Antiquity 2023 page 1 of 5
https://doi.org/10.15184/aqy.2023.110

Project Gallery

Feeding the Roman Army in Britain

Peter Guest[1], Hongjiao Ma[2], Leïa Mion[2], Angela L. Lamb[3] & Richard Madgwick[2,*]

[1] Vianova Archaeology & Heritage Services, UK
[2] School of History, Archaeology and Religion, Cardiff University, UK
[3] National Environmental Isotope Facility, British Geological Survey, UK
* Author for correspondence ✉ MadgwickRD3@cardiff.ac.uk

How did the Roman Empire supply and maintain its frontier garrisons? What was the impact on populations and landscapes of conquered territories? The *Feeding the Roman Army in Britain* project will answer these questions by establishing how soldiers were provisioned and how frontiers operated as economic as well as militarised zones.

Keywords: Roman Britain, Roman army, Roman imperialism, Roman economy, animal origins, isotope analysis

Introduction

Rome's success as a superpower was based on the ability to field large armies and to maintain sizeable provincial garrisons over extended periods of time. The imperial army comprised around 300 000 soldiers, but we are almost entirely ignorant about how the military authorities supplied units on the frontiers. Therefore, critical questions about the provisioning of the army and the impact on native populations of thousands of soldiers arriving in the provinces remain unanswered.

For many years, ancient literature was the only evidence through which to explore Roman military logistics, though these sources provided very little information regarding provisioning or related topics such as soldiers' diets (e.g. Davies 1971). From the 1970s, however, the study of excavated animal remains from Roman military sites produced the first direct evidence of the dietary habits of soldiers, and the rate of research on faunal assemblages in Britain has accelerated significantly in recent decades. This work, complementing the textual evidence, has led to a much better appreciation of the army's use of animals, not only to sustain the fairly meat-rich diet of the soldiers but also to provide milk, cheese, leather, wool and other resources (e.g. King 1984; Stallibrass & Thomas 2008).

Despite this progress, we still have only a rudimentary understanding of the quantities of animals consumed by Roman soldiers, where and by whom these were reared, and how supply was organised. Simply feeding the 5500 men in a legion, for instance, required the control of considerable agricultural resources over a large area and the redistribution of those resources

Received: 25 October 2022; Revised: 8 June 2023; Accepted: 21 June 2023

from producers to consumers. How Roman authorities achieved this remains almost entirely unknown, despite it being central to the success of Roman imperialism (e.g. Reece 2002).

A pilot study by members of the project team investigated the capacity of strontium isotope analysis to establish where animals consumed at the legionary fortress at Caerleon were reared (Madgwick *et al.* 2019a). The analysis, crucially combined with local strontium biosphere samples, demonstrated that at least 25 per cent of cattle, and perhaps similar proportions of sheep/goats and pigs, came from beyond the local region, with some brought from at least as far as the Wessex chalklands and possibly further afield. This study marked the first step towards a better understanding of legionary supply, but also highlighted the limited resolution that can be achieved using strontium isotope analysis alone, particularly in geologically diverse regions.

Animal supply networks on the frontiers

Feeding the Roman Army in Britain (FRAB), funded by the Leverhulme Trust, will conduct an ambitious analytical programme to examine the logistics of Roman military supply and to address the army's impact in frontier provinces. Focusing on fauna from forts and rural settlements in three frontier zones, the project will produce one of the largest multi-isotope datasets in archaeological research to date, which will reveal animal origins, supply networks and any husbandry strategies introduced by the Romans to increase and intensify agricultural production.

FRAB's overarching aim is to address the question of how the Roman army was supplied on *Britannia*'s frontiers. The project's objectives are to:

- identify the supply networks to forts and fortresses by establishing the origins of the main taxa consumed;
- reconstruct animal and landscape management strategies (i.e. manuring, foddering regimes and diet), and investigate evidence for agricultural intensification to meet the needs of the Roman army;
- explore chronological variation in supply to establish whether or not provisioning changed when frontiers became established; and
- provide a large comparative dataset and new mapping data to stimulate wider faunal provenancing studies in Roman archaeology and beyond.

