGNATION
2. LEVEL/LOCUS
3. MATERIAL TYPE - As defined for Shoofly lithics by Bradley. If more than one type given, prominent material given first with arrow toward second, less prominent type (arrow indicates gradation from one material type to another).
4. ANALYSIS ID
5. MAXIMUM LENGTH - Artifact placed on standard 10 mm/cm graph paper and maximum length plotted. Whenever possible, artifact oriented with length measured from platform to flake termination. Measurement reflects area of maximal surface coverage of graph paper rather than actual maximal length of artifact.
6. MAXIMUM WIDTH - Artifact placed on standard 10 mm/cm graph paper and maximum width plotted. Whenever possible, artifact oriented with width measured from edge to edge. Width measurement always taken as maximum surface area coverage perpendicular to length measurement.
7. MAXIMUM THICKNESS - Measurement obtained through thickest area of artifact with Vernier Type 6914

calipers.

8. NUMBER OF UTILIZED EDGES - Edges defined as area of conjunction of dorsal and ventral surfaces. Notches and projections are subsumed under Edge classification. Number of utilized EDGES is NOT the same as number of utilized AREAS (see report text).
9. EDGE SHAPE - Prominent edge shape noted. Edge shape may be defined as one type (ie., Concave, Straight, etc.) and also have Notch and/or Projection noted.
10. STEP FRACTURES - Defined as any negative scar which has been removed from edge which terminates in a "hinge" or "step" rather than feathering smoothly outward from their proximal ends (Rehar 1977; Knudson 1979). Position and size as follows:
- |       |   |
|-------|---|
| V/D   | VENTRAL/DORSAL (SIDE)                                 |
| DI/P  | DISTAL/PROXIMAL (END)                                 |
|       | (Proximal end defined as that with platform)          |
| R C L | RIGHT CENTER LEFT                                     |
|       | (Position on V/D side)                                |
| 1 MM  | Less than 1 mm from edge to hinge/step termination    |
| 1 MM  | Greater than 1 mm from edge to hinge/step termination |

11. ATTRITION - Any reduction of edge - can include scalloped reduction of edge; small half-moon, conical or spaul-like flake scars removed from edge (Rehar 1977; Knudson 1979; Tringham et.al. 1974). Position and size as noted in #10 above.
12. EDGE ANGLE - Obtained with SK No. 19 edge angle calipers. Some artifacts exhibited edge angles which were unobtainable with edge angle calipers - noted with N/M (Not Measured).
13. NOTES - Any pertinent notes regarding use-wear location, morphology and location of flake scarring, hinge/step fractures, battering or crushing, and thoughts regarding use-wear patterns on artifact.
14. SKETCH - A sketch was made of all artifacts with effort to draw artifact Ventral side up (side noted with "D" or "V"). Unusual concentrations of use-wear scarring noted.

SHOOFLY VILLAGE

PRELIMINARY USE-WEAR ANALYSIS

1 UNIT # - E \_\_\_\_\_ N \_\_\_\_\_

2 LEVEL/LOCUS \_\_\_\_\_ - \_\_\_\_\_

PLT NOT USED

3 MATERIAL TYPE \_\_\_\_\_

4 ANALYSIS ID # \_\_\_\_\_

5 MAXIMUM LENGTH \_\_\_\_\_

6 WIDTH \_\_\_\_\_

7 MAXIMUM THICKNESS \_\_\_\_\_

8 NUMBER OF UTILIZED EDGES \_\_\_\_\_

EDGE 1

EDGE 2

9 EDGE SHAPE

EDGE SHAPE

Concave      Concave-Convex

Concave      Concave-Convex

Straight      Projection

Straight      Projection

Convex      Notches

Convex      Notches

USE-WEAR DAMAGE LOCATION

USE-WEAR DAMAGE LOCATION

10 STEP FRACTURES

STEP FRACTURES

V / D      DI / P      R C L

V / D      DI / P      R C L

1 mm      1 mm

1 mm      1 mm

11 ATTRITION

ATTRITION

V / D      DI / P      R C L

V / D      DI / P      R C L

< 1 mm      1 mm      5 mm

1 mm      1 mm      5 mm

lines indicate which attributes occur together (as above -

EDGE ANGLE \_\_\_\_\_

EDGE ANGLE \_\_\_\_\_

NOTES: Ventral, distal AND  
Dorsal, distal  
Both < 1mm)

NOTES::

This is a report detailing results of a preliminary investigation of use-wear lithics obtained from Shoofly Village near Payson, Arizona, under the direction of Charles E. Redman. The purpose of this investigation was to document variation and range in morphology, use-wear scarring and possible tool types of utilized lithics. A sample of 50 silicious stone artifacts was analyzed. All artifacts were recovered from subsurface excavation units.

