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Mapping of subsurface shell midden components through percussion coring: examples from the Dundas Islands

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ABSTRACT

Following earlier examples of mapping the subsurface of shell bearing sites using augering, we employ percussion coring to identify early Holocene shell midden components at two types of sites on the Northwest Coast of North America. We describe a method for mapping subsurface components at shell bearing sites including basal deposits, paleosols and transitions between distinct cultural components. Our research was undertaken for the purpose of identifying early Holocene shell middens above the modern shore, and as components below large shell midden villages. Our results augment the developmental trajectory of shell middens on the Northwest Coast by suggesting that pre-5000 BP forms of these sites may be more common than previously thought. In light of these results, we argue that the Northwest Coast cultural historical sequence, which locates an increase in the number and rate of accumulation of shell middens beginning 5000 years ago, to be premature. However, there are insufficient data from shell middens in the early Holocene, a sampling problem that the percussion coring methods described here can address.

The Northwest Coast of North America is known for its high density of shell middens. They vary considerably in size and complexity and often present the archaeologists with serious challenges in designing an appropriate sampling program. At one end of the range are small, unstructured patches of shell and other cultural debris, representing the remains of short-term encampments or resource-processing stations; at the other are much more extensive deposits containing the highly structured remains of large, stable village communities. These larger sites are especially problematic, often covering an area of several thousand square metres and reaching depths of 5 m or more. Typically, they contain not only accumulations of food remains and artifacts, but also a variety of cultural features, including hearths, postholes, house floor deposits, human burials, and sometimes fortifications (Blukis Onat, 1985; Marquardt, 1990; McMahon and Marquardt, 2004; Whittaker and Stein, 1992). Moreover, these richly varied village deposits were often laid down over centuries or even millennia, providing a potential record of any changes that may have occurred in the size and layout of the settlement. The systematic excavation of sites such as these can be both time-consuming and expensive, and in many cases, there are lingering questions as to whether the samples obtained are truly representative of the site as a whole. What is needed under these circumstances is a technique that would provide reliable, preliminary data on the age and developmental history of a site for use in planning the full-scale excavations.

Mechanical coring has a long history of use in geological and archaeological–palynological contexts, especially lake bed sediments, bogs, and glaciers (Bouma, 1969; Cannon, 2000a; Garrison, 2003; Stein, 1986; Weaver and Schultheiss, 1990). The coring principle is similar in all cases—extracting a stratigraphically intact cylinder of sediment for analysis—although the mechanical device varies by substrate. Coring differs from augering, in which subsurface sediment is extracted in vertically-stacked volumes collected within a rotating 'bucket' bit. In augering the contents of each volume are mixed and lose all internal vertical provenience. The coring principle has four components, a) recovery of a stratigraphically intact sample within which vertical distances can be

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