

## SECTION A: GEOLOGY

“In Xanadu did Kubla Khan  
A stately pleasure dome decree:  
Where Alph, the sacred river, ran  
Through caverns measureless to man  
Down to a sunless sea.”

**Samuel Taylor Coleridge.**

This section provides the essential geologic framework for this book. These four chapters center on the Page-Ladson site complex, yet they also readily scale up to regional and global perspectives. Such grand extensions from one small site are warranted by two critical facts, both clearly documented in this section. First, the sequence of sediments at Page-Ladson were nearly continuously deposited during an interval of some 10,000 years. And secondly that sequence is well dated by a robust set of carbon dates, permitting century-scale correlations with the absolute chronology of the Quaternary Period. This stratigraphic and chronologic framework permits preliminary correlations of local events with broader climatic, evolutionary, and cultural changes elsewhere.

At present the Aucilla River flows centrally through the Woodville Karst Plain in northwestern corner of the Florida Peninsula. This expanse of about a thousand square kilometers of swampy lowlands is underlain by limestone formations of Eocene and Oligocene age. During the last glacial interval, when sediments accumulated in the Page-Ladson site complex, that same karst plain was approximately three times larger than its present size and extended far into what is now the Gulf of Mexico. The sea lay about 150 km south of the present coastline, and the PaleoAucilla River, extended, partly surface and partly subterranean, across that broad apron of exposed lowland limestone. The increased hydrologic head that flowed seaward through the region accelerated the rate of subterranean dissolution, producing some of the largest underground cavern systems in the world, well exemplified by Wakulla Springs. As continental ice sheets retreated, the seas rose and coastal sinkholes such as Page-Ladson backfilled with fine-grained sediments.

The description of sediments from the Page-Ladson site complex is fully detailed as the essential framework for all other inferences and interpretations. The next chapter indicates the methods by which carbon dates were obtained, and considers their strengths and weaknesses. Finally, local depositional episodes, with their associated carbon dates, are correlated with the full range of climatic events in the Gulf of Mexico, the North Atlantic and the world ocean.

These geologic chapters feature the last phases of the Ice Ages. The Quaternary Period spans about 1.6 million years, representing the most recent and most variable chapter in earth history. Hominids had already appeared in Africa where they interacted with Elephantidae, Equidae, and other animal groups in savanna settings. The final deglacial hemicycle embodies the most fully studied set of glacial episodes. And the Page-Ladson evidence falls within that final series of events. The first Floridians

appear and interact especially with American Mastodons. These records fall between 14,000 and 15,000 calendar years before present. The last appearances of mastodons, horses, camelids, and other extinct megafauna at this site are recorded about 13,000 calendar years before present. The basis for these and subsequent events is framed in these geologic chapters.