Rural Settlement in Roman Britain Project

Agriculture and animal husbandry: initial results from the East Midlands

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Seminar research queries...
Animal husbandry and agriculture in the East Midlands

• What has the impact of developer-funded archaeology been on the quantity and quality of the environmental dataset for the East Midlands?

• What geographic bias affects the dataset?

• What temporal patterns can be observed in the evidence for livestock keeping and husbandry regimes? How much variation exists?

• How far do spatial patterns in the archaeobotanical dataset inform us of the agricultural landscape and its economy?

• To what extent can we consider further archaeological evidence – material culture, settlement features, etc. – to extend our understanding of the agricultural economy?
Building on existing work...


• *Is an integrated approach to the evidence profitable for a holistic analysis of agriculture, herding and hunting?*
Impact of developer-funded archaeology on environmental data

Quantity of animal bone reports produced by year from different sectorial groups

Quantity of animal bone reports with evidence of sieving carried out
Breakdown of animal bone dataset by county

Frequency of archaeological reports which include zooarchaeology sections by county

Frequency of zooarchaeological reports which include baseline data by county
Quantitative distribution of environmental assemblages

Number of animal bone assemblages in the East Midlands dataset by number of fragments
Note: 122 assemblages include less than 100 fragments

Number of archaeobotanical assemblages in the East Midlands dataset by number of taxa

- All assemblages, regardless of size, are included to provide a ‘signpost’ for other researchers and future projects
• Wide geographic coverage and similar distributions suggest that synthetic analyses of the animal bone and archaeobotanical assemblages will be complementary
Livestock-keeping
Temporal variation in livestock assemblages

n.b. only assemblages with >300NISP cattle, sheep/goat, and pig

Assemblages with higher pig frequencies most common in the late Iron Age

LIA/ER (1st C BC/AD)
Largely mixed cattle/sheep with some high pig frequencies

Early Roman (1st-2nd C AD)
Greater variation: some high sheep frequencies

Mid-Roman (l.1st-e.3rd C)
Greater variation: some high sheep frequencies

Late Roman (l.2nd-4th C)
Less variation: concentration of high cattle frequencies
Relative frequencies of main livestock species by phase

- At a landscape scale we see:
  - higher pig and generally mixed assemblages in the late Iron Age
  - higher sheep frequencies in the early Roman period
  - a shift towards a dominance of cattle in the late Roman period

- A consistent increase in cattle frequencies can be observed from the early to late Roman periods
Changes in cattle frequencies on sites with continuous occupation

Late Iron Age/early Roman:
Some settlements demonstrate significant change

Middle Roman:
Some settlements demonstrate increases in cattle

Late Roman:
Many settlements demonstrate increases in cattle

- Similar to patterns from the Eastern region
Cattle management regimes: East Midlands vs. Eastern region

East Midlands cattle dental ageing data
31 assemblages; 235 specimens
• peak in cull at immature age
• no change between early and late Roman periods

Eastern region cattle dental ageing data
71 assemblages; 1496 specimens
• peak in cull at sub-adult and adult
• shift to increased frequency of older cattle into later Roman period
Variation in sheep/goat management regimes

- Farms
  - Elms Farm, Humberstone, LIA
  - Mawsley New Village, Great Cransley, E-MR
  - Stanion Roman Villa, E-MR

- Nucleated settlements
  - Manor Farm, Humberstone, LIA
  - Higham Ferrers, M-LR

- Range of mixed husbandry regimes carried out at farms
- Increased selectivity at nucleated settlements, focussed on the production of specific secondary products
Variation in pig management regimes

**Intensive**

- **Stanion Roman Villa, E-MR**
  - Neonatal: 10%
  - Juvenile: 30%
  - Immature: 20%
  - Sub-adult: 10%
  - Adult: 5%
  - Elderly: 0%

- **Thistleton Quarry, Roman**
  - Neonatal: 90%
  - Juvenile: 90%
  - Immature: 90%
  - Sub-adult: 90%
  - Adult: 90%
  - Elderly: 90%

- **Higham Ferrers, LR**
  - Neonatal: 0%
  - Juvenile: 5%
  - Immature: 10%
  - Sub-adult: 20%
  - Adult: 30%
  - Elderly: 90%

**Non-intensive**

- **Thistleton Quarry, Roman**
  - Neonatal: 100%
  - Juvenile: 90%
  - Immature: 80%
  - Sub-adult: 70%
  - Adult: 60%
  - Elderly: 50%

**Selective**

- **Piddington Roman Villa, MR**
  - Neonatal: 20%
  - Juvenile: 30%
  - Immature: 40%
  - Sub-adult: 50%
  - Adult: 60%
  - Elderly: 70%
Evidence for livestock breeding

Variation in the presence of neonatal livestock remains between differing site types

- Breeding potentially carried out on all site types
- Variation = intensity of breeding regime?

