LATE GLACIAL SITE PROSPECTION BY TEST PIT SURVEY AT BRADGATE PARK LAWNS, NEWTOWN LINFORD

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with contributions from:
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INTRODUCTION

A field survey was conducted at Bradgate Park Lawns in September 2021 as a component of a National Lottery Heritage Fund (NLHF)-funded collaborative project linking three Late Upper Palaeolithic sites in the East Midlands: at Farndon Fields, Bradgate Park and Creswell Crags. This project follows the Ice Age Journeys initiative under the umbrella of the Ice Age Insights charity that promotes community engagement in Palaeolithic archaeology and geology in the East Midlands (registered charity number 1169575). Fieldwork was undertaken by members of the partnership and volunteer fieldworkers, with fieldwork coordination by Lynden Cooper and Daryl Garton, with additional archaeological expertise provided by Prof Nick Barton and Alison Roberts, geological expertise provided by Colin Baker and Richard Tyndall, and pottery expertise by David Budge. Fieldworkers came from the Bradgate Park Trust staff and volunteers, Creswell Heritage Trust staff, Leicestershire Fieldworkers and members of the Farndon (FARI) group. A video of the fieldwork can be viewed at *tinyurl.com/BradgateLawns*.

The survey area (Fig. 1) is mapped by the British Geological Survey (2010, BGS) as a river terrace situated between the eastern mouth of Little Matlock Gorge, the site of a Late Upper Palaeolithic (LUP) Creswellian campsite (Cooper 2012), and the diorite outcrop to the immediate south of Bradgate House (a known LUP findspot) on the northern side of the present course of the River Lin. The bedrock (Precambrian South Charnwood Diorites and Triassic Gunthorpe Member, Mercia Mudstone Group) forming the higher ground to west, north and east is mantled with till of Quaternary age. The Lawns area can be equated with the Syston Terrace of the River Soar attributed to MIS2 (Last Glacial Maximum) and correlated with the Holme Pierrepont Terrace of the Trent (Cooper 1997, table 2; Bridgland *et al.* 2014, 90–1). Contours at 0.5m vertical interval show the Lawns as very slightly convex and sloping gently down to the east (Fig. 1). The northern edge of the terrace is marked by a continuous hollow fed by hollows of former streams; other short stretches of linear hollows/probable stream-braids lie between this stream and the River Lin.