#### MORPHOLOGY

All artifacts were measured for maximum length, width and thickness (see KEY for detailed explanation). Edge shape was noted and categorized as follows: Concave; Straight; Convex; Concave-Convex. Projections and Notches were also noted. An edge was defined as that area where the dorsal and ventral sides conjoined. Number of utilized edges was noted, with Notches and Projections being subsumed under the Edge classification. The number of utilized areas was noted (Figure 1) and this number is higher than the Utilized Edge count due to inclusion of Notches and Projections under this category.

Tool length ranged from 8.65 mm to 57.95 mm with a mean of 28.66 mm. Width ranged from 10.40 mm to 85.90 mm with a

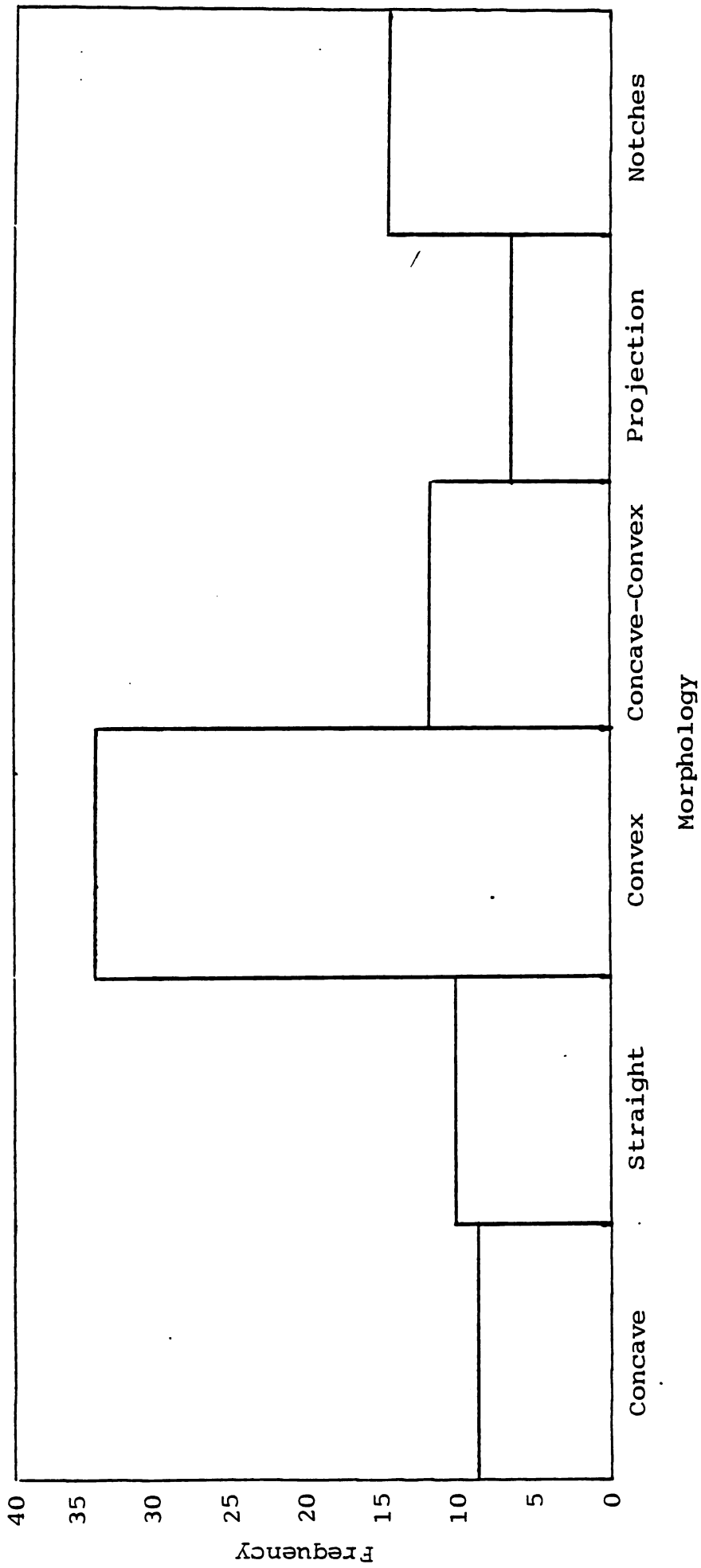


FIGURE 1. BAR GRAPH OF 84 UTILIZED AREAS - BY MORPHOLOGY

mean of 26.48 mm. Thickness ranged from 2.65 mm to 16.65 mm with a mean of 8.36 mm. Material types included: Birch Mesa, Preacher Canyon, East Verde and miscellaneous cherts, quartzite, schist, tabular slate and quartz crystal. A total of 73 utilized Edges and 84 utilized Areas were identified and examined. Edge angles were obtained for 50 of the 73 edges. Edge angles ranged from 20° to a maximum of 78°, with a median of 42°, and a mean of 42.22°. Edge angle measurements also exhibited three modes at 25°, 36°, and 48°, with clustering around these modes (see Figure 2).

Some regularity and patterning was noted between tool morphology and type of use-wear scarring. Scalloping of edges resulting from reduction of the edge was visible primarily on flakes with edge angles of less than 40°. Step and hinge fracturing occurred throughout the range of angles, but was more extensive and pronounced on those with edge angles greater than 45°. A total of 14 notches were noted, and these all were semi-circular with hinge and step fracturing and/or battering on one surface only (usually dorsal). Six projections were noted and were either broken or exhibited crushing. Based on recent experimentation with edge damage from use-wear (Ahler 1979; Knudson 1979; Reher 1977; Tringham et.al. 1974), it appears that those artifacts exhibiting larger edge angles were utilized on harder



