

The projects reported upon here contribute significantly to many of the BSR's current research themes (Archaeologies of Knowledge; Connectivity in the Mediterranean; Conservation, Heritage Management and Sustainability; and Landscapes and Urbanscapes); and at the same time demonstrate how the BSR is integrated within national and international research networks.

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GEOPHYSICS PROJECTS

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The geophysics programme, a collaboration between the British School at Rome and the University of Southampton (Archaeological Prospection Services of Southampton (APSS)), was as diverse geographically as it was in its scope of research. The year included geophysical survey work at three different sites in Sudan (Amara West, Dangeil and Kawa), and within Italy at San Giovenale (Lazio), Montelibretti (Lazio), Segni (Lazio) and Tivoli (Lazio). It also saw the start of two major projects investigating ancient ports in Turkey (Kane) and Tunisia (Utica). These last two projects form part of the wider European Research Council-funded Portus Limen — Rome's Mediterranean Ports Project (<http://portuslimen.eu>), directed by Professor Simon Key. Initial results from Kane, when viewed with the information from other survey work in the area, are beginning to piece together the extent of the Hellenistic port and its cemetery. The results from Utica were astonishing over the heavily built-up town area, and details of the urban plan are clearly evident. These projects will be discussed below (p. 309).

For the past few years the geophysics programme at the British School at Rome has been fortunate to have generous funding from the Roger De Haan Charitable Trust, and we are sincerely grateful to Sir Roger De Haan for supporting our work through both the sponsorship of a geophysics assistant and providing the BSR with the opportunity to initiate and continue its own geophysics projects.

Building on the wealth of information accumulated through archaeological surveys within the BSR's Roman Towns Project, directed by Simon Key (University of Southampton) and Professor Martin Millett (University of Cambridge) between 1997 and 2004, this renewed investigation looks to reveal and understand the relationship of Roman urbanscapes to their landscapes. We are focusing on two sites: Peltuinum, a Roman town along the ancient route through the Abruzzo, and Lucus Feroniae, an Archaic-Roman sanctuary site 20 km north of Rome.

Thanks to initial funds from the Soprintendenza per i Beni Archeologici dell'Abruzzo, the BSR/APSS team had conducted a pilot season of geophysics at the site of Peltuinum in the Abruzzo. The results were very promising and the De Haan Charitable Trust donation has allowed the team to return to the site in order to complete the process of mapping the entire urban settlement. The project at Lucus Feroniae was fully funded by the De Haan donation, and a second season also has been made possible through its continued support.

The success of geophysical surveys relies upon extracting the most complete picture of the buried features. A multi-method survey approach is beneficial in building up a greater understanding of the nature of potential archaeological remains. Different survey

techniques measure different attributes of the buried remains, and thus by comparing the results of different survey types more information can be extracted. A similar survey strategy was applied at both sites: widespread coverage with a gradiometer survey and targeted pilot studies with georadar. Whereas gradiometry surveys provide two-dimensional datasets across a broad area, georadar (GPR) surveys provide detailed three-dimensional visualization of the results.

PELTUINUM

Peltuinum (also known as Ansidonia) lies in the heart of the Abruzzo, 20 km southeast of L'Aquila. The Roman settlement stands on a ridge overlooking the Aterno valley and straddles the Via Claudia Nova, the Roman road built in AD 47 that formerly connected a mountainous region of the Abruzzo with the established infrastructure between Rome and the Adriatic (Gardner, 1913). Robert Gardner had visited the site and taken photographs of the standing Roman remains,¹ yet described Peltuinum as having 'played no part in history' (Gardner, 1913: 226).

Recent archaeological investigations at the site have proved otherwise. The town originally grew up along a *tratturo*, a sheep track, and must have played a central role in transhumance (Segenni, 2007: 182). By the mid-first century BC, Peltuinum had risen to prominence as a result of the administrative reorganization and general movement towards urbanization in central Italy after the Social War (91–88 BC) (Sommella, 1988: 147–8; 1989: 482). The principal standing architecture on site — comprising a temple (Bianchi, 2012), theatre (Migliorati, 2007: 559–60) and elements of the town wall and the west gate (Sommella, 1995: 281) — has all been dated to the late first century BC and demonstrates the monumentality of the town. Beyond the extant standing remains, little is known about the form of the rest of the town other than small glimpses of an orthogonal layout of the streets noted in both excavations and aerial photographs (Sommella, 1988: 178; Giustizia, 2007: 219). The town's demise came in the fourth century, following an earthquake that left traces of structural damage, and only a few people continued to occupy the site.

The gradiometer survey covered an area of five hectares across the central northern section of the town. The gradiometer results (Fig. 1) clearly reveal the assumed orthogonal layout of the road system, perpendicular to the course of the Via Claudia Nova, and suggest a relatively dense pattern of buildings and open spaces. The dark, positive linear anomalies that denote the courses of the roads stand out in the results and also serve to emphasize the notable lack of roads parallel to the main thoroughfare. Only one such road is visible, 130 m northeast of the Via Claudia Nova, and this road appears to have marked the limit of the inhabited area. Beyond this road, the survey results show no obvious signs of human activity. The roads visible in the results are not spaced at regular intervals, and whether this was part of the original layout or whether the demise of the town in its later history brought about the abandonment of areas may be answered by extending the gradiometer survey.

