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Christoph Rummel, Dave Cowley, Manuel Fernández-Götz,
Jessica Schmauderer

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Burnswark/Middlebie, Scotland, United Kingdom

Iron Age and Roman Landscapes in Southwest Scotland

Research Work between 2020 and 2021

CHRISTOPH RUMMEL, DAVE COWLEY, MANUEL FERNÁNDEZ-GÖTZ,
JESSICA SCHMAUDERER

Romano-Germanic Commission of the German Archaeological Institute (DAI)

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HEAD OF PROJECT

Ch. Rummel (RGK), M. Fernández-Götz (Edinburgh), D. Cowley (HES)

TEAM

H. Blake, A. Grundmann, N. Hannon, J. Schmauderer, R. Scholz

ABSTRACT

As part of a British Academy funded project from 2020 to 2021, the University of Edinburgh, Historic Environment Scotland and the Romano-Germanic Commission of the DAI carried out research between the hillfort of Burnswark and the Roman fort of Birrens in eastern Dumfriesshire, Scotland. As part of the project, the collaborators undertook magnetometry surveys at different scales, which were analysed in combination with LiDAR data, aerial photographs and the datasets from the Scottish National Record of the Historic Environment. This work is supporting a better understanding of the settlement dynamics in this landscape during the early centuries AD.

KEYWORDS

Landscape archaeology, Iron Age, Roman period, borders, geophysical investigations, military camps



Fig. 1: Location of the study area within the United Kingdom (UK)

ZUSAMMENFASSUNG

In einem von der British Academy finanzierten Projekt untersuchten von 2020 bis 2021 die Universität Edinburgh, die schottische Denkmalpflegebehörde Historic Environment Scotland (HES) und die Römisch-Germanische Kommission des DAI die Landschaft zwischen dem Hillfort Burnswark und dem römischen Kastell Birrens im östlichen Dumfriesshire in Schottland. Im Rahmen des Projektes führten die Projektpartner verschieden skalierte magnetische Prospektionen durch, die zusammen mit LiDAR-Daten und Luftbildern sowie den Datensätzen der schottischen Denkmalpflegedatenbank ausgewertet werden. So wird ein besseres Verständnis der Siedlungsdynamik in dieser Landschaft in den ersten Jahrhunderten n. Chr. gewonnen.

SCHLAGWÖRTER

Landschaftsarchäologie, Eisenzeit, Römerzeit, Grenzen, Geophysikalische Untersuchungen, Militärlager

Background and Project Outline

1 Between 2009 and 2018, teams from the Römisch-Germanische Kommission (RGK) of the German Archaeological Institute carried out magnetometry surveys across southwestern [Scotland](#) (Fig. 1). These surveys were undertaken with Scottish project partners using a variety of systems as part of wider Public Private Partnership projects to develop hardware and software solutions for magnetometry prospection, to encourage European landscape archaeology research initiatives¹ and networks, as well as progress internal RGK research initiatives. The range of frameworks within which this work was undertaken means that there is not one overarching research design but rather a series of individual case studies dealing with the Iron Age to Roman period sites and landscapes². In 2021, the RGK project »Limites: Grenzen, Wege und Interaktionsräume« was initiated, focussing on

1 2009–2011: ZIM project between Sensys Magnetometers & Survey Solutions and the RGK funded by the then BMWi (German Ministry for Economic Affairs); 2010: »Magnetische Prospektion archäologischer Kulturlandschaften« (RGK); 2010–2015: ArchaeoLandscapes Europe; 2017–2018: »Raumerschließung und römisch-germanische Interaktionen« (RGK).

