Natural Environment Research Council

University of Southampton

DOING AS THE ROMANS DID

Ancient Lessons from the Environmental Legacy of Romano-British Industries

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01 INTRODUCTION

The Roman conquest of Britain (43 CE) instigated an era of unprecedented industrialisation, far exceeding the scale of the Iron Age. The imperial administration aggressively exploited indigenous reserves, establishing major industries in lead, silver, iron, tin, pottery, charcoal, salt, and much more across the province (Jones & Mattingly, 1990; pp. 179-232). Established archaeological research has successfully mapped the spatial organization, technological processes, and circulation networks of these industries but very little has been said about their long term environmental impacts.

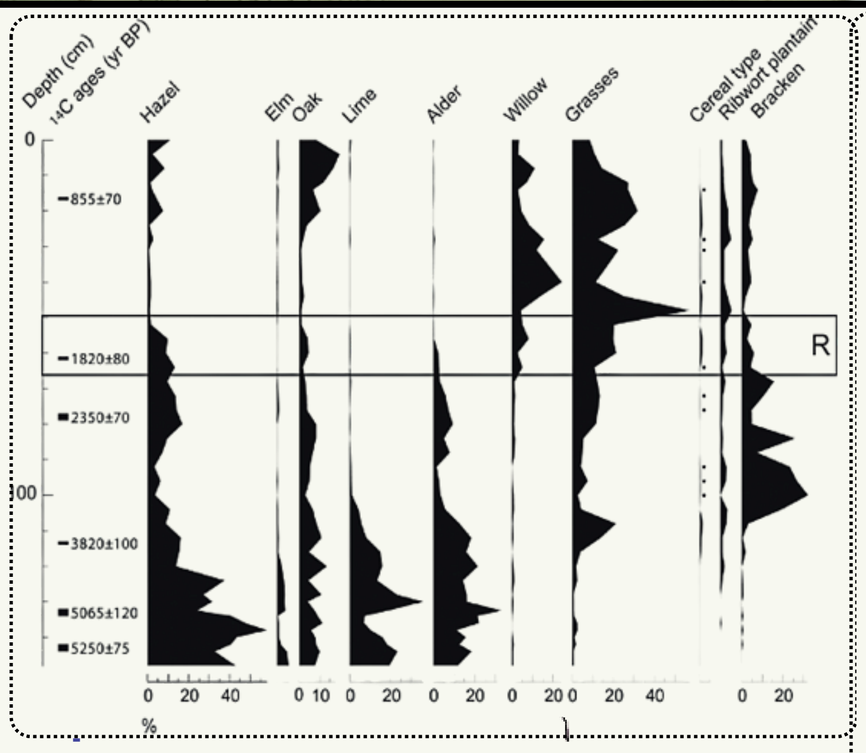


Fig. 1. Pollen diagram from Sidlings Copse, Oxfordshire—centre of the Roman Oxfordshire Ware industry—showing deforestation and grassland expansion during the Roman period (Dark, 2017).