![Bar chart showing percentage of site assemblages with neonates for different site types: villa (n=13), linear farm (n=33), nucleated (n=24), enclosed farm (n=55), other rural (n=68).]
Temporal variation in the presence of neonatal livestock at farms and villas

Percentage presence of neonatal livestock remains at farms and villas by phase

- Cattle and sheep/goat more prominent in the earlier period, with neonatal pig remains becoming comparatively more widespread in the later period
Percentage of horse remains relative to cattle, sheep/goat and pig

Number of assemblages

LIA/ER (1st C BC/AD)
Early Roman (1st-2nd C AD)
Mid-Roman (l.1st-e.3rd C)
Late Roman (l.2nd-4th C)

• An increase in the number of assemblage with higher proportions of equids occurs into the late Roman period, alongside a increasing mean frequency of equid remains overall

• Black dots equal the mean frequency of horse remains in each phase

• Only assemblages with greater than 100 NISP C,S,P are included
Evidence for horse breeding

Sites with remains of juvenile horses

<table>
<thead>
<tr>
<th>site</th>
<th>type</th>
<th>period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enclosure 2, Irchester, Victoria Park</td>
<td>farm</td>
<td>late Iron Age</td>
</tr>
<tr>
<td>Partney bypass</td>
<td>farm</td>
<td>late Iron Age/ early Roman</td>
</tr>
<tr>
<td>Hardingstone</td>
<td>industrial</td>
<td>late Iron Age/ early Roman</td>
</tr>
<tr>
<td>Woolram Wygate, Spalding</td>
<td>farm</td>
<td>late Iron Age/ Roman</td>
</tr>
<tr>
<td>Baston Quarry, Langtoft</td>
<td>farm</td>
<td>late Iron Age/ Roman</td>
</tr>
<tr>
<td>Stanwick</td>
<td>villa</td>
<td>mid-late Roman</td>
</tr>
<tr>
<td>Linwood Road, Market Rasen</td>
<td>industrial</td>
<td>late Roman</td>
</tr>
<tr>
<td>former Dalgety Warehouse, The Hoplands</td>
<td>small town</td>
<td>Roman</td>
</tr>
<tr>
<td>Weston Bypass, Weston</td>
<td>field-system</td>
<td>Roman</td>
</tr>
<tr>
<td>Pasture Lodge Farm, Long Bennington</td>
<td>shrine</td>
<td>Roman</td>
</tr>
</tbody>
</table>
Equine/transport items:

Items associated with the use of the horse or travel

- Comparatively large quantities of transport items recovered from the nucleated settlements at Higham Ferrers and Dragonby
- Sites classified as villas tend to more commonly produce transport items
Agricultural production and cereal processing
Temporal variation in the presence and relative abundance of the main cereal taxa in the East Midlands

Percentage of assemblages with cereal taxa present

Percentage of assemblages with cereal taxa present in abundant quantities
Geographic distribution of the presence and abundance of spelt wheat in the East Midlands and Eastern regions

- Spelt wheat generally ubiquitous across both regions
- Apparent intensification in spelt wheat cultivation around the fenland hinterland
- Spelt well represented on the heavier fertile clays in the south-east of the region
Geographic distribution of the presence and abundance of barley in the East Midlands and Eastern regions

- Barley has a generally widespread distribution, though less intensively cultivated than spelt
- Barley is perhaps more prominent in the East Midland compared to the Eastern region
- Barley is poorly represented along the chalk ridge southeast of the fens and on the heavier clays of Essex, particularly in the later phase
Geographic distribution of the presence and abundance of free-threshing wheat in the East Midlands and Eastern regions

- An ‘innovation’ in cereal husbandry, free-threshing wheat has a wide but comparatively sparse distribution.

- During the earlier phase, only prominently represented on a few sites in the south.

- In the later phase, evidence of more intensive cultivation of FTW appears to spread into the East Midlands.
Agricultural tools:
Items associated with ploughing, harvesting or processing of arable produce

Number of tools by site (excavation >0.1ha)

- Stanwick villa produced 206 agricultural tools
- However, sites classified as villas tend to more commonly produce agricultural tools

Number of tools per hectare of excavation by site type (excavation >0.1ha)

Percentage of sites with agricultural tools present (excavation >0.1ha)
Cereal processing:
distribution and dating of corndriers

- Corndriers have a widespread and broadly even geographic distribution, particularly on sites in river valleys.

- Present on most site types.