2 For previous work, see Beusing 2018; Posluschny 2015.

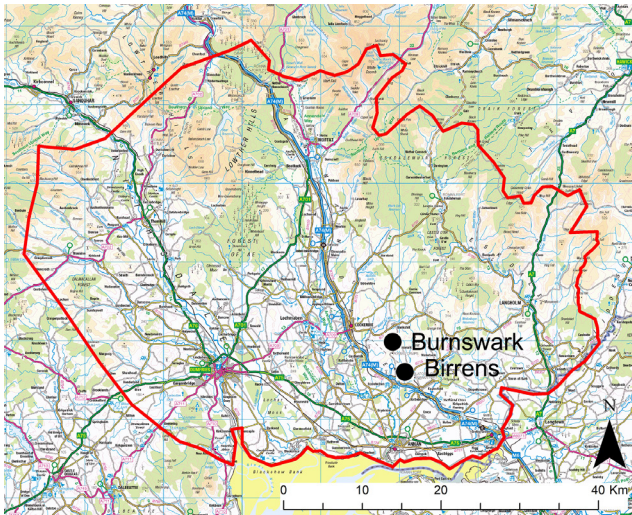


Fig. 2: The overall extent of the study area

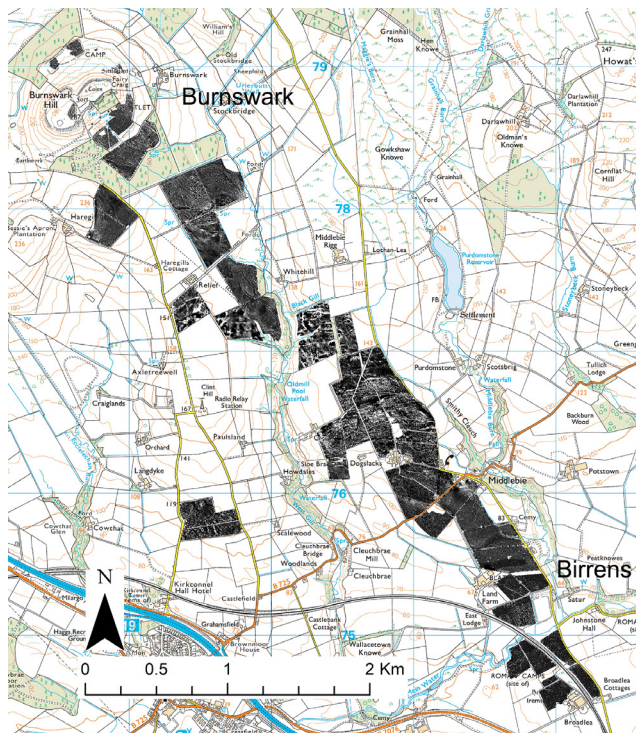


Fig. 3: Areas covered by RGK geophysical survey between Birrens in the south and Burnswark to the north

cultural contacts and interactions in the frontier zones of the Roman Empire. Within the framework of this broader project, magnetometry surveys were carried out in the area around the hillfort of [Burnswark](#) and the Roman fort of [Birrens](#) near Middlebie in Dumfriesshire, southwest Scotland (Figs. 2 and 3).

2 This research incorporated information from earlier projects and was able to create a more extensive dataset to address broader research questions regarding the Iron Age and Roman interactions in southern Scotland. The work was supported by the British Academy funded research project »On the Edge of Empire: Exploring Iron Age Settlement Landscapes in Southwest Scotland«, developed by the authors to contribute to a better understanding of the later Iron Age settlement landscapes of southwest Scotland and the impact of Roman power in the region. Despite the limitations imposed by the COVID-19 pandemic, it was possible to carry out a joint fieldwork season in 2021 with two foci. The RGK team carried out a large-scale magnetometry survey using a vehicle towed array, primarily focussed on Middlebie Hill, where Roman temporary camps had been identified from crop-marking observed during aerial reconnaissance³. At the same time, archaeologists from Historic Environment Scotland (HES) covered a smaller area using a hand-pushed magnetometry unit around Catharine's Hill, an indigenous settlement lying close to a Roman road. In addition, the project included desk-based analysis of remote sensing data in order to identify new sites. The following outlines the main methodologies and results of this multi-scalar approach.

LiDAR Assessment

3 Staff from the University of Edinburgh and HES evaluated freely available LiDAR (Airborne Laser Scanning) data from the Scottish Remote Sensing Portal⁴ with a ground point density of about four ground points per m² in an area of about 1500 km² around Burnswark Hill in southwest Scotland. This area was known to

³ Jones 2011, 275.

⁴ <https://remotesensingdata.gov.scot>, dataset downloaded as 50 cm Digital Terrain Models (DTM) based on point cloud files of 4 points per metre.

