Approaches to environmental evidence (zooarchaeology): initial results from the east of England

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The contribution of zooarchaeology: limitations and potential

Limitations

• To what extent are zooarchaeological assemblages contributing to the records and what level of data are represented?
• What effect has developer-funded archaeology had in generating accessible and usable datasets?
• Can the quality of synthesised data be improved through better standardisation in reporting?

Potential

• What patterns can we see in the zooarchaeological data from the East of England?
• How might such patterns contribute to our understanding of Roman rural settlement?
Proportion of site records which include zooarchaeological data

- Around 50% of site records from each county give zooarchaeological data
- Cambridgeshire records provide an above average proportion
- c.10% of site records include reports where assemblages are present, though no data are given

Relative frequency of animal bone data presentation by county
Relative frequency of animal bone data presentation: commercial v. non-commercial

- % Records with quantified assemblages
- % Records with assemblages but no data

- Commercial: (n=495)
- Non-commercial: (n=110)
• Substantial increase in assemblages being sieved by commercial units

• In part reflects more rigorous excavation strategy by units, but also increasing standards over time

• The proportion of assemblages sieved is low overall - information may have been edited out of reports

• Sieving potentially alters the complexion of an assemblage, i.e. smaller taxa (small mammals, birds, fish) usually better represented

Percentage of assemblages sieved: commercial v. non-commercial
Proportions of quantified assemblages with baseline ‘usable’ data

- Some variation in presentation of taxa (e.g. species) identification amongst quantified assemblages
- Dental ageing data are far less presented though the proportions are less varied by county
- Many assemblages may not include suitable specimens
Contribution of developer-funded archaeology to the potential of environmental data (animal bone)

• Developer-funded archaeology has:
  – increased the proportion of assemblages which get quantified at a basic level
  – increased the proportion of assemblages being sieved

• Development of commercial archaeology has improved the potential of environmental assemblages overall
• Assemblages are likelier to be more informative
• Room for improvement possible

• Greater need for the standardisation in the requirements for an assessment report, full analysis, etc.
Potential of the existing data...
Relative frequency of main animal taxa

- Domestic mammals
- Wild mammals
- Domestic birds
- Wild birds

1st C BC/AD
1st-2nd C AD
1st-3rd C AD
2nd-4th C AD
Roman
Relative frequencies of main livestock species by site type

- Villa (n=14)
- Linear farm (n=55)
- Enclosed farm (n=19)
- Nucleated settlement (n=33)
- Religious (n=8)

- Cattle
- Sheep/goat
- Pig
Relative frequencies of main livestock species by phase

<table>
<thead>
<tr>
<th>Phase</th>
<th>Cattle</th>
<th>Sheep/Goat</th>
<th>Pig</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIA/ER (1st C BC/AD) n=42</td>
<td></td>
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<tr>
<td>Early Roman (1st-2nd C AD) n=23</td>
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<tr>
<td>Mid-Roman (l.1st-e.3rd C) n=39</td>
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<tr>
<td>Late Roman (l.2nd-4th C) n=67</td>
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</tbody>
</table>
Relative frequencies of main livestock remains by period and site type

Nucleated settlements

Farms

%
Percentage of cattle culled in each age class by phase

- **Farms**
  - LIA/ER (1stC BC/AD) n=19 [m=263]
  - Early Roman (1st-2ndC AD) n=10 [m=78]
  - Mid-Roman (l.1st-e.3rdC) n=14 [m=125]
  - Late Roman (l.2nd-4thC) n=18 [m=157]

- **Nucleated settlements**
  - LIA/ER (1stC BC/AD) n=1 [m=99]
  - Early Roman (1st-2ndC AD) n=3 [m=143]
  - Mid-Roman (l.1st-e.3rdC) n=4 [m=273]
  - Late Roman (l.2nd-4thC) n=8 [m=416]
Percentage of sheep/goats culled in each age class by phase

