Test Excavations at the Portage River and Crane Creek Sedimentary Analysis Field Sites

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Abstract

Northwest Ohio possesses a rich archaeological record spanning more than 13,000 years. Thus, when sediment and climate scientists began testing at the Portage River and Crane Creek field sites, they wanted to make sure they were not disturbing cultural resources. To assess this possibility, Kent State archaeologists conducted minimally invasive test excavations at these two locations. The results, which yielded no archaeological remains, are consistent with the conclusion that there are no substantial cultural resources at Portage River or Crane Creek sites.

Introduction

The 'Coastal Observations, Mechanisms, and Predictions Across Systems and Scales: Field, Measurements, and Experiments' (COMPASS-FME) project is a multi-institutional effort funded by the Earth and Environmental System Science Division of the U.S. Department of Energy's Office of Science. The project aims to understand and predict ecosystem function and state changes in response to sea level rise, lake-level change, and extreme events. It focuses specifically on how flood frequency and duration impact terrestrial-aquatic interface landscapes, and how these impacts propagate through water, sediments, soils, microbes, and plants (https://compass.pnnl.gov/FME/COMPASSFME, accessed 6 June 2024). Thus, this project has developed highly instrumented field sites with passive sensors reporting environmental conditions in real time, but where researchers can also conduct field experiments and take samples for laboratory activities.

Two locales where COMPASS-FME conducts experiments and collects sediment samples are in Northwest Ohio on the southwestern coast of Lake Erie. They are referred to as the Portage River Field Site and the Crane Creek Field Site (Figure 1). Both sites fall within the broader Ottawa National Wildlife Refuge Complex (ONWRC). COMPASS-FME sediment samples were acquired via cores over the two field sites, removing small sediment volumes ranging from only 98.17 cm^3 (2.5 cm core radius and 5 cm deep) to 269.39 cm^3 (3.5 cm core

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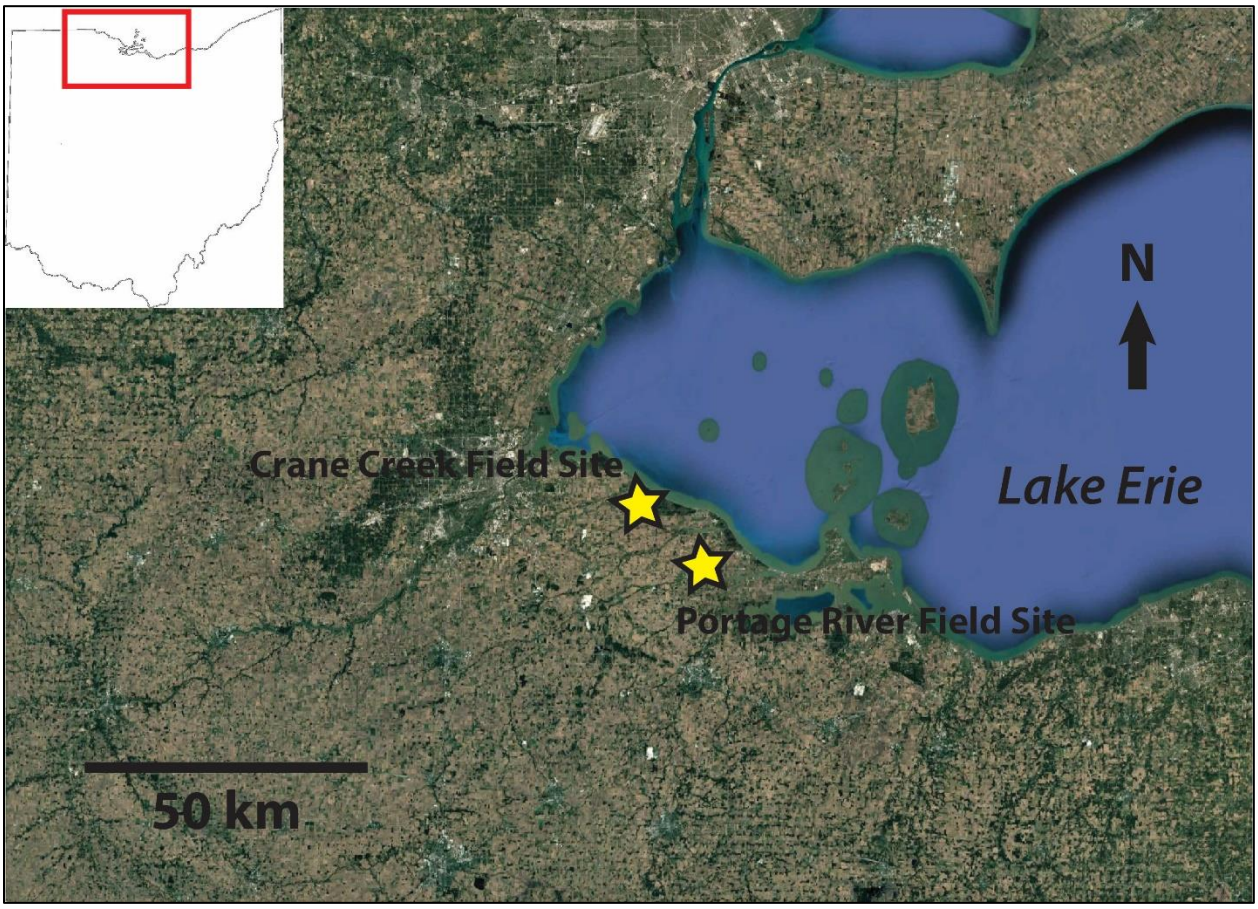