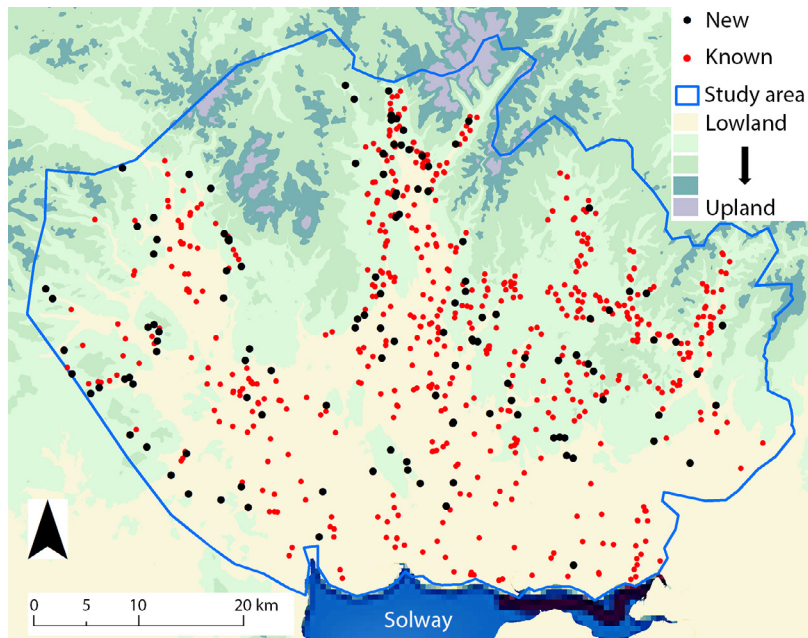


Fig. 4: The distribution of previously known Iron Age sites in the study area and those newly discovered during a LiDAR-based survey in 2021



Fig. 5: Magnetometry survey being carried out in the area between Burnswark and Birrens by the RGK

contain a variety of Iron Age and Roman sites recorded during a range of earlier survey processes, including the area-based survey of Eastern Dumfriesshire⁵. The LiDAR data supported a rapid desk-based survey that has added significantly to the corpus of sites and enhanced the records of known monuments on a systematic basis. The LiDAR assessment identified 134 previously unknown definite, probable, or possible Iron Age settlements across the study area (Fig. 4), as well as further sites from other periods⁶. This work has enlarged the corpus of Iron Age settlement in the study area from 570 to 704, which represents an increase of over 20 %. The LiDAR-based survey also included the ground covered by the geophysical element of the wider project, providing detailed topographic data for those areas.

Magnetometry Surveys

4 The majority of the magnetometry survey focussed on the Middlebie area between Burnswark and Birrens. The RGK team surveyed an area of about 58 ha at Middlebie using a towed array (Fig. 5). This complemented earlier RGK surveys in the vicinity at Burnswark, Scalewood, and Birrens, which had covered a total of 45 ha. The HES team surveyed about 19 ha around Catharine's Hill⁷, an Iron Age settlement lying close to the Roman road that extends roughly north-south through this part of Dumfriesshire, some 22 km north-north-west of Burnswark. In this paper, we focus on the work at Middlebie.

5 The magnetometry survey at Middlebie aimed to fill gaps between earlier surveys and so create contiguous large-area coverage in the areas between the Iron Age hillfort of Burnswark in the north and the Roman fort of Birrens in the south. The notable landmark of Burnswark (Fig. 6), a flat-topped hill bounded by a rampart to enclose an area of ca. 7 ha⁸, has long attracted academic interest because of its prehistoric remains and the two Roman temporary camps in its

5 RCAHMS 1997.

6 For a more extensive discussion of results, see Cowley et al. 2022, esp. 16–19.

7 Blake 2022.

8 RCAHMS 1997, 179–82



Fig. 6: Left – Aerial view of the Burnswark hillfort from the north, with one of the Roman camps in the foreground. Right – The fort at Birrens from the air, showing the western part of the site as differential crop-marking (top right half of image) and the eastern half under pasture (bottom left half of the image)

immediate vicinity. The Roman camps and the hundreds of Roman projectiles found at the hillfort have attracted considerable debate, with interpretations ranging from training camps at an abandoned indigenous hillfort to the remains of a major Roman attack on an important centre of local Iron Age populations⁹. In past fieldwork seasons, the RGK carried out hand-propelled magnetometry surveys on the northern, eastern, and southern slopes and around the base of Burnswark Hill in order to provide a better understanding of the relationship between the Roman installations, the hillfort, and further Iron Age remains in the immediate vicinity¹⁰.

6 Around 4.5 km south of Burnswark, on the north bank of the river Ar-ran, lies the Roman fort of *Blatobulgium*, modern Birrens (Figs. 2. 3 and 6). The fort is mentioned in the Antonine Itinerary¹¹ and has been under investigation since the 18th century. The first excavations were undertaken by the Society of Antiquaries of Scotland in the late 19th century and subsequently by Eric Birley with Ian Richmond in the 1930s, with more systematic research carried out by a team from Newcastle University under the direction of Anne Robertson in the 1960s¹². A geophysical survey carried out by Richard Jones of Glasgow University in 2012 and 2013, as well as fieldwork in 2018 by Ruth Beusing from the RGK, provided further detail on the annexe to the west of the fort, as well as a possible vicus and field systems to its northwest¹³. The work carried out in 2021 as part of the project reported on here is still being analysed in detail. However, interim results confirm that the possible field systems or extension of the vicus extend for only about 200 m to the north of the Roman fort. In places, the 2018 and 2021 RGK surveys identify what may be the line of the road extending north-north-west from Birrens. This is an area where the proposed route of the road has been projected as a straight line in current OS mapping, while geophysical evidence suggests that the actual route takes account of the topography and skirts around the west side of the camps.