The project's source material comes from 15 sites in the three case-study areas (identified by an earlier scoping study), where excavations have produced optimal faunal assemblages for the project's objectives (Figure 1).

1. South Wales (*c.* AD 55–200)
   a. two legionary fortresses: Usk; Caerleon
   b. two auxiliary forts: Cardiff; Loughor
   c. three rural settlements: Nash; Thornwell Farm; Whitton
2. Hadrian's Wall (*c.* AD 120–220)

https://doi.org/10.15184/aqy.2023.110 Published online by Cambridge University Press

a. five auxiliary forts: South Shields; Wallsend; Housesteads; Vindolanda; Birdoswald
b. the town/supply base at Corbridge

3. Antonine Wall (*c.* AD 142–165)
   a. two auxiliary forts and supply bases: Inveresk; Cramond

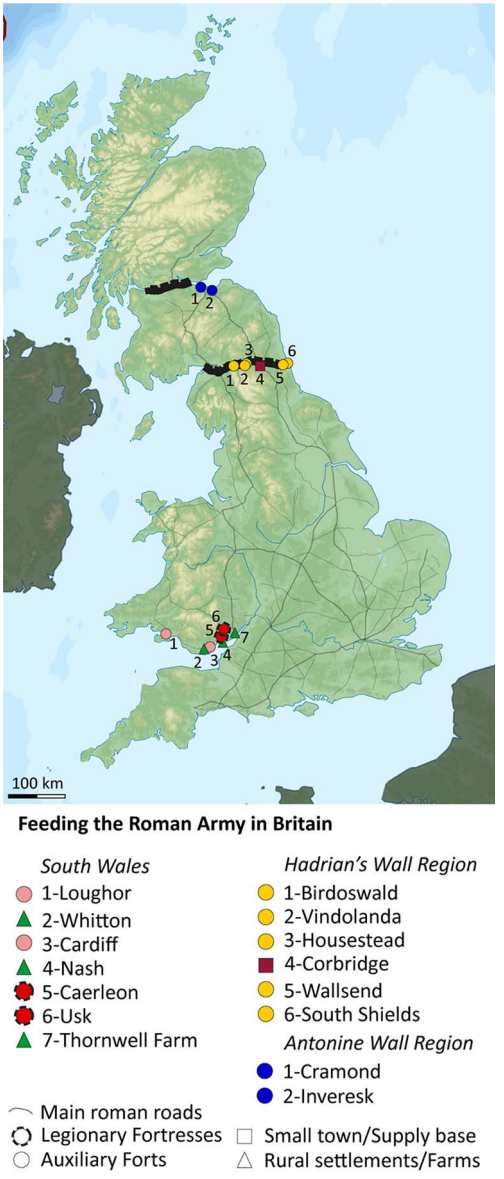

Figure 1. Map of Roman Britain showing sample sites in the three case-study frontier zones (figure by L. Mion).

https://doi.org/10.15184/aqy.2023.110 Published online by Cambridge University Press

The project intends to analyse the remains of more than 500 animals, concentrating on the three dominant domestic taxa (cattle, sheep/goat and pig) from early military phases, with additional samples from later Roman occupation. While supply to military sites is the main focus, animals from selected rural settlements in south Wales also will be included to explore potential 'producer' sites. Therefore, this project will bring together, for the first time, two key categories of Romano-British settlements—military and rural—to examine how these sites were connected and how each affected the other, leading to new and better-informed interpretations of the economy of Roman Britain's frontier regions.