Figure 1. Locations of the Portage River Field Site and the Crane Creek Field Site in Northwest Ohio. (Base map credit: Google Earth)

radius and 30 cm deep) per core. There were 37 cores removed at Portage River and 30 cores removed at Crane Creek. The coring was in the vicinity of (approximately 20-30 meters), and roughly surrounded, a "logger box" center point. These logger boxes are powered by solar energy, and act as communication hubs between the sensors installed in the field and the remote data acquisition software *Loggernet*. These logger boxes allow COMPASS-FME personnel to collect real time data without needing to do any manual monitoring. On rare occasions, surface sediment samples or "grab" samples ranging from 600 g to 1000 g were collected. Thus, even though the project is minimally invasive with regard to sediment collection, COMPASS-FME personnel wanted to ensure that their research was not disturbing any archaeological remains. Toward that end, COMPASS-FME personnel asked Kent State University archaeologists to conduct an archaeological evaluation to assess whether any cultural resources might be present at the two field sites.

COMPASS-FME personnel's respect for North America's Indigenous peoples' past culture and current beliefs, as well as their concern for the preservation of cultural resources is both admirable and responsible; it is also warranted. The western Lake Erie drainage basin boasts an impressive prehistoric archaeological record that extends back to the terminal Pleistocene, over 13,000 years ago (Stothers and Abel 2001). Evidence of Stone Age hunter-

gatherers peopling a recently deglaciated landscape in Northwest Ohio is evidenced by the presence of Clovis stone and bone artifacts, such as bifacially-flaked fluted points (Perrone et al. 2020) and preforms (Eren et al. 2016). And a bit further afield is the Sheriden Cave site in Wyandot County, perhaps representing a cache of tools Clovis people buried for a future need that never arrived (Conrad et al. 2023; Redmond and Tankersley 2005; Waters et al. 2009). Post-Clovis, Archaic-aged cultures dating between ca. 10,000 and 3,000 years ago became more sedentary; regionally diversified; and adopted a subsistence strategy focused on smaller game, locally available mast and wild seeds, and ground stone technologies. They engaged increasingly with long-distance trade; expanded in population; and knapped a diversity of projectile point forms (Lepper 2005). In the western Lake Erie basin sites like Fishing Camps, Baker II, and Burrell Orchard, represent the cultural and technological remains of these Archaic peoples (Lepper 2005; Nolan and Redmond 2015; Purtill 2009; Redmond 2017; Stothers 1992; Stothers and Abel 2008).