⁹ See most recently Reid – Nicholson 2019. For a summary see Breeze 2011.

¹⁰ Beusing 2018, 53; Posluschny 2015, 56–59.

¹¹ Rivet 1970, 42.

¹² Robertson 1975, with earlier references; Birley 1938; Christison 1896.

¹³ Beusing 2018, 52; Jones 2014, 63.

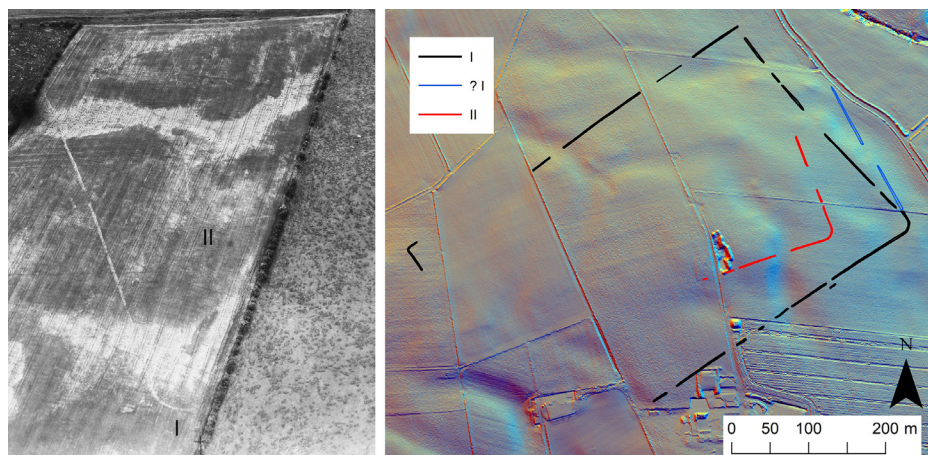


Fig. 7: Camps I and II at Middlebie. Left: Cambridge University oblique aerial photograph taken on 1st August 1970 showing the crop marks of the corners and south sides of the camps and the entrance gap with titulus on the south side of Camp I. Right: Composite mapping of the crop mark evidence from multiple aerial photographs against a background of a multi-direction LiDAR-derived hillshade that illustrates the undulating topography of Middlebie Hill.

A New Roman Temporary Camp on Middlebie Hill

7 Middlebie Hill is a low rounded hill with good all-round visibility, which lies 1.8 km to the north-north-west of Birrens and about 3 km south-south-east of Burnswark (see Fig. 2 and 3). Two Roman temporary camps at Middlebie, which were found during aerial reconnaissance by St. Joseph of Cambridge University in 1949 and 1966, are known as Camp I and Camp II¹⁴. Mapping of the crop marking recorded on the aerial photographic evidence indicates that Camp I enclosed about 17.3 ha, though the south-west corner is not evidenced, the north-west and north-east corners are not clearly indicated, and the north-east end may take one of two lines. The extent of Camp II, which lies at least partially within Camp I, is unknown as the aerial photograph evidence only reveals two sides (Fig. 7)¹⁵.

8 The magnetometry survey carried out in 2021 adds considerable further evidence to the record of the camps on Middlebie Hill (Fig. 8). Firstly, some gaps in the aerial photographic record for the ditches of Camps I and II can now be filled, while also confirming the cropmarked evidence (Fig. 9). Secondly, and more significantly, the magnetometry plot reveals an additional Camp within the interior of Camp II. The evidence for this comprises a ditch that extends from the S side of Camp II, forming a rounded corner before extending north-north-west to define the east-north-east side of a small camp, whose north-north-east side is also represented in the geophysical data. There is an entrance gap with an external stretch of ditch protecting it (known as a *titulus*) mid-way along the east-north-east side – as is also present along the south side of Camp I (see Fig. 7). The new camp is designated Camp III in recognition that it must represent at least a significant remodelling of Camp II, for example with a reduction in size, or an entirely different phase of activity¹⁶. With only parts of two sides identified so far, it is not possible at present to reconstruct the extent of this installation. The chronological relationship between Camps II and III is not clear at present, but it might be established by minimal invasive investigation in the future.

14 St. Joseph 1951; see also in »Sites Explored«, Britannia 28, 1997, S. 410–411 Fig. 8.

15 See Jones 2011, 275; <https://canmore.org.uk/site/67088/middlebie-hill>.

16 E. g. Jones 2011, 87–90.