¹ The Gardner photographic archive of Peltuinum is now available to view online as part of the BSR's digital collection: <http://www.bsrdigitalcollections.it/>

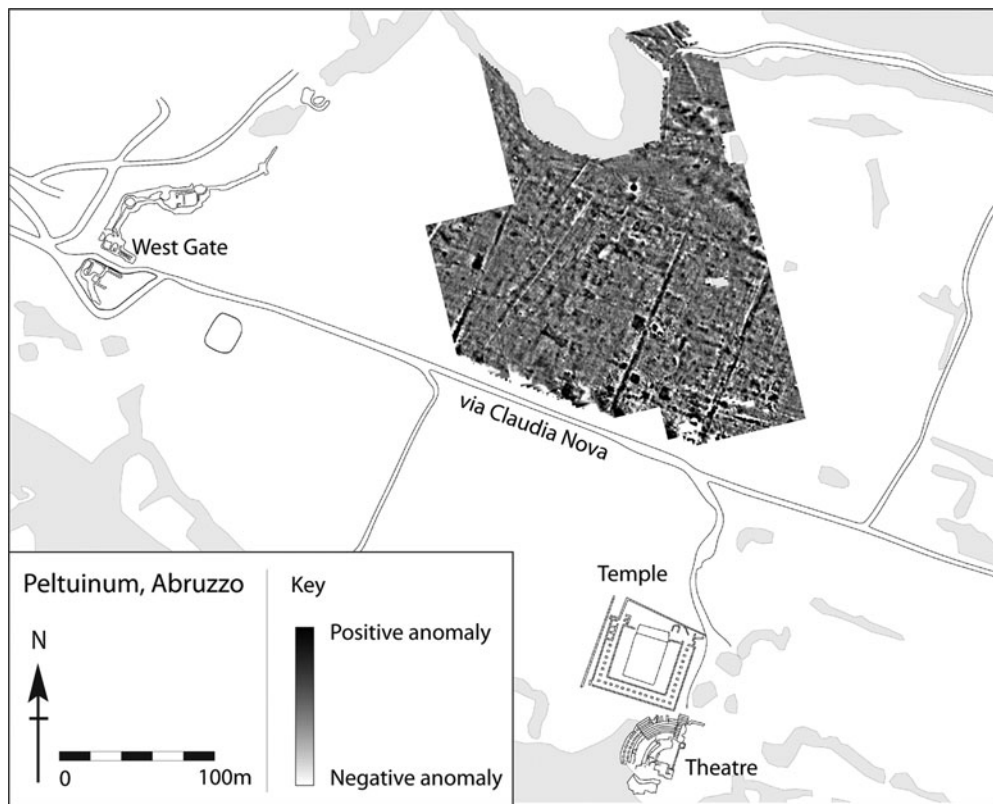


Fig. 1. Peltuinum: gradiometer survey results in the central section of the town.

Two test areas were covered with GPR based on findings in the results of the gradiometer survey, and the results provided a clearer, more detailed image of the buried archaeology. A potential benefit of using GPR on a site with an attested long history of development is that by interrogating the results at different depths we can assess the height of the buried remains and possibly have an opportunity to visualize chronological change. This could be fundamental in disentangling the town's complex past and its response to the landscape it occupies.

LUCUS FERONIAE

Lucus Feroniae is located on an open plain near the confluence of the Fosso di San Martino and the river Tiber, and connected with Rome by the Via Tiberina (Jones, 1962: 191). The beginnings of the site are somewhat unclear, but it emerged as a pre-Roman sanctuary site centred on the worship of the Sabine goddess Feronia. Fittingly, the sanctuary that triumphed the goddess of wildlife, abundance and fertility was established in a grove ('lucus'). Evidence for the cult comes in the form of a large temple to Feronia and the earliest votive material excavated on the site, dated to the fourth century BC (Barker and Rasmussen, 2000: 311).



Fig. 2. Lucus Feroniae. *Left*: detail of the gradiometer survey results near the forum. The rectangle denotes the area of the GPR survey. *Right*: horizontal slices of the GPR survey results at increasing depths showing the changing nature of the buried remains.

Although scholars have debated as to when exactly the sanctuary became a colony (for example: Bartocchini, 1961; Jones, 1962; Keppie, 1983), certainly by the Augustan period it was named *Colonia Iulia Felix Lucoferonensis*. Excavations have revealed the Roman forum complex with adjacent temple, baths and basilica. Isolated to the west are the remains of an amphitheatre, but little is known about the intervening layout and form of the sanctuary site and the later adjacent Roman colony.

As at Peltuinum, the strategy was to use gradiometer survey to map the unexcavated area of the archaeological park and its immediate environs² and then use GPR to target specific areas. Although the gradiometer results were relatively clear, the buried archaeological anomalies are far more defined in the GPR results (Fig. 2). Individual walls, rooms and spaces can be discerned in the GPR results, aiding our understanding of the nature and form of the buried remains. Viewing different horizontal depth ‘slices’

² The full results of both the gradiometry and GPR surveys will be published in collaboration with Dott. Gianfranco Gazzetti of the Soprintendenza per i Beni Archeologici dell’Etruria Meridionale (now Soprintendenza Archeologia del Lazio e dell’Etruria Meridionale), Dott. Enrico Stanco, Professor Christopher Smith (BSR) and Professor Simon Keay (University of Southampton/BSR).

through the archaeological features offers an opportunity to witness a less static two-dimensional view of the structures and allows the assessment of the condition and height preservation of the buried remains. It is hoped that GPR work will be extended at this site and that the multi-method approach of geophysical surveys will provide the overall picture of the town in its landscape, but also clarify the critical relationship between the sacred and urban areas.

Further details and a full summary of all of the work, both past and present, conducted by the British School at Rome and APSS, can be found on the online database of *Fasti Online* (<http://www.fastionline.org>), as well as on the archaeology research pages of the British School at Rome website (www.bsr.ac.uk/research/Archaeology).

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