Woodland-aged cultures between 3,000 and 1,100 years ago further increased in cultural complexity and population; intensified sedentism, pottery usage, and agriculture; engaged in craft production; and regularly employed the bow and arrow (Lepper 2005). The Danbury, Seaman's Fort, Pumpkin, and Libben sites are representative of Woodland period sites in the western Lake Erie basin (Blatt et al. 2011; Lovejoy et al. 1977; Meindl et al. 2008; Redmond 2007, 2012; Stothers et al. 1998). Finally, the Late Prehistoric period in Northwest Ohio is embodied by the 'Sandusky Tradition' dating from about 1,100 to 400 years ago. Sites like White Fort, Petersen, Indian Hills, among others, appear to indicate increased social stratification within Late Prehistoric societies and escalating conflict between them (Abel 2002; Lepper 2005; Redmond 1999; Stothers 1981).

More specifically, in the last few years several archaeological finds have been documented in and immediately around the ONWRC. For example, Eren et al. (2022) described a number of water-worn Late Archaic points found on the shore of the Cedar Point National Wildlife Refuge (which is part of the ONWRC). In their report, Eren et al. (2022:6) also show the location of several other sites near the points' coastal findspot. And more recently, ONWRC park rangers recovered on that same shore a Late Archaic stemmed point (perhaps Genesee Cluster, Justice 1987) knapped on a toolstone macroscopically consistent with Bloomville chert (DeRegnaucourt and Georgiady 1998) (Figures 2-3). If indeed the chert is Bloomville, then this point is evidence that people were moving, or goods were being transported, across the areas of interest in this manuscript. Here we describe the archaeological field testing conducted at the Portage River and Crane Creek field sites.

Portage River Field Site

Consultation with the Ohio State Historic Preservation Office indicated that no archaeological sites had been previously documented at the Portage River Field Site. The closest site to the Portage River sediment collection area was the Late Prehistoric Two Rivers site (OT0017), approximately a quarter kilometer to the west.

Figure 2. A water-worn, flaked stone point made from Bloomville chert found on the shores of the Cedar Point National Wildlife Refuge (which is part of the ONWRC). Mass = 18 g; Length = 77.58 mm; medial width = 28.51; shoulder width = 34.44; stem width = 20.34; medial thickness = 8.27.

After a brief surface reconnaissance of the Portage River field site (Figure 4) – which yielded no archaeological remains – and survey of sediment collection locations, archaeologists decided that four 50 cm by 50 cm test units would be minimally invasive, but still informative enough to make a preliminary determination with respect to the presence of cultural resources. These test units were interspersed with the COMPASS-FME "logger boxes." To reiterate, the logger boxes indicate the small area where sediment coring took place, and thus by placing our test units near and around them we were able to look for cultural resources in the area where sediment was being disturbed/collected. The location of the four archaeological test units and the logger boxes at Portage River can be seen in Figure 4 (their precise coordinates are on file with the COMPASS-FME project and the ONWRC). Units 1, 3 and 4 were adjacent to and interspersed with logger boxes; Unit 2 was located far to the west of the logger boxes. One logger box in the easternmost portion of the Portage River Field Site was in a flooded area and thus no archaeological testing could be conducted.

Standard archaeological field equipment was used to excavate the test units, which included shovels, trowels, tape measures, and ¼ inch mesh screens. Each unit exhibited a 15-30

cm thick, loose, dark gray-brown, highly organic upper layer of soil. No artifacts were found in this upper layer in any of the units, either *in situ* or via sediment screening. Beneath this upper layer in each unit was a compact yellowish-orange clay, common to most of Ohio, that likely originated in glacial or proglacial deposits. No cultural material is thought to occur in primary context in this unit (e.g. Meltzer et al. 2022) and indeed that was the case here: no artifacts were found in this clay layer in any of the units, either *in situ* or via sediment screening. Excavation via shovel occurred in each unit to a depth of approximately 70 cm (approximately 40-55 cm into the sterile clay layer).