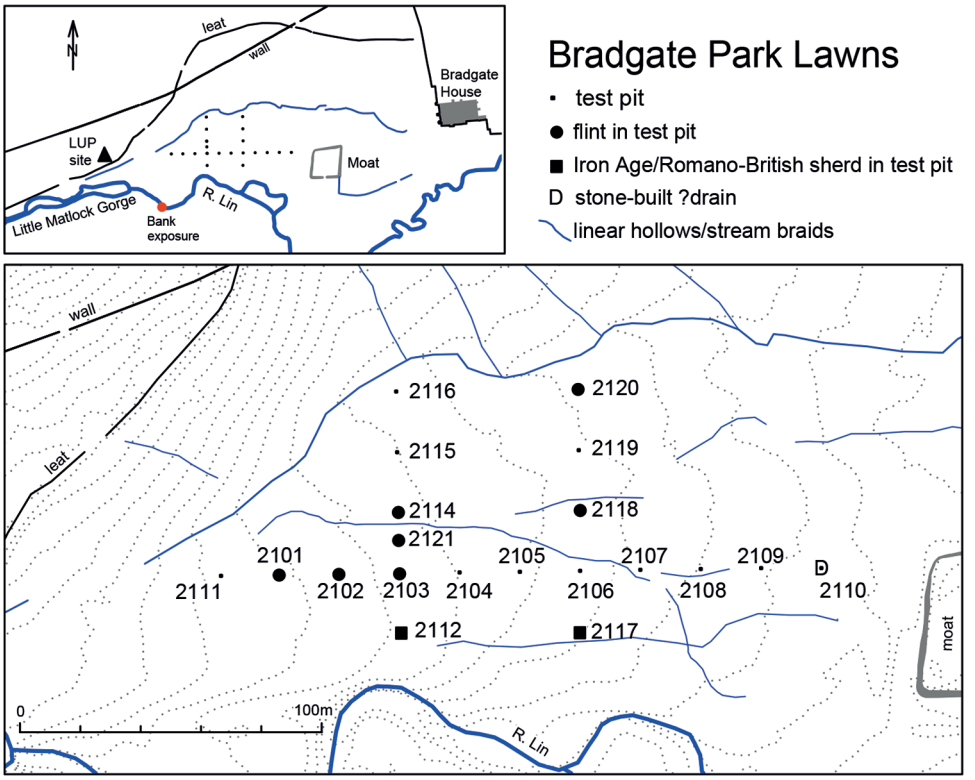

Fig. 1. Bradgate Park Lawns between the Little Matlock Gorge and the ruins of Bradgate House, showing the position of the 2021 test pits (nb artefact symbols not to scale) and fresh exposure on the bank of the River Lin. Contours (at 0.5m vertical interval) and stream braids generated from 1m DTM Environment Agency LiDAR and GPS ground survey. Contains Ordnance Survey data © Crown copyright.

Our working geomorphological hypothesis at the project start was that the river terrace probably formed in the Devensian, the Last Glacial Maximum, and thereafter was relatively stable. In the warming environment of the last interstadial, the River Lin to the east of Little Matlock was likely a braided channel system with flanking areas of back swamps, a rich environment for animal resources. It was speculated that Late Upper Palaeolithic archaeology may be present in the upper profile of the terrace.

The River Lin is a small tributary of the Soar, which in turn is a major right bank tributary of the River Trent. The wider Trent basin links the areas of the known Creswellian cave and open-air sites in the East Midlands (Garton and Jacobi 2009). Recent radiocarbon work on cave collections from Creswell Crags suggest that occupation in the region first occurred towards the beginning of the Late Glacial (Windermere) interstadial, but probably some decades after the initial settlement event in the south-west *c.*14,700 BP (Jacobi and Higham 2009; 2011). It has been speculated that the Trent and Severn served as a natural corridor linking the Creswellian hunter-gatherers of these regions in the Late Glacial period (Pettitt and White 2012, 447).

Bradgate Park has been the subject of wider archaeological investigations by University of Leicester Archaeological Services to inform the heritage section of the Bradgate Park Management Plan for Higher Level Stewardship (Cookson and Tickner 2014). Data gathering for this exercise was undertaken from 2014 to 2015 and included test pit survey of the known Upper Palaeolithic lithics findspot, LiDAR survey/mapping and walkover survey. The Late Upper Palaeolithic site at the eastern mouth of Little Matlock Gorge was subject to excavations in 2015–16 to mitigate the effects of erosion by visitor traffic. Reports on the site discovery with a preliminary assessment of the lithic evidence have been published (Cooper 2004; 2012) and a full excavation report is in preparation (Cooper forthcoming). The excavations revealed a dense scatter of worked flints around a surface hearth, possibly within a tent structure. It is a very rare example of an open-air site with clear evidence for hunting, tool maintenance and animal product processing. There is an apparent focus upon bone/antler working, perhaps indicative of an autumnal occupation. There was a notable paucity at the campsite of butchery tools such as retouched and/or utilised blades. By analogy with the evidence for such specialised activity at the small Creswellian site of Wey Manor Farm (Jones and Cooper 2013), it might be envisaged that associated kill and butchery sites were situated nearer to the Late Glacial floodplain.

From 2015 to 2019, University of Leicester School of Archaeology and Ancient History ran a Field School, a training exercise for students (TLAHS Notes, 2016–20: Thomas *et al*. 2019). Pertinent here is the excavation that took place at the moated site within the study area. Residual LUP finds, including a blade core and a micro-piercer, were recovered from the fieldwork (Thomas *et al*. 2019, 176; Cooper pers. obs.), providing a tantalising glimpse of potential archaeology that could be located on the Bradgate Lawns.