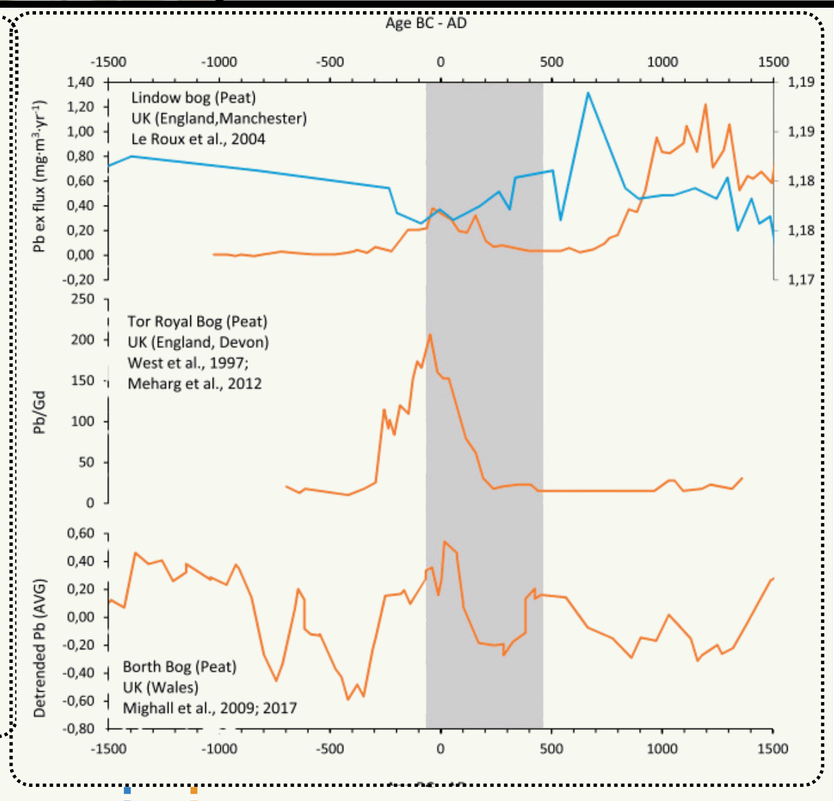


Fig. 2. Lead (Pb) pollution from British sources—levels are high but do not match expected European patterns. Data suggest Roman activity often overlapped with earlier prehistoric mining (Silva-Sanchez & Armada, 2022).