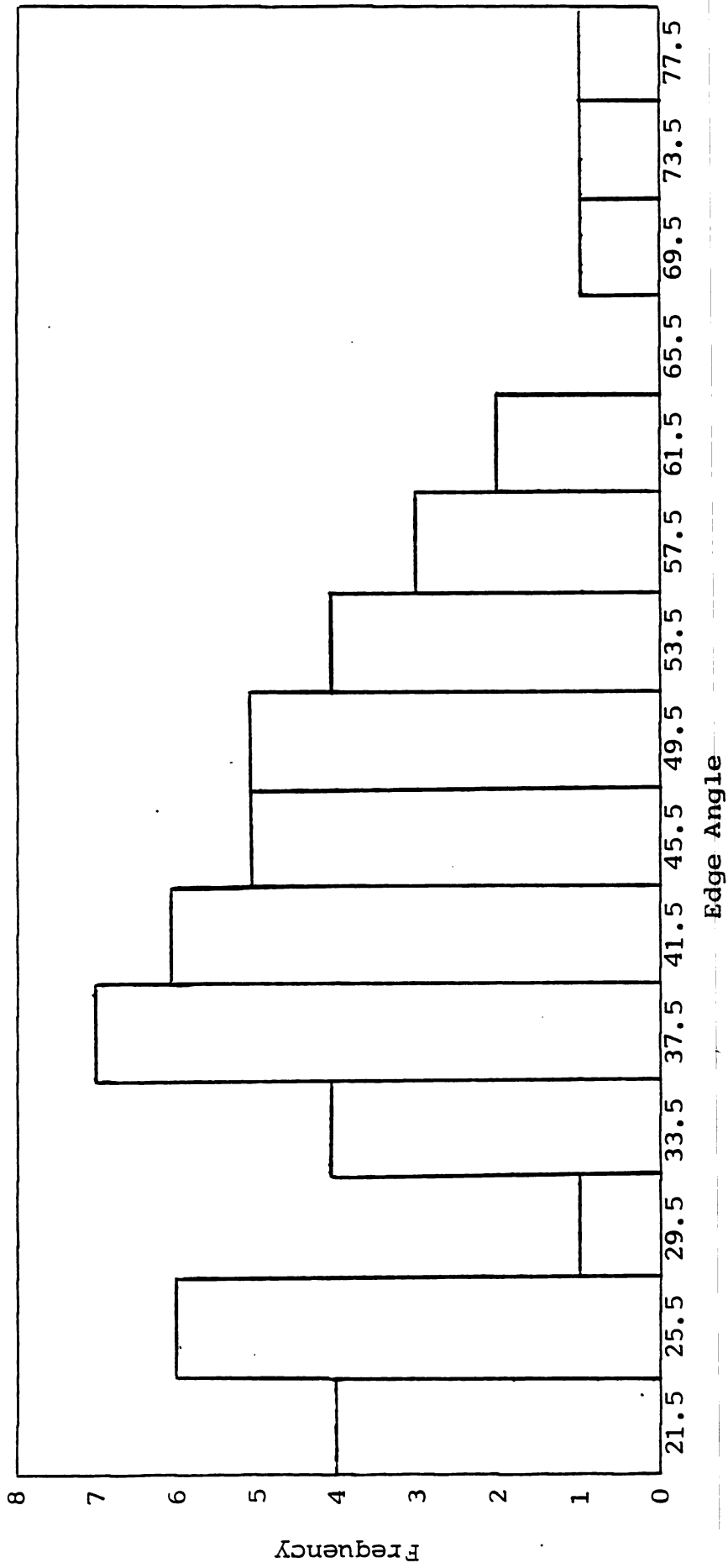


FIGURE 2. HISTOGRAM OF 50 EDGE ANGLES OF UTILIZED LITHICS (BY INTERVAL)

materials (bone, wood) than those with smaller edge angles. The artifacts with angles less than  $45^{\circ}$  seem to have been utilized for cutting or scraping of softer materials (plants, hides). Certainly the notched artifacts are a distinct group, and may have been used to strip raw plant materials.

It should be explicitly noted that the sample size for this study represents less than one percent (1%) of the total lithic assemblage obtained from excavations during the 1984 field season, and that no systematic and/or random sampling was performed for this study. As a result, any trends observed within the sample may or may not reflect trends within the entire assemblage. Results of this report should be regarded as a preliminary study of use-wear lithics at Shoofly Village.

#### THOUGHTS AND SUGGESTIONS

Examination of use-wear patterning of lithics is a time-consuming and detailed undertaking. Approximately 80 hours were spent in the analysis and compilation of this report. Following are some suggestions to streamline and improve further use-wear analysis at Shoofly:

1. FORM - Although the form used in this study was

adequate for a preliminary study, I would suggest changes in format for a more detailed study. Each use AREA should be noted and evaluated (rather than each EDGE). Terminology should be tightly defined and each type of meaningful damage considered as an attribute, with space for presence/absence and location. Under each attribute, size and count intervals should be listed. Notes should be limited and confined to those artifacts with unusual characteristics. The above is intended to simplify data recovery for later computerization and cluster analysis.

2. INITIAL FIELD SORTING - Personnel need to be adequately trained in the identification of use-wear and retouch lithics. Each bag examined for this study had to be reanalyzed to confirm counts. Frequently, use-wear and retouch lithics were not bagged separately. Perhaps identification of use-wear and retouch lithics should not be performed in the field by previously untrained personnel.
3. INTERPRETATION AND APPLICATION OF USE-WEAR ANALYSIS - Application of use-wear analysis is particularly appropriate in interpretation of

