



Using LiDAR data to locate a Middle Woodland enclosure and associated mounds, Louisa County, Iowa



Melanie A. Riley^a, Joseph A. Tiffany^{b,*}

^a Georgia Department of Natural Resources, Wildlife Resources Division, Social Circle, GA, 30025, USA

^b Office of the State Archaeologist, The University of Iowa, 700 Clinton Street, Iowa City, IA, 52242, USA

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ABSTRACT

LiDAR data is used to locate an enclosure reported at the McKinney site (13LA1) as well as destroyed mounds associated with the Toolesboro mound group National Historic Landmark (13LA29). Using various geo-visualization and interpolation techniques, one of us (Riley) located the earthwork enclosure, eight mounds, and possibly a ninth or an excavation spoil pile. An anomaly north of 13LA1 and within the detected enclosure area were also identified. There is no modern survey relating to these two anomalies. Our results support historic accounts regarding the location and shape of the McKinney enclosure and its relationship to the Toolesboro mound group. All features found by LiDAR will be ground truthed in the future.

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1. Introduction

This research focuses on two sites—the late prehistoric McKinney Oneota village site (13LA1) and the adjacent Toolesboro National Historic Landmark Mound Group (13LA29, Toolesboro mound group) located on the uplands and the adjacent bluff edge respectively overlooking the confluence of the Iowa and Mississippi rivers in Louisa County, Iowa (Fig. 1). The main occupation of the McKinney site dates from A.D. 1500–1650 (Hollinger, 2005:90–91; Tiffany, 1988:298–299). The Toolesboro mound group is a component of the Havana tradition of the Middle Woodland period (200 B.C.–A.D. 300) and was part of an exchange network in exotic and raw materials and ideology in Eastern North America archaeologists originally termed the Hopewell Interaction Sphere (Struever, 1964). Geometric earthworks are important elements of the Middle Woodland period cultural landscape in the Eastern Woodlands. They are a central component of Hopewell centers in Ohio, but less so in the Havana tradition of the central Illinois Valley.