Farms

Nucleated settlements

[Bar chart showing data for different phases and age classes]

- LIA/ER (1st C BC/AD) n=17 [m=371]
- Early Roman (1st-2nd C AD) n=6 [m=71]
- Mid-Roman (l.1st-e.3rd C) n=13 [m=91]
- Late Roman (l.2nd-4th C) n=20 [m=172]

[Bar chart showing data for different phases and age classes]

- LIA/ER (1st C BC/AD) n=2 [m=130]
- Early Roman (1st-2nd C AD) n=3 [m=177]
- Mid-Roman (l.1st-e.3rd C) n=4 [m=180]
- Late Roman (l.2nd-4th C) n=8 [m=464]
% sites with remains of neonatal livestock

Adjusted data: >300NISP C.S.P and/or sieved

The presence of neonatal remains is a prerequisite for the evidence of breeding at a site

- Linear farms tend to produce neonatal remains more commonly than other types of site
- However, all types of site provide evidence for livestock breeding
% sites with evidence for livestock breeding

Unadjusted data: all sites

pre-AD200
- % neonatal pig
- % neonatal sheep/goat
- % neonatal cattle

nucleated settlement (n=10)
rural settlement (n=53)

post-AD200
- % neonatal pig
- % neonatal sheep/goat
- % neonatal cattle

nucleated settlement (n=18)
rural settlement (n=53)
Relative frequency of equids (horse, mule and donkey) through time

![Graph](image)

*Data calculated as average percentage against cattle, sheep/goat and pig*
% sites with remains of juvenile horses (animals <3.0 years)

- Nucleated settlement (pre-AD200, n=55/post-AD200, n=23)
- Rural settlement (pre-AD200, n=43/post-AD200, n=14)
Frequency of sites with paddocks/stock enclosures recorded

- Enclosed farms (n=51)
- Linear farms (n=38)
- Nucleated settlement (n=30)

- Pre-AD200 (n=94)
- Post-AD200 (n=25)
Percentage presence of equine-related and agricultural artefacts

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**Bar Graphs:**

- **Equine/transport items**
  - Pre-AD200: [Data Value]
  - Post-AD200: [Data Value]

- **Agricultural tools**
  - Pre-AD200: [Data Value]
  - Post-AD200: [Data Value]

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**Pie Chart:**

- Nucleated settlement
  - Equine/transport items: [Percentage]
  - Agricultural tools: [Percentage]

- Enclosed farm
  - Equine/transport items: [Percentage]
  - Agricultural tools: [Percentage]

- Linear farm
  - Equine/transport items: [Percentage]
  - Agricultural tools: [Percentage]

- Villa
  - Equine/transport items: [Percentage]
  - Agricultural tools: [Percentage]
Representation of domestic fowl through time

Percentage of sites with domestic fowl remains present

Relative frequency of domestic fowl remains on all site types

*Data calculated as average percentage against cattle, sheep/goat and pig
Inter site-type, inter period variation in domestic fowl exploitation

- LIA/ER (1stC BC/AD)
- Early Roman (1st-2ndC AD)
- Mid-Roman (l.1st-e.3rdC)
- Late Roman (l.2nd-4thC)

Graph showing percentage of nucleated settlement, farm, villa, and religious sites over different periods.
Evidence of chicken husbandry: remains of juvenile fowl and eggshell

