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## Short term occupation surfaces in the lower Ohio River Valley: Exposing more of the late Holocene hidden record



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### ABSTRACT

As in other larger river valleys, Holocene alluvial deposition in the lower Ohio River Valley created a sampling bias towards certain prehistoric archaeological sites by burying them too deep to be accessed by conventional archaeological methods. Alternatively, archaeological site types that do not leave a large signature (i.e. a large sample of artifacts) may also be obscured since they are not associated with recognizable geomorphic or soil development features, such as a buried A horizon. This obscuration has led to an incomplete record of the region's prehistory. To better understand the age and type of prehistoric sites that may be buried within this alluvial landscape, it is necessary to understand the structure and history of the alluvium in the valley. This can be done by reconstructing the chronological development of alluvial deposits and the soils that formed in them. Regional models for the age and development of Ohio River Valley alluvium, and the cultural deposits they may contain, have been previously developed, but must be continuously reviewed and revised as to their applicability to all and any alluvial packages found within the lower Ohio River Valley. This study tests and expands some of these models through the investigation of an alluvial landscape near the confluence of the Ohio and Great Miami Rivers in Indiana. An age-based landscape reconstruction, which focuses on late Holocene alluvium, is presented. Cultural deposits can be linked to brief stability periods within alluvial packages, stability periods that were too brief to have formed an A horizon. This study shows that short-term or ephemeral prehistoric occupations may co-occur with periods where the surface of an alluvial landscape or landform was geomorphically stable for a brief period. Identifying these short-term stable surfaces could likely lead to the better identification of underrepresented prehistoric cultural components or archaeological site types and help to reduce sampling bias in the regional prehistoric record.

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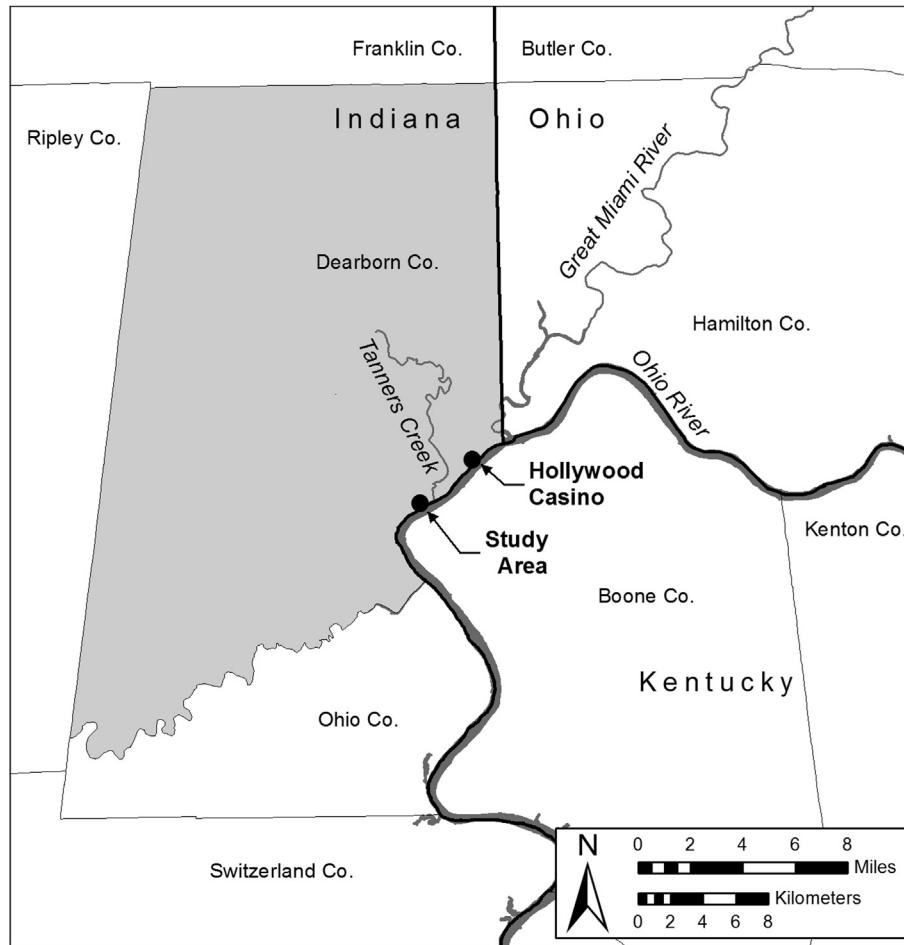
### 1. Introduction