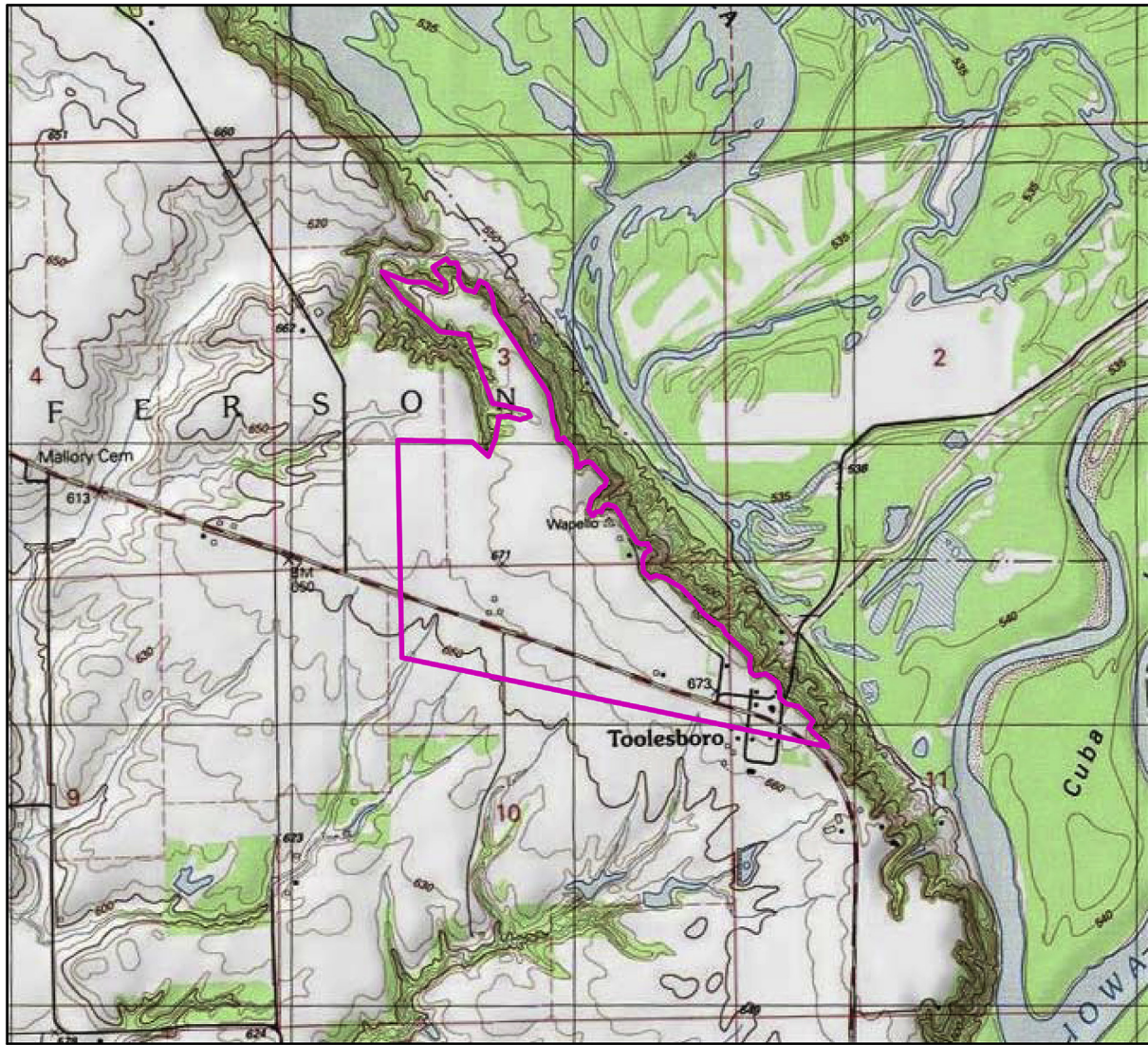
A small portion of the McKinney Oneota village occupation extends into the area of a geometric earthwork (the “Old Fort”) first reported in 1841 by John B. Newhall (1841:231–233; Fig. 2), but no

surface expression of this historically reported enclosure has been detected since the 19th century. Archaeologists believe this earthwork is associated with the earlier adjacent Toolesboro mound group (Tiffany, 1988; Whittaker and Green, 2010). McKinney thus has two cultural components of disparate age, and some researchers have likely mistakenly associated the enclosure with the much later Oneota village because of surface recovery of Oneota artifacts in the enclosure vicinity. Several earthwork enclosures are reported along the Iowa side of the Mississippi in northeast and southeast Iowa (Whittaker and Green, 2010; Wedel, 1959:12–15). The McKinney enclosure is one of only three enclosures associated with mortuary mound features of Middle Woodland age among the five Early and Middle Woodland earthwork features reported by Whittaker and Green (2010:29–30), and it is the only one associated with a mortuary complex of recognized national significance. Thus, locating and documenting the enclosure and other associated features is of major importance for the archaeological record. This article reports on the location of the earlier Middle Woodland enclosure at the McKinney site and its relation to the Toolesboro mound group using Light Detection and Ranging (LiDAR) data.

Any Middle Woodland habitation site associated with the Toolesboro mound group and enclosure has yet to be identified. If it exists and is like typical Havana tradition settlements in the Illinois Valley and Middle Woodland settlements locally, the village site at Toolesboro would be at the bluff base on a terrace in the

* Corresponding author. Tel.: +1 319 384 0604.

E-mail addresses: jthawkeye9@gmail.com, joseph-tiffany@uiowa.edu (J.A. Tiffany).



Area of interest

0 0.5 1 2 Miles

0 0.75 1.5 3 Kilometers

Fig. 1. Project area base map for LiDAR analysis. From USGS Toolesboro quadrangle, 7.5 series, 1953, photorevised, 1976. Air photo from ArcGIS Online World Imagery dataset, accessed April 2012.

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