Isotope analysis is an exclusive approach (i.e. it is best suited to excluding, rather than pinpointing origins) and FRAB will employ four proxies (following Madgwick *et al.* 2019b), each with a specific role. Identifying origins is still challenging and the analytical strategy has been designed to refine provenance:

- Strontium ($^{87}Sr/^{86}Sr$) will provide geological signals for animal origins;
- Sulfur ($\delta^{34}S$) will show whether animals were raised in coastal, wetland or inland areas;
- Carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) will reconstruct husbandry and foddering regimes.

A substantial biosphere-mapping component is also included in the project. The British biosphere is mapped in more detail than any other country (Evans *et al.* 2023), but carefully selected modern plants, augmenting biosphere resolution, are critical to exploring animal origins, as demonstrated in the pilot study, as well as having benefits for future research beyond Roman archaeology.

Feeding the Roman Army in Britain: research outcomes

This ambitious interdisciplinary project will transform understanding of the Roman army and Roman imperialism, leading to an enhanced appreciation of Roman frontiers as economic as well as militarised regions. By providing the first direct evidence for the supply networks that provided soldiers in *Britannia* with meat and animal products, the project will stimulate similar approaches in other parts of the Roman Empire and extend our understanding of the processes by which provinces were colonised and native populations became 'romanised'. Ultimately, this will reveal how the Empire functioned economically. Both themes are at the forefront of Roman studies and the FRAB project will provide substantial new evidence, as well as new methods, allowing archaeologists and scholars of ancient history to explore the Roman past in more nuanced ways.

The project will serve as a model for integrated and interdisciplinary research, combining history with archaeology and science, while connecting university research with museum collections. This is timely as we now have the means to integrate the vast corpus of archived faunal material with advanced multi-isotope methods and high-resolution biosphere mapping in Britain. The research will contribute to Roman studies and will also have benefits for future studies of mobility, both animal and human, providing an invaluable dataset

https://doi.org/10.15184/aqy.2023.110 Published online by Cambridge University Press

and a blueprint for exploring trade, military supply, mobility and connectivity in a wide range of geographical and chronological contexts.

Acknowledgements

We are grateful to the Leverhulme Trust for funding the FRAB project (RPG-2021-060), and also the Roman Research Trust and Cardiff University's Seedcorn Fund for supporting the earlier pilot study and scoping project.

References

Davies, R.W. 1971. The Roman Military Diet. *Britannia* 2: 122–42. https://doi.org/10.2307/525803

Evans, J.A., K. Mee, C.A. Chenery & A.P. Marchant. 2023. *Biosphere Isotope Domains GB (V2): Interactive Website. British Geological Survey (Dataset)*. https://doi.org/10.5285/2ce7fc22-1b6e-4979-968f-42058c0120fb

King, A. 1984. Animal bones and the dietary identity of military and civilian groups in Roman Britain, Germany and Gaul, in T. Blagg & A. King (ed.) *Military and civilian in Roman Britain* (British Archaeological Research British Series 136): 187–217. Oxford: Archaeopress.

Madgwick, R., J. Lewis, V. Grimes & P. Guest. 2019a. On the hoof: exploring the supply of animals to the Roman legionary fortress at Caerleon using strontium isotope analysis. *Archaeological and Anthropological Sciences* 11: 223–35. https://doi.org/10.1007/s12520-017-0539-9

Madgwick, R., A. Lamb, H. Sloane, A. Nederbragt, U. Albarella, M. Parker Pearson & J. Evans. 2019b. Multi-isotope analysis demonstrates long distance movement of people and animals for feasts in the Stonehenge landscape. *Science Advances* 5: eaau6078. https://doi.org/10.1126/sciadv.aau6078

Reece, R. 2002. The future of Roman military archaeology, in R. Brewer (ed.) *The Second Augustan Legion and the Roman military machine*: 179–91. Cardiff: National Museums and Galleries of Wales.

Stallibrass, S. & R. Thomas (ed.). 2008. *Feeding the Roman Army: the archaeology of production and supply in NW Europe*. Oxford: Oxbow.