- None date to the late Iron Age.

- Most sites appear to have active driers during the 3rdC AD.

- Those at villa sites are mainly later Roman.

Distribution of Roman corndriers in East Midlands

Approximate dating of individual sites when corndriers are active
Types of corndriers: increasing production or diversification of output?

- T-shaped and H-shaped
  Leadenham Quarry, Lincs.

- ‘simple’
  Old Sleaford, Lincs.

- Circular ‘drying floors’
  Great Casterton Villa, Rutland

- Some corndriers of different type show evidence of different output, i.e. drying, malting, etc.

- T-shaped commonly associated with malting, though botanical evidence suggests it may not be restricted to these
### Archaeobotanical evidence for malting

<table>
<thead>
<tr>
<th>Site</th>
<th>Site type</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grange Park, Courteenhall, Area 5</td>
<td>Developed farm</td>
<td>LIA/ER (1st C BC/AD)</td>
</tr>
<tr>
<td>Bishop Grosseteste College, Lincoln</td>
<td>Unclassified rural</td>
<td>M-LR (2nd-4th C AD)</td>
</tr>
<tr>
<td>Grange Park, Courteenhall, Area 5</td>
<td>Developed rural</td>
<td>M-LR (2nd-4th C AD)</td>
</tr>
<tr>
<td>Sutterton Enterprise Park</td>
<td>Unclassified rural</td>
<td>M-LR (2nd-4th C AD)</td>
</tr>
<tr>
<td>Leadenham Quarry</td>
<td>Villa</td>
<td>LR (3rd-4th C AD)</td>
</tr>
<tr>
<td>St Barnabas Road, Barnetby le Wold</td>
<td>Developed farm</td>
<td>LR (3rd-4th C AD)</td>
</tr>
<tr>
<td>Stanion Roman Villa, Brigstock Road</td>
<td>Villa</td>
<td>Roman</td>
</tr>
<tr>
<td>Stanwick</td>
<td>Villa</td>
<td>Roman</td>
</tr>
<tr>
<td>Renner's Park, Empingham Site</td>
<td>Unclassified rural</td>
<td>Roman</td>
</tr>
<tr>
<td>Manor Farm, Sudbrook</td>
<td>Unclassified rural</td>
<td>Roman</td>
</tr>
<tr>
<td>Ridlington site 5</td>
<td>Unclassified rural</td>
<td>Roman</td>
</tr>
</tbody>
</table>

Sites with botanical assemblages containing quantities of sprouted grain

Leadenham Quarry, Lincolnshire, included both T-shaped and H-shaped corndriers. The former included quantities of sprouted grain, the latter unsprouted

- Spelt dominated, but barley and emmer were also present
- Millstones present also suggest the site to have been a mill
To quern or not to quern? Evidence for hand-grinding and milling

No. quernstones recovered per hectare (>0.1ha)

Percentage of sites with quernstones (>0.1ha)

No. millstones recovered per hectare (>0.1ha)

Percentage of sites with millstones (>0.1ha)
The invisible mill...

Structural evidence for mills are rarely identified:

- only examples are at Burcote Wood Farm, Stanwick and Redlands Farm – all are villa estates
- each mill primarily identified based upon proximity to an adjacent flowing-water source
- Burcote Wood Farm also produced millstones, carbonised grain and associated corndriers

Burcote Wood Farm, Towcester
(Turland 1977, 68)
Concluding points

Impact of developer-funded archaeology

• Commercial archaeological units have dramatically increased the quantity and quality of zooarchaeological data available for analysis over the past 25 years, most particularly in the last 10 years

• The geographic distribution of environmental samples are wide and evenly spread in the East Midlands

• The current dataset, however, only represents a sample; to improve our understanding of animal husbandry and agricultural practice in the Roman rural landscape, continued production of environmental assemblages and the maintenance of analytical standards are essential
Concluding points

Animal husbandry

• Sites with higher proportions of pig more common in the late Iron Age, though a concentration on sheep and cattle occurs into the Roman period

• Sites with high proportions of cattle dominate in the late Roman period

• Considerable variation in livestock cull profiles - beef production important, whilst the presence of older animals suggest the role of cattle-traction

• Sites more concerned with horse-keeping in the later Roman period

Arable production and cereal processing

• Agricultural tools and transport equipment most commonly associated with villas and nucleated settlements – access to and availability of agricultural technology

• Intensification of spelt production around the fenland into the later Roman phase

• Intensive cereal processing appears most common from the 2\textsuperscript{nd}-4\textsuperscript{th} C AD, as evidenced by corndriers

• Perhaps a greater emphasis can be placed on the identification of mills through inter-site analyses