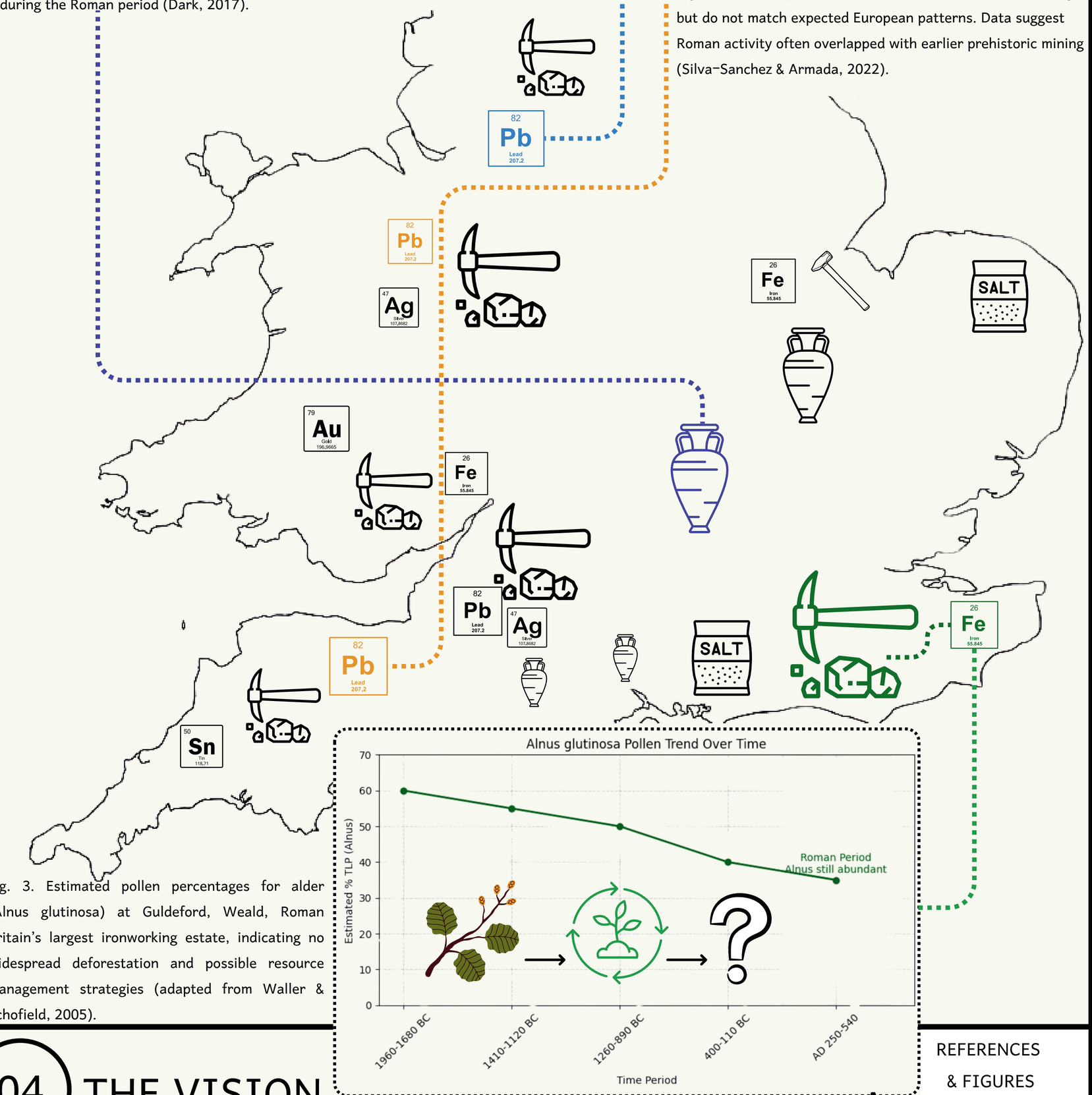


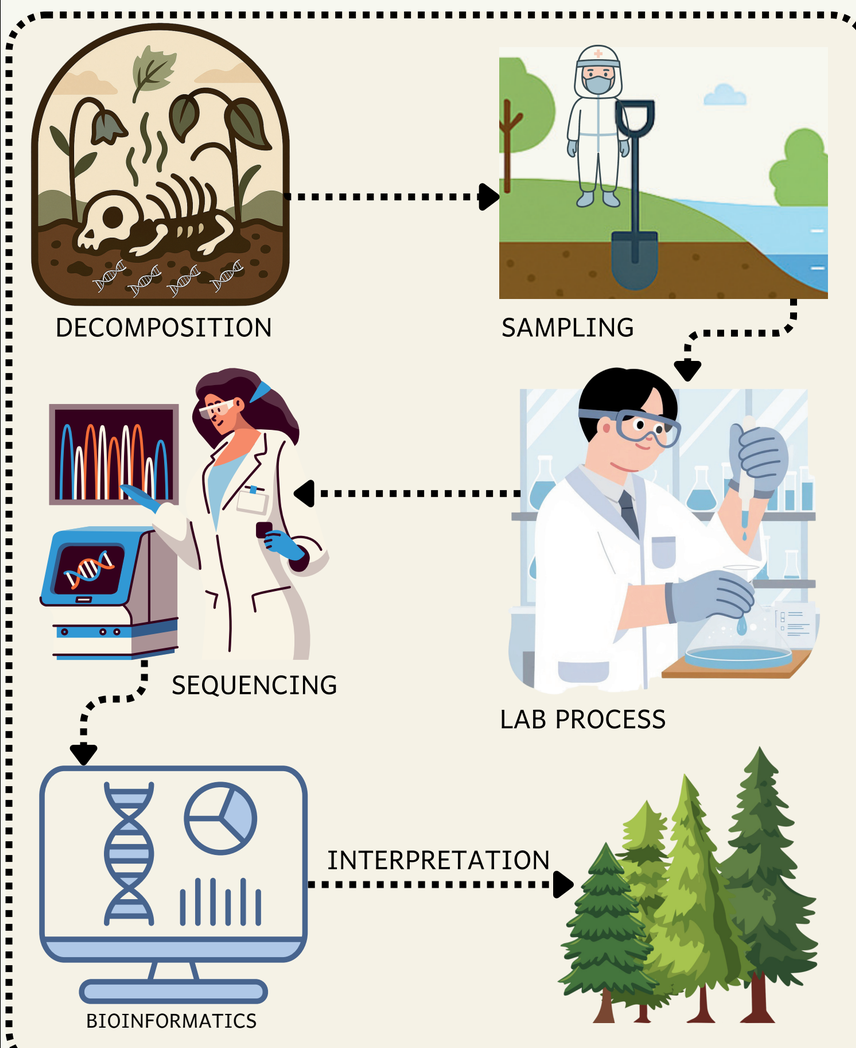
Fig. 3. Estimated pollen percentages for alder (Alnus glutinosa) at Guldeford, Weald, Roman Britain's largest ironworking estate, indicating no widespread deforestation and possible resource management strategies (adapted from Waller & Schofield, 2005).

02 THE PROBLEM

Despite extensive research on Roman industry, its ecological impacts - such as woodland dynamics, habitat restructuring, and biodiversity shifts—remain poorly understood. Existing studies focus on deforestation (Dark, 1999) (Fig 1) and ancient pollution (Silva Sanchez et al., 2022) (Fig 2), leaving broader vegetation change and ecosystem responses underexplored. Methodological divides often separate archaeology from advances in palaeoenvironmental science. This research bridges that gap by integrating both fields to reconstruct a comprehensive history of human-environment interactions and their relevance to modern environmental challenges.

03 THE INNOVATION

This study pioneers the use of sedimentary ancient DNA (sedaDNA) as a proxy in Romano-British ecological research - the first application of its kind. SedaDNA offers transformative insights into vegetation and ecosystem responses to industrial pressures, complementing traditional proxies like pollen. Hailed as a catalyst for a "revolution in archaeology" (Brown et al., 2025), this approach situates the Roman period within a broader narrative of environmental resilience and change across the 1st millennium CE.



04 THE VISION

Reconstructing these deep-time ecological responses can illuminate how societies navigate environmental stress—past and present. Our findings will advance debates on ecosystem resilience, inform sustainable resource management, and refine archaeological best practice.

REFERENCES & FIGURES