KRISTY HENSON, Dept of Biology and Environmental Science, West Virginia Wesleyan College, Buckhannon, WV, 26201, and F. ROBIN O'KEEFE, Dept of Biological Sciences, Marshall University, Huntington, WV, 25755. Comparative digitization techniques of a dire wolf (*Canis dirus*) ulna fossil.

Recent technological advances, like three-dimensional (3D) digitization have assisted in expanding paleontological research collections. Digitization equipment varies in accuracy and cost, offering a range of abilities while efficiency and accuracy of the replications have not yet been explored. Assessing the potential of these methodologies, we compared processing time, accuracy, and costs of a medical computer tomography (CT) scanner, an Artec Eva portable handheld 3D light scanner, and a NextEngine 3D laser scanner. We digitized one dire wolf (*Canis dirus*) ulna fossil. The digitized replicas underwent 3D printing on a ZPrinter 250 3D rapid prototyping machine. We hypothesized that the cost and ease of the user interface will affect the digital replicas' accuracy of reaching less than 5% error. Percent error was tested by various landmark measurements and visual assessments of both digital models and 3D printed models compared to the original fossil material. Results show that the dire wolf ulna digitized by the Artec Eva scanner captures the fossil but does not result in less than 5% error due to small features the scanner is unable to capture. The NextEngine has similar limitations as the Artec Eva and the CT image is closer to an ideal replica of less than 5% error with less post processing time but still lacks the ability to capture certain features of the fossil. The ZPrinter 250 3D printer creates ideal replicas only limited by print layer thickness. Each digitization method was able to successfully replicate the fossil with the CT replica being the most accurate followed by the NextEngine then the Artec Eva.