Aims and objectives

- Deposit modelling of superficial deposits for the study area.
- Assess Late Upper Palaeolithic activity on the floodplain, an area where 'kill sites' associated with the Little Matlock Gorge camp site are likely to have taken place.
- Build a knowledge of Late Glacial prehistory and a field investigation skillset for participants.

Realising these aims by:

- Excavating a series of test pits laid out as transects in the study area; a W–E transect from the eastern mouth of Little Matlock Gorge to the scheduled moated monument with two cross N–S transects.
- Test pits used as a prospection tool for the recovery of prehistoric lithics, with special attention paid to the identification of Late Upper Palaeolithic finds.
- Test pit deposit sampling and surface terrain mapping to allow geoarchaeological assessment of the floodplain.

Excavation method

Eighteen test pits at 20m intervals, with three additional test pits in areas of specific interest, were excavated – all 0.5 × 0.5m to 0.5m depth (Figs 1, 2). Once the turf was removed, spits of 5cm depth were removed by hand with all sediments sieved through a 10mm sieve mesh (in frame sieves), or through a 11mm mesh (in small hand sieves). Augering into the base of the pits in the N–S lines was attempted, but the sediments were too stony to be successful. All stone was collected by spit, inspected and photographed to show the types and quantity. The north face of each pit was photographed and drawn at 1:10. The transects and locations of each test pit was surveyed with a Geomax Zenith 16 Global Navigation Satellite System that records locations to 10mm. Despite heavy rain the day prior to opening any test pits, the sediments were very dry. Artefacts recovered *in situ* were photographed, their position/orientation noted together with their depth/context. The depth of artefacts recovered by sieving was recorded.

TEST PIT RESULTS

Sedimentology and archaeology

While there was some variability to the test pit sediment profiles, they did present a generalised sequence of topsoil overlying a subsoil of colluvial head (Fig. 2).

The subsoil included a heterogeneous mixture of rock clast types and sizes (<10mm to >500mm), ranging from angular to rounded within a medium-fine sand silt matrix reminiscent of fluvio-aeolian sediment (windblown with some fluvial modification). Bar superficial sorting to stone-free silt in pit 2121, which lay close to a mapped stream braid, no obvious grading of sediment size, or bedding or cryoturbation structures, was recognised. All our test-pits included rounded quartzite pebbles/cobbles (largest dimension 100mm) and 'natural' flint fragments (mostly below 30mm), both derived from till on the higher ground. The unsorted nature of this deposit suggests a colluvium and/or head deposited under periglacial conditions (i.e. solifluction). The density of clasts in pits 2114, 2115 and 2116 – some with fresh, angular edges – may be *in situ* frost-fractured breccia from a buried large boulder(s), or represent a high point on an undulating diorite surface. A single test pit (2112) reached the surface of terrace gravels: this was the closest to the current river course and may reflect a higher ridge of gravel. A similar sequence (i.e. head overlying river gravels) is exposed 100m to the south-west in a fresh bank exposure of the River Lin (SK5291-1002; Fig. 1). It is likely that none of the deposits we encountered would have been differentiated in published BGS maps (>1m deep rule: Smith 2009).

Some topsoils appear to have been sorted by bioturbation (2101–2105) so have not been disturbed recently. Scattered pebbles in other topsoils (2112, 2117, 2119, 2121) suggest relatively recent disturbance or colluviation. Clayey sediments at the top of the profile of pits 2111 and 2116 perhaps indicate relatively recent ponding; both are close to the linear hollows identified in the topography mapped via LiDAR (Fig. 1).