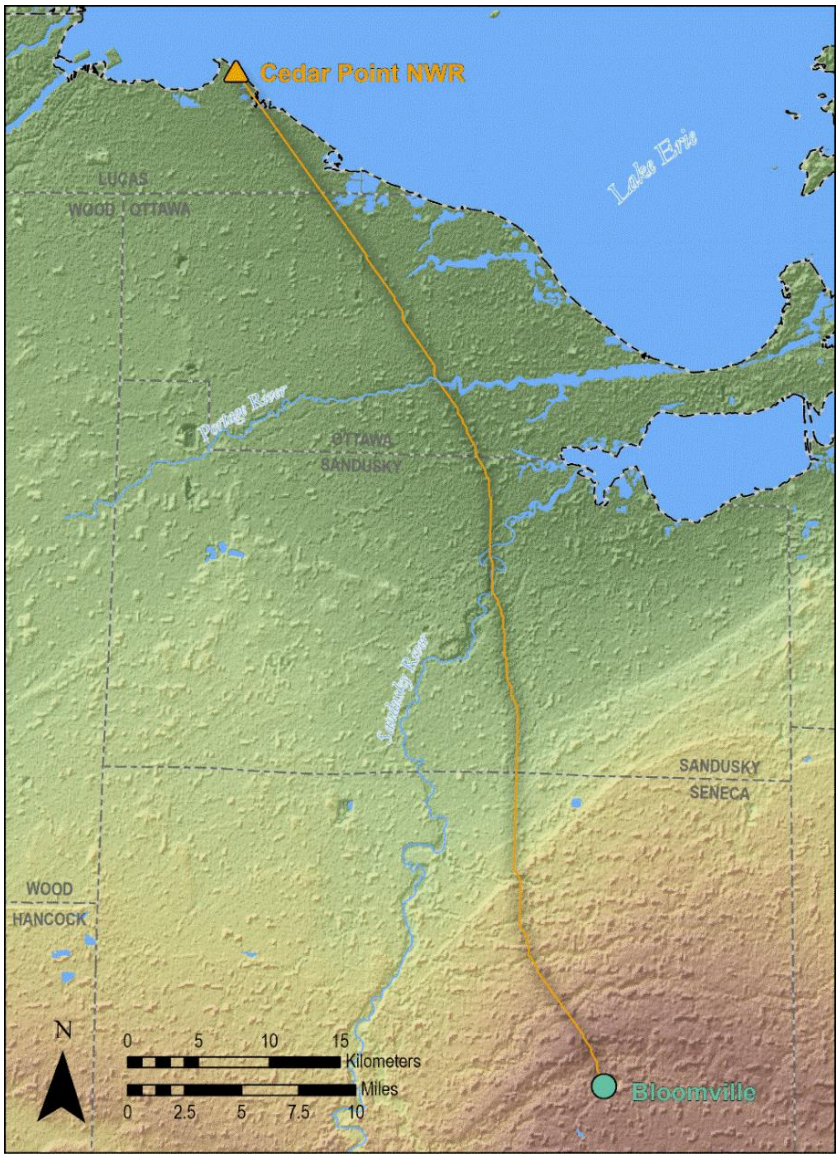

Figure 3. The distance between Bloomville, Ohio and the find spot of the point depicted in Figure 2. The straight-line distance between these two locations is 76.3 km and the least-cost distance path is 79.9 km.

