

Katherine Sterner, Towson University • Robert Jeske, Jeske Archaeological Consultants

## The Cove Site

The Cove Site (47DR428) sits on an elevated landform at the confluence of Big Creek and Sturgeon Bay, in Door County, Wisconsin. Cultural materials are shallow, generally found between 10-35cm below ground surface/ The site is a predominantly Late Woodland occupation. Three food residues samples taken from the interior of thin, grit tempered, cord-marked ceramic vessels provide calibrated dates that range from ca AD 770 to ca. AD 1175. Diagnostic ceramics wares such as Madison and Heins Creek support these dates. Madison Triangular, as well as small, stemmed, corner and side notched diagnostic lithic point types are also common.



Figure 1. Location of the Cove site (47DR428).

## Methods

### Blood Residue Analysis

A sample of 33 lithic tools from the 2019 and 2022 field seasons was selected for protein residue analysis. The protein residue analysis portion of this research was conducted at Archaeological Investigations Northwest, Inc. (AINW). Possible protein residues were identified using crossover immunoelectrophoresis (CIEP). The CIEP method exploits the immune (antibody-antigen) reaction in which antibodies are produced to recognize and bind to foreign antigens as part of the body's defense mechanism. The artifacts in this analysis were tested against antisera from deer, dog, human, beaver (guinea pig), squirrel (rat), duck, and rabbit.

### Microwear Analysis

Microwear analysis yielded further data on the function of these tools. Tools were washed in an ultrasonic cleaner using warm water and dish soap for 20 minutes. Analysis was conducted using an Olympus BX53M incident light microscope. Tools were examined at 50x, 100x, and 200x magnification and wear was documented using a 5MP camera and Olympus Stream Basic software.



Figure 2. Artifacts positive for blood residue.

## Results

### Blood Residue Analysis

Of the 33 tools tested for blood residue, four (12%) were positive:

- Guinea Pig (Beaver): BR-11, a flake tool with a short projection made by a burin blow.
- Rabbit: BR-33, a broken triangular biface with a short projection.
- Human: BR-10, a triangular biface with weak side notching, possibly a Honey Creek or Klunk point type.
- Rabbit: BR-22, a biface with a steeply retouched distal end and stemmed hafting element, possibly Monona or Steuben point type.

### Microwear Analysis

Ten of the 33 tools (30%) showed evidence of use, and a single tool exhibited grit polish from post-depositional processes. Two triangular tools showed diagnostic projectile wear and three more showed evidence of hafting on the proximal end but no wear on the distal end. Four other tools displayed generic weak polish indicating use but not a specific contact material. A final tool, morphologically a T-shaped drill, exhibited wood polish on the distal end and wet hide polish on the medial ridge.

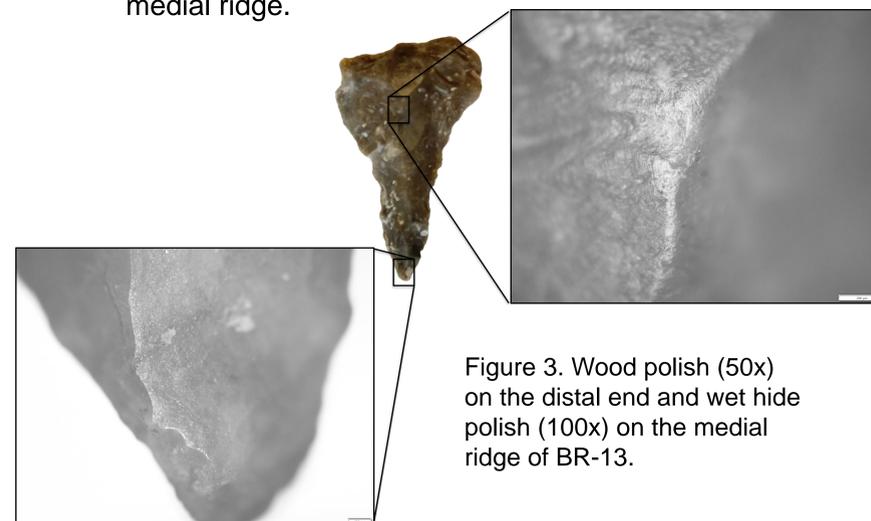


Figure 3. Wood polish (50x) on the distal end and wet hide polish (100x) on the medial ridge of BR-13.

## Discussion

The combined methods of blood residue and microwear analyses provide insight into the activities undertaken by Cove site residents. Although neither beaver nor rabbit remains were identified in the sparse faunal assemblage, we know that they were utilized. We know that a morphological T-shaped drill was used in boring holes in wood and was used in processing fresh hides. Additionally, the presence of human blood residue on a tool that shows clear use-wear supporting its designation as a projectile point suggests that interpersonal conflict was a part of Late Woodland life in the Door Peninsula.

This analysis also indicates the importance of a combined approach. Of the four tools that tested positive for blood residue, only one exhibited use-wear. Thus, caution must be exercised when using microwear results to interpret tool and/or site function. Many curated tools are likely resharpened, then rejected as useful, just before being discarded. The lack of wear on an edge does not mean the tool was not used extensively. Additionally, the presence or absence of use-wear on a tool does not necessarily reflect the likelihood that blood residue will be present or absent. Choosing tools exhibiting edge-use only (ie., no evidence for resharpening) may provide a higher probability of obtaining a positive blood residue result.

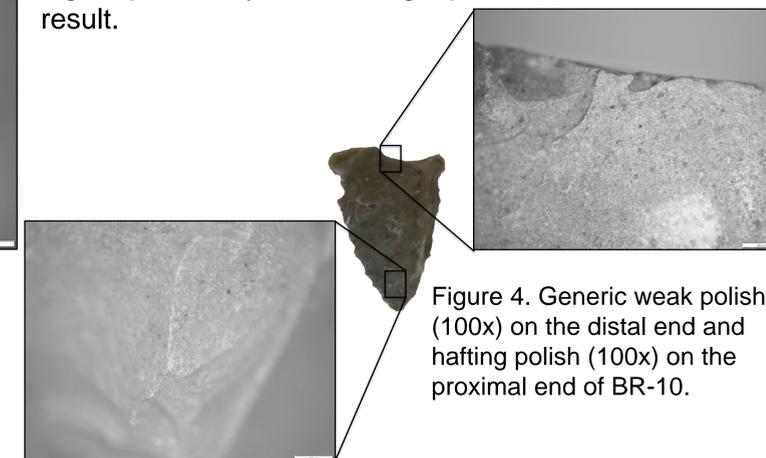


Figure 4. Generic weak polish (100x) on the distal end and hafting polish (100x) on the proximal end of BR-10.