Test pit 2110 clipped one side of a stone-construction (three rough courses of angular igneous blocks), possibly part of a drain. No other certain cut/construction

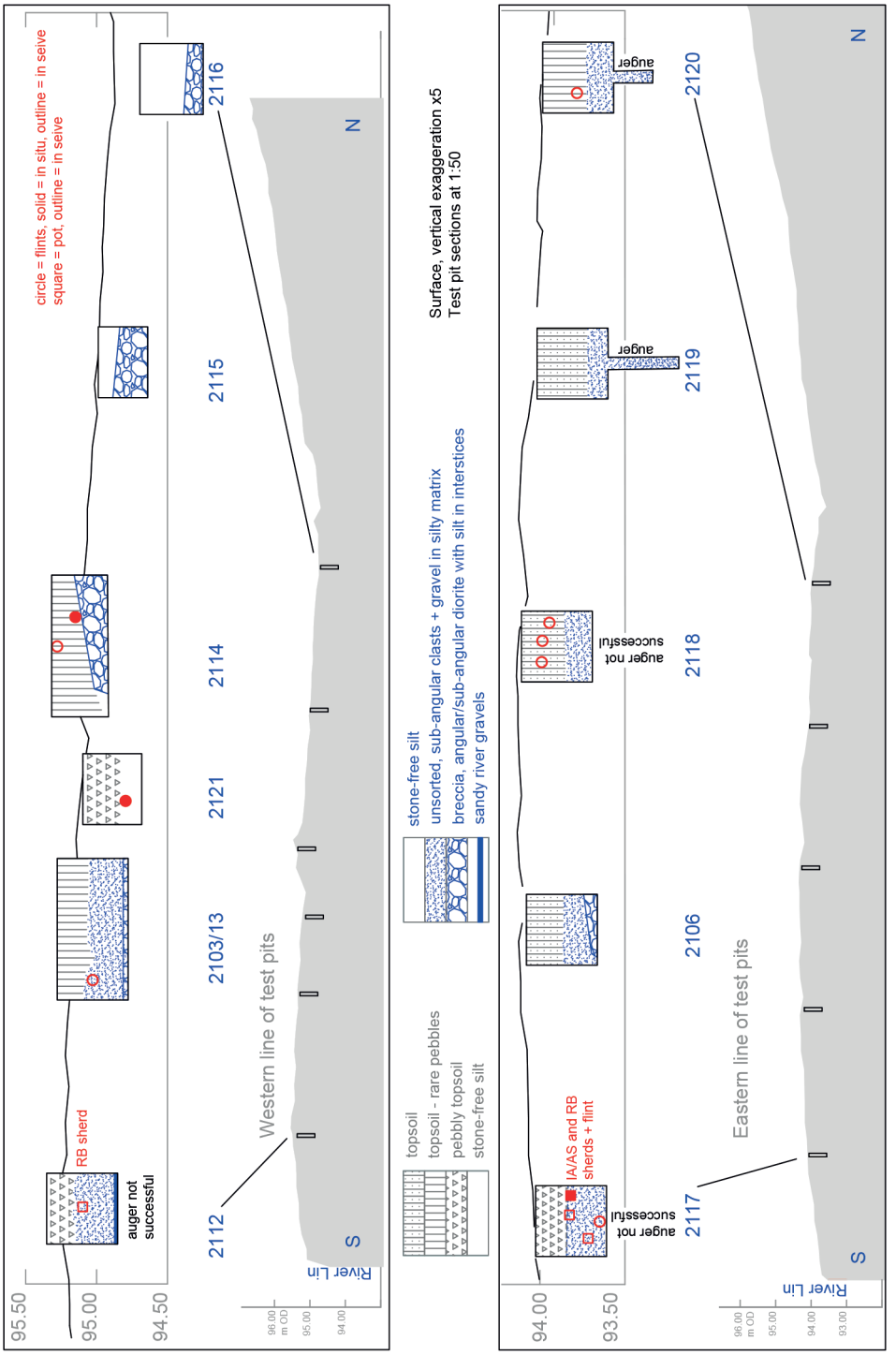

Fig. 2. Bradgate Park Lawns, diagram showing both S–N lines of test pits: lower shows overall topography (nb vertical exaggeration ×5); upper illustrates deposits and artefact positions. IA/AS = Iron Age /Anglo Saxon; RB = Romano-British.

Fig. 3. Bradgate Park Lawns, flints. Left – micro-piercer from 2101; right – burin from 2114. Both dorsal face with platforms towards bottom, mm scale. Photograph: Lynden Cooper.

features were recognised, though the uppermost sediments of the adjacent test pit (2109) were darker and more humic than elsewhere, almost certainly representing an anthropogenic deposit. Charcoal fragments were noted in 2112.