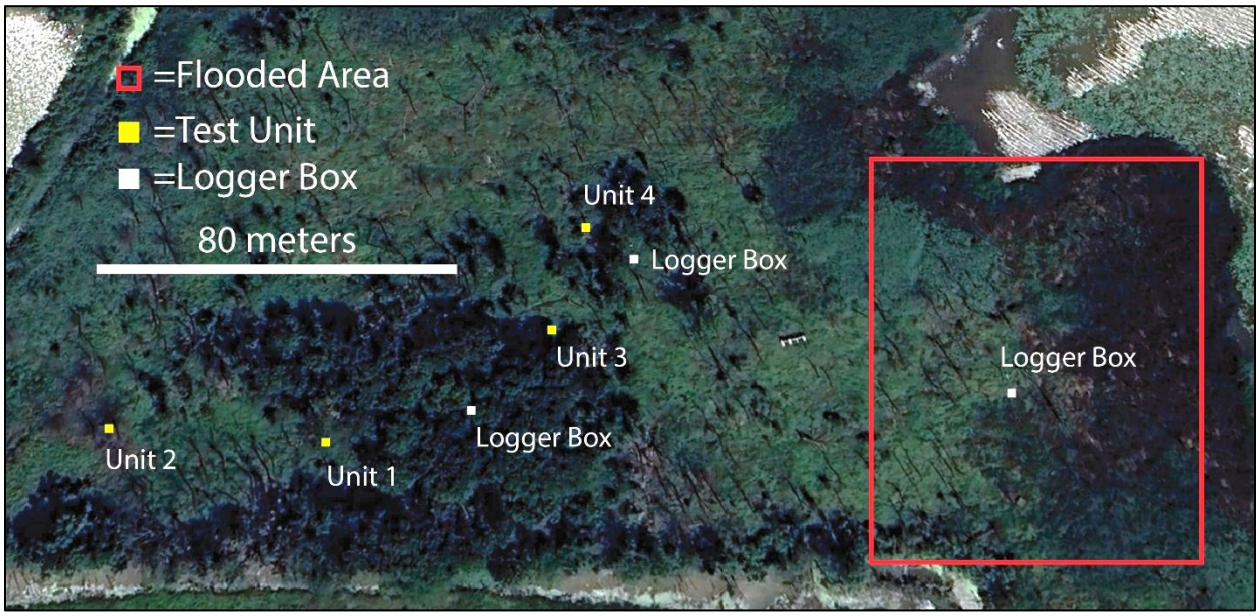

Figure 4. The Portage River Field Site and the location of archaeological test units and logger boxes. (Base map credit: Google Earth)

Out of an abundance of caution at this first field site, at a depth of approximately 70 cm an AMS telescoping regular auger was employed in each unit to further sample down to a depth of 100-120 cm. Each auger bucket was examined and the fill screened for artifacts and none were found. Figure 5 shows each unit at the end of shovel and trowel excavation. All units were backfilled immediately upon completion of testing.

Figure 5. The four Portage River Field Site test units after shovel testing: unit #1 (left); unit #2 (center-left); unit #3 (center-right); and unit #4 (right). All units were archaeologically sterile.

Crane Creek Field Site

Inquiry to the Ohio State Historic Preservation Office indicated that no archaeological sites had been previously documented at the Crane Creek Field Site. Indeed, no sites had previously been documented within a kilometer of the sediment collection area.

The Crane Creek Field Site was different than the Portage River Field site in that it was comprised of three limited sediment collection areas around three distantly separated logger boxes (Figure 6). We had initially planned to do six test units, one on both the east and west sides of each location's logger box. However, the western most sediment collection spot and logger box (Location #1) was flooded. Thus, as at Portage River, we again excavated four 50 cm by 50 cm test units: two units on either side of the logger box at Location #2 and two units on either side of the logger box at Location #3. The location of these four test units relative to the logger boxes can be seen in Figure 6 (their precise coordinates are on file with the COMPASS-FME project and the ONWRC).

