Supplemental Material, Text 1, AMS Dating

Direct AMS dates were obtained from residue adhering to the interior of stylistically designed Hopewellian pottery and from human remains recovered from Schultz complex burials. The accuracy of AMS ages from ceramic residue has been questioned for the late prehistoric period (ca. AD 900–1350) of the central Plains due to the freshwater reservoir effect (FRE) (Roper 2013). FRE is the suggested impact of fossil carbon on AMS dating, that could happen when ancient carbon reservoirs in aquatic resources introduce ancient carbon into charred ceramic residues. When used for AMS dating, this results in old apparent ages. However, FRE has not been proven to significantly impact organic freshwater resources (Fischer and Heinemeier 2003; Hart and Lovis 2014).

The AMS ages from ceramic residue presented in this study were initially acquired as part of a KCH ceramic analysis (Keehner and Adair 2019), which confirmed that all of the residue samples dated to the expected time range of the established ceramic styles, especially when compared to radiocarbon ages from the Illinois Hopewell (King et al. 2011). Further, aquatic resources are consistently minimally represented in KCH faunal assemblages (Adair 1977; Johnson 1975; Katz 1969; Logan, ed. 1993). With a consistency between residue dates and those from annual plants for the Middle Woodland period (Table 1), we concluded that dating ceramic food residues was roughly equivalent to dating annual plant remains, assuring that the material dated was produced at a time contemporaneous with both the occupation and use or discard of the ceramic vessels (Keehner and Adair 2019). Further, by using only stylistically designed ceramics that are temporally diagnostic for the AMS dates, we avoid the problems associated with using wood charcoal, especially wood charcoal from multicomponent sites. The AMS ages are therefore directly applicable for this current study.

Human remains from the Schultz burials were selected for AMS dating and submitted to the Illinois State Archaeological Survey, University of Illinois Champaign Urbana as part of a larger study involving dietary reconstructions from isotope values (Kauffman 2013). Bone collagen samples were selected for AMS dating on the basis of stable isotope results and submitted to the Illinois State Geological Survey (ISGS) radiocarbon lab for preparation. All samples were submitted to the W. M. Keck Carbon Cycle AMS facility at the University of California–Irvine.

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