Worked lithics

Some 14 struck flints and an unworked burnt flint were recovered from eight test pits (Table 1). The flint raw material was mostly translucent and of black or dark brown colour (bar three pieces noted in the table) and, where present, with thin buff-coloured cortex. The collection comprised blade fragments, flakes, an atypical burin and a micro-piercer on a bladelet support (Fig. 3): all certain worked pieces were in a relatively fresh condition, although some minor edge damage was present on a few pieces. All lithics are prehistoric, but there are no distinct chrono-types to

enable closer dating. However, when compared with the lithic technology of the LUP site, none of the pieces would have been out of place in such a context. Some support for a LUP attribution was the burin with faceted butt from test pit 2114 and micro-piercer tool-form comparable with the Little Matlock LUP campsite.

Test pit	Find no.	Type	Comment
2101	01	Flake fragment	Two burnt fragments, ventral surfaces mostly lost, probably parts of same flake.
2101	02	Micro-piercer	Bladelet with oblique truncation and minimal opposed retouch to form a point. Marked conchoidal rings suggests soft stone percussion – Fig. 3.
2102	01	Blade fragment	Proximal portion, appears to be a deliberate segment – percussion marks from ventral ridge.
2103~	01	Flake (2ry)	Elongated.
2112	01	Flake? fragment	Conchoidal but rolled, so probably natural.
2113~	01	Shatter	Irregular chunk with conchoidal and thermal scars. Unstratified, spoil heap find.
2114	01	Burnt fragment	No signs of working.
2114	02	Burin?	Possible burin on a break. Flake (3ry) support. Faceted butt. Opaque off-white flint with narrow band of translucence. Iron staining of the white surface evident from recent chipping of edge – Fig.3.
2117	03	Flake (3ry)	Light grey-brown semi-translucent flint.
2118	01	Flake? fragment	Conchoidal but rolled, so probably natural.
2118	02	Blade fragment	Opaque grey flint.
2118	03	Chip	
2118	04	Flake (1ry)	
2120	02	Flake (2ry)	Burnt.
2121	02	Flake fragment	

Table 1. Lithic finds from the test pits (1ry: 2ry: 3ry: indicate respectively complete: partial: absence of cortex on flint; Healy 1988, 48). 2103 extended by 2113 – only 2103 numbered in Fig. 1.

Pottery

Three test pits produced five pot sherds, quantified in Table 2 (further details in archive). Fabric groups and code names follow the Leicestershire Ceramic Type Series names and codes (Pollard 1994; Marsden 2011; Cooper and Forward in prep; Sawday unpublished).

Test pit	Find no.	Type and date	Weight	Condition and comments
2110	01	RA – Raeren-type salt glazed stoneware. Late fifteenth to sixteenth century	0.6g	Body sherd from globular hollow vessel, probably a rounded mug (MPRG 1998 form 3.6.5). External brown salt glaze. Moderately abraded.
2112	02	MC – Miscellaneous Coarseware. Transitional/Early Romano-British	4.9g	Body sherd of large jar. Unusual fabric containing rock fragments up to 5mm (including acid igneous rocks). Similar to Leicester MC4 (Pollard 1994, 73), but the firing pattern suggests an early Roman date. Heavily abraded.
2117	01	Q1/F1 – Iron Age or Early to Middle Anglo-Saxon quartz tempered ware	10.9g	Body sherd of jar or bowl, broken along coil-line. Burnished surfaces inside and out, producing sparkly surfaces from light reflected off flat spots on the quartz grains. Atypical fabric with common quartz 0.1–0.75mm and common iron-rich clay pellets, sometimes sandy, up to 2.5mm. Slightly abraded.
2117	02	MG3 – Mixed Gritted Ware Early Romano-British	1.6g	Rim of jar, form as Pollard 1994 no. 33. Heavily abraded interior and moderately abraded exterior. Some external sooting from use.
2117	03	MG3 – Mixed Gritted Ware Early Romano-British	12.4g	Body sherd of small jar. Calcareous inclusions have leached out during burial leaving voids. Slightly abraded. Traces of external sooting from use.