Prehistoric geoarchaeological studies in stream valleys have recognized that certain prehistoric periods are underrepresented at the land surface (e.g. Bettis and Hajic, 1995; Bettis and Mandel, 2002; Guccione, 2008), including the lower Ohio River Valley region (e.g. Stafford and Creasman, 2002; Stafford, 2004; De Rego, 2012). This geomorphic bias is due to the deep (>1 m below surface) burial of cultural deposits by alluvium. Through a better understanding of the alluvial history of a river valley, prehistoric settlement patterns of different prehistoric cultural groups can be better understood and interpreted. This study examines the evolution and distribution of Holocene alluvial deposits and landforms 6.7 km downstream of the Great Miami and Ohio River's

confluence. This location provides an opportunity to better understand how the evolution of this type of landscape can potentially obscure or bias the archaeological record in an alluvial setting.

A geoarchaeological assessment was completed during the re-evaluation of four prehistoric archaeological sites (12D487, 12D494, 12D496, and 12D497) identified during previous deep archaeological testing (Callum, 1995). The sites, located on the Ohio River floodplain between Tanners Creek and Wilson Creek near Lawrenceburg, in Dearborn County, Indiana (Fig. 1), are deeply buried, low-density deposits of prehistoric artifacts, which lacked definitive temporal designations. A re-evaluation was implemented to determine the likelihood that these deposits could provide specific research avenues to better understand regional prehistory. Specifically, the goal was to provide a better temporal and environmental context of the cultural deposits, to assess how alluvial geomorphic processes have biased the archaeological

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**Fig. 1.** Regional context of the study area in the lower Ohio River Valley, shown in relation to the Argosy Lawrenceburg Casino ge archaeological study (presently the Hollywood Casino).

record, and compare results to similar ge archaeological studies in the region.

The current study examines the depositional history and describes both the lithostratigraphy and soil stratigraphy of the landforms that comprise the floodplain in the area of the four prehistoric sites (Fig. 2). Understanding the depositional nature of these landforms helps us understand how the archaeological record was shaped. In the study area, landscape evolution was reconstructed and landforms were placed in a soil-geomorphic context with similar studies of the lower Ohio River Valley. Specifically, the results of this study are compared to Stafford and Creasman (2002) alluvial model developed for the fill episodes near the modern confluence of the Great Miami and Ohio Rivers, directly upstream from the study area. Their study of late Holocene alluvium identified a “hidden record” principle in which a significant part of the late prehistoric record (ca. 3500–600 BP) was buried at depths extensive enough to mask them from typical archaeological near-surface investigations (i.e. at depths below 1 m). The hidden record principle also indicates that prehistoric sites buried within late Holocene alluvium are not commonly associated with buried soils. Thus, in contrast to many ge archaeological studies in the Great Plains (e.g. Ferring, 1995; Holliday, 1995; Mandel, 2008; Beeton and Mandel, 2011) buried site potential cannot be estimated on the presence of buried soils alone within late Holocene Ohio River alluvium, which is similar to results from the Mississippi River Valley (e.g. Bettis et al., 2008; Guccione, 2008; van Nest, 2014).

## 2. Background

### 2.1. Archaeology

The four archaeological sites in the study area were originally identified during investigations conducted by the Glenn A. Black Laboratory of Archaeology at Indiana University (O'Brien, 1995). Site 12D487 is an unidentified prehistoric lithic scatter. It lies between an abandoned railroad grade and the north edge of a reclaimed settling pond (Fig. 2). Artifacts were primarily found on the surface and included 13 flakes and 20–30 pieces of fire-cracked rock (FCR). Two trenches produced a few additional artifacts; one trench yielded one piece of FCR and charcoal flecks at 70–80 cm below surface (BS) and the other produced one piece of FCR and one flake at 45 cm BS. The eastern half of the site was thought to be “effectively destroyed by industrial activity” (O'Brien, 1995 pp.18).

Site 12D494 (see Fig. 2) is comprised of an unidentified Woodland (ca. 3000–600 BP) component underlain by an unidentified component. The site was identified by artifacts collected in eight contiguous trenches. Artifacts recovered include heat-altered chert flakes ( $n = 5$ ), cordmarked and indeterminate surface ceramic sherds ( $n = 4$ ), FCR, and a large limestone slab. The amount of FCR encountered was not recorded, and neither FCR nor the limestone slab was collected. Artifacts were buried between 100 and 200 cm BS; however, some artifacts, including prehistoric ceramics, were

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