<table>
<thead>
<tr>
<th>SITE</th>
<th>TYPE</th>
<th>PHASE</th>
<th>JUVENILES</th>
<th>EGG SHELL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nazeingbury</td>
<td>linear farm</td>
<td>LIA/ERB (1st C AD/BC)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>A421 Water End East (Site 8)</td>
<td>linear farm</td>
<td>ER (1st-2nd C AD)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Snettisham Bypass</td>
<td>linear farm</td>
<td>ER (1st-2nd C AD)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Wallington Road, Baldock</td>
<td>funerary site</td>
<td>E-MR (1st-3rd C)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Scole</td>
<td>nucleated settlement</td>
<td>E-MR (1st-3rd C)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>West Row, Mildenhall</td>
<td>farm, unclassified</td>
<td>M-LR (2nd-4th C)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Watersmeet, Mill Common, Huntingdon</td>
<td>funerary site</td>
<td>M-LR (2nd-4th C)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Welwyn Hall, Welwyn</td>
<td>nucleated settlement</td>
<td>M-LR (2nd-4th C)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Camp Ground, Colne Fen, Earith</td>
<td>nucleated settlement</td>
<td>M-LR (2nd-4th C)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Hartsfield JMI School, Baldock</td>
<td>nucleated settlement</td>
<td>LR (3rd-4th C)</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Meppershall</td>
<td>enclosed farm</td>
<td>Roman</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Tort Hill (West &amp; East)</td>
<td>linear farm</td>
<td>Roman</td>
<td>X</td>
<td></td>
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<tr>
<td>Baldock bypass</td>
<td>linear farm</td>
<td>Roman</td>
<td>X</td>
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<tr>
<td>Haddon</td>
<td>linear farm</td>
<td>Roman</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Langdale Hale, Earith, Colne Fen</td>
<td>linear farm</td>
<td>Roman</td>
<td>X</td>
<td></td>
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<tr>
<td>Ivy Chimneys</td>
<td>shrine</td>
<td>Roman</td>
<td>X</td>
<td></td>
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<tr>
<td>Northchurch</td>
<td>villa</td>
<td>Roman</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>
Inter-site, inter-period variation in wild animal exploitation

Wild mammals

Wild birds

Legend:
- Farm
- Nucleated settlement
- Villa
- Religious
Inter-site type variation in wild mammal exploitation and evidence for deer hunting

![Diagram showing variations in wild mammal exploitation across different site types.]

The diagram illustrates the percentage distribution of red deer, roe deer, hare, and other wild mammals across different site types:

- **Villa (n=22)**: 70% deer bones, 20% deer antler
- **Nucleated Settlement (n=52)**: 65% deer bones, 35% deer antler
- **Enclosed Farm (n=23)**: 55% deer bones, 45% deer antler
- **Linear Farm (n=79)**: 45% deer bones, 55% deer antler
- **Religious (n=19)**: 30% deer bones, 70% deer antler

The diagram compares the exploitation of deer bones and deer antlers across these site types.
Summary

• East of England appears to be broadly cattle-dominated in terms of domestic livestock

• Little variation in topographic positioning of sites, though a considerable increase in cattle over sheep and pigs through time can be observed

• This may have been a long-term change of an increasing cattle population, though there is some evidence to suggest that a periodically-localised shift towards cattle farming took place around or soon after the 2ndC AD

• An increase in horse-keeping appears to take place around the same period

• Finds of neonatal livestock and juvenile horses suggests that breeding of domesticates may have been somewhat confined to farms in the earlier phase, though spread to nucleated sites sometime around the 2ndC AD

• Domestic fowl become continually more common on sites from the late Iron Age through to the late Roman period

• Some variation in wild animal exploitation can be observed, perhaps linked to sites of higher status
Some thoughts...

- Apparent changes in 2ndC AD (early-mid Roman phase) in terms of increasing cattle and horse remains perhaps relates to economic and landscapes changes:
  - Increase in arable agriculture
  - Increasing movement of surplus goods
  - Affect of the *annona militaris*?
  - Reclamation of liminal zones?

- The ownership of horses seems to have been more restricted in the late Iron Age/early Roman period, perhaps associated with wealth, but may be more ubiquitous and less associated with landed-wealth in the later period

- Chickens also seem to change from rare, perhaps more exotic animals in the late Iron Age, to being very commonly represented farm animals in most sites in the late Roman period

- The representation of wild animals, particularly deer-hunting and wild-fowling, may reflect expressions of status and landownership, and cultural attitudes to nature