Table 2. Pot sherds from the test pits.

The Raeren-type sherd from 2110 (and the neck/rim of a mould blown glass bottle of the nineteenth–early twentieth century) came from above the probable stone-drain. None of the sherds came from a recognised feature dug into the head: this could be due to the small size of the test pits.

The three Roman sherds are in fabrics considered to belong to the transition from Iron Age to Romano-British potting traditions in Leicestershire (Pollard 1994, 74–5): the combination of fabrics and forms suggest a date in the second half of the first century AD, although the mixed gritted fabrics may continue into the first few decades of the second century (Buckley *et al.* 2021, 238–41). The vessels are all coarsewares, and the external sooting seen on two of the jars may suggest use in domestic cooking.

Sherd 2117 F01 was found alongside two of the Roman sherds in test pit 2117 (Fig. 2). It is in fresher condition than them and may be of early to middle Anglo-Saxon date. However, due to similarities in the raw materials used (e.g. Cooper and Forward in prep.) and the manufacturing and firing techniques employed, it can be difficult to distinguish between undecorated body sherds of vessels of Iron Age and Anglo-Saxon date when no feature sherds (e.g. rims, decoration, etc.) are present. This, together with the somewhat atypical fabric (Table 2), means it is not possible to exclude an Iron Age date for this sherd.

DISCUSSION

The test pit survey has provided limited but useful insight into the character of the surface deposits across the Bradgate Lawns, an area mapped by BGS as first gravel terrace. The survey area appears to have a veneer of soliflucted head deposit, probably of Late Glacial age, overlying a river terrace of Last Glacial Maximum age. Only one of our test pits suggests potential Holocene re-working of these deposits. Terrace gravels were only located in one test pit (and the fresh river bank exposure), but it is likely that the terrace is more extensive and is sealed beneath the head deposit. Most importantly the fieldwork has demonstrated the presence of previously unmapped superficial head, a deposit with high potential for preservation of Late Upper Palaeolithic remains.

While prehistoric lithic finds were few, their presence in the subsoil demonstrates its contained archaeological potential. It is likely that the flint finds had been deposited originally on the surface of the head deposit, and that they have worked down profile through geological and biological processes (cf. Collcutt 1992), a situation recognised at the Little Matlock Gorge LUP site where artefacts were found throughout the excavated head deposit (up to *c.*1m depth).

The recovery of Romano-British sherds, from test pits some 60m apart, complement the recent discoveries of other Roman artefacts on Bradgate Park Lawns, including a Roman tile from the River Lin (Leicestershire and Rutland Historic Environment Record ref. MLE21239), and Roman pottery, a lead weight, tile and slates from the excavations at the nearby moated site (Thomas *et al*. 2019, 175–6, 179–80). Taken together, this strongly hints at Romano-British settlement on the Lawns.

The feature we identified as a probable stone-built drain (2110) appears to be located immediately south of a soil resistance linear anomaly plotted in the north-west part of fig. 2 of Thomas *et al*. (2019). Perhaps surprisingly, this anomaly is a low-resistance feature – if the stone-construction was of any width, we would have expected a high-resistance feature. This suggests that our 'drain' might be the facing-stone of a wide (*c.*2m) drain or ditch. Two stone-drains recorded in the nearby moat excavations were suggested as post-dating the occupation of the medieval building (Thomas *et al*. 2019, 177).

Raeren-type stoneware was imported to Britain in great quantities and occurs widely on sites of all social levels in the first half of the sixteenth century (Hurst *et al*. 1986, 194–8). The sherd from 2110 may have additional interest as Bradgate Park

is associated with Lady Jane Grey, queen of England for just a few days in 1553: the Grey family had a residence in Bradgate Park (Richards 1988, 33) and Jane's life overlaps with the period in which this vessel may have been imported and used.

The archive and all artefacts will be deposited with the Leicestershire Museum Service accession number XA78.2021.

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