

ASSESSING “LITHIC SOUND” TO PREDICT A ROCK’S EASE OF FLAKING

David Scott DeForest

Dr. R. Lee Lyman, Thesis Supervisor

ABSTRACT

Objective information concerning “lithic sound’s” properties of pitch, duration, and intensity, can inform archaeologists about a stone’s candidacy for human use, and whether or not lithic material at a site has been heat treated. A hammer stone machine held and struck specimens under controlled conditions. To process acoustic information, A Kay Computer Speech Laboratory and related software proved effective. Nineteen specimens of stone were tested. Based upon waveform evaluation, heat treated stone had much higher average sound intensity levels than the stone in its unheated condition. Archaeologists could use methods discussed in this study to assess if heat treated siliceous rock is present at sites. After being struck with a hammer stone, significant differences existed concerning the duration and average vibration rates of sound between types of stone, unheated versus heated stone, and high and low quality stone of the same type. Accessory information included observation of how the hammer stone rebounded differently from specimens with obvious flaws, compared to stones with no imperfections. The hammer rebounded farther after striking high quality rock. Knappers use their sense of proprioception to determine a stone’s candidacy for reduction. When striking a core stone which will flake predictably, the hand holding the hammer, will rebound quicker and farther back, compared to a low quality stone which absorbs energy.