prehistoric behavior at Shoofly Village. At least three avenues of investigation may be conducted through careful research design and execution.

These are:

A. TECHNOLOGY - Aspects of lithic technology at Shoofly such as:

Range of material types (local and non-local), which may give an indication of trade networks.

Suitability and variability of local raw lithic material for tool production.

Distribution and quantity of reduction debitage from tool manufacture, which may indicate tool production areas.

Variability in "types" of tools produced and from which materials these tools are produced.

By-products of tool use (available from flotation), and the distribution of such use-debitage to indicate activity areas.

Correlations between tool types and type(s) of use-wear damage associated with each, and possible uses for types of tools.

B. SOCIAL ORGANIZATION - Aspects of social organization and living areas within Shoofly Village such as:

Horizontal patterning of tool types and correlated use-wear scarring in association with other data (ie., architectural styles, ceramic distributions, flotation and palynological results) which may give indicators of social organization spatially as well as through time.

C. FORMATION PROCESSES - An understanding of general site formation processes may be gained from comparison of surface and subsurface wear patterning (see Tringham et.al., pp. 182-183), and the results applied to the site as a whole.

Controlled experimentation with lithics, ceramics and architecture should be an integral part of such a study of site formation processes.

#### CONCLUSIONS

Preliminary investigation of 50 use-modified lithics recovered at Shoofly Village during the 1984 field season has demonstrated that patterning of use-wear damage exists within the lithic assemblage. Albeit, the patterning observed was not tested, nor was the sample randomly and/or systematically obtained. However, future analysis of utilized lithics using systematic sampling methods and cluster analysis has been suggested as a means to gain further insight into the prehistoric technologic and social organization of Shoofly Village, and may also contribute to understanding of site formation processes.

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