DIGITIZATION OF TAPHONOMIC DATA IN A LARGE ACTIVE UPPER CRETACEOUS DINOSAUR SITE IN NORTHEASTERN WYOMING

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We have employed digital field techniques for over fifteen years in a Wyoming Lancian dinosaur site. To date we have excavated nearly 20,000 bones, teeth and bone fragments from twenty diverse quarry sites, spread over 500 hectares. We have employed high precision RTK GPS to obtain positional information and have recorded field digital photos for all bones. At the end of each field season, we integrate the GPS positional data with the digital photos of the bones using GIS software, and generate virtual quarry diagrams for each of the active quarries. These quarry diagrams are then posted to our on-line digital museum site, along with the metadata for each bone and high resolution 3DVR images of the bones. Each bone can be rotated in real time, and the location of the bone in the quarry and its relationship to other bones on the site can be visualized.

The digital data can be sorted and viewed in a variety of ways, allowing us to study the distribution of individual bone types, for example, or to study the vertical relationship between the bones. This enabled us to document the existence of a graded bone bed, which profoundly affects how we reconstruct the sedimentology of the site. The observation of an apparently random horizontal distribution of bones by type holds important taphonomic and sedimentologic clues as well. We can also reconstruct the three dimensional geometry of the bonebeds themselves. Much more study remains to be done, and active study is ongoing. Because the data are all available online, future access to both the data and the metadata is assured.