MAPPING OF LATE CRETACEOUS VERTEBRATE LOCALITIES IN ALBERTA, CANADA USING THE GLOBAL POSITIONING SYSTEM

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The whereabouts of many fossil vertebrate quarries in Alberta are unknown, due to high erosion rates and poor field documentation from 1910-1975. In the mid 1930's, Charles M. Sternberg made efforts to field document and mark quarries with stakes set in concrete and produced a map of quarries in Dinosaur Provincial Park (DPP). However not all sites were documented and critical re-examination of the published map and data has revealed some errors.

The mapping of approximately 350 DPP quarry sites needs to have a high degree of spatial and stratigraphic accuracy because one vertical meter stratigraphically represents on average 500 years in time. The global positioning system (GPS) can provide this accuracy. Handheld GPS offers great promise by providing user simplicity and provides an excellent tool for navigation to known sites. But it lacks the accuracy required to distinguish sites that are clustered close together. Survey grade GPS receivers provided the spatial and stratigraphic accuracies required with the assistance of a data dictionary, barcodes and a handheld computer. Two teams visited the individual sites for a few minutes each recording its positions and attributes. The data was downloaded to a computer for processing at days end. The data dictionary allowed the quarry site information to be imported into a database for quick generation of reports, and charts. A geographic information system was used for spatial analysis and automated map production.

Since 1999, the authors and their organizations have pooled knowledge, hardware and technological resources to relocate and replot all quarries (1912-present), bonebeds, uncollected dinosaurs and other sites in DPP and elsewhere in Alberta.

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