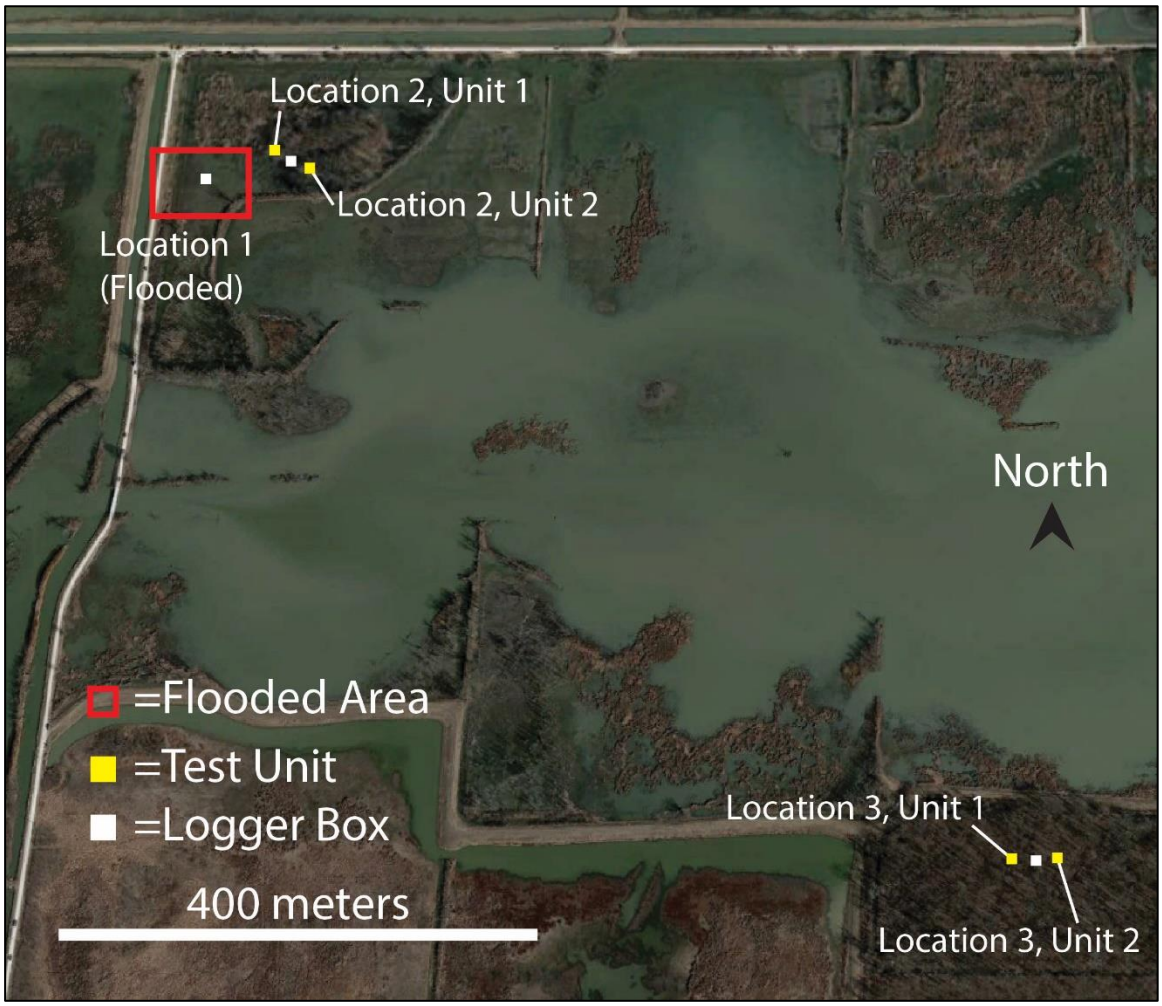

Figure 6. The Crane Creek Field site and the location of archaeological test units and logger boxes.

At both Locations #2 and #3, we documented a similar stratigraphy to that at Portage River: a thick, loose, dark gray-brown, highly organic upper layer of silt loam in the top 15-30 cm and a compact yellowish-orange clay beneath it. At Location #2, we excavated the test units to depths of 60 cm (35 cm into sterile clay) in Test Unit #1 and 50 cm (35 cm into sterile clay). Both Location #2 units filled with water at this depth. At Location #3, we excavated Test Unit #1 to a depth of 55 cm (37 cm into sterile clay) and Test Unit #2 to a depth of 40 cm (22 cm into sterile clay).

All sediments were screened with ¼ inch mesh screens. No cultural materials were found in any of the test units. Given our negative results at the Portage River Field Site, and the negative results in both the upper dark gray-brown and lower yellowish-orange clay layers at Crane Creek, we decided to forgo any auguring at Crane Creek. Figure 7 shows each unit at the end of shovel and trowel excavation. Like at Portage River, all Crane Creek units were backfilled immediately upon completion of testing.

Figure 7. The four Crane Creek Field Site test units: location #2, unit #1 (left); location #2, unit #2 (center-left); location #3, unit #1 (center-right); location #3, unit #2 (right). No testing was conducted at Location #1, represented by the square red box in Figure 6, because the area was flooded. All images are of each unit's north wall, and all units were archaeologically sterile.

Conclusion

Archaeological excavation is a sampling game. It is always possible that more excavation could yield cultural resources, but more excavation is more invasive, and ultimately, more destructive. A highly conservative (i.e., minimally invasive), but still methodologically thorough, strategy was pursued for the testing of the Portage River and Crane Creek Field Sites. Based on the conducted fieldwork, we are confident that there are no archaeological materials at either field site, certainly no prehistoric villages, cemeteries, or sites of any substantial size or density. It is always possible that a smaller, and yet undiscovered, archaeological signal is present, such as isolated artifacts, or even a small ephemeral activity area (e.g., a prey kill site; a single knapping event). However, we do not think that latter possibilities are probable ones; and even if

small-scale archaeological phenomena are present, they are not likely ones that the COMPASS-FME project would disturb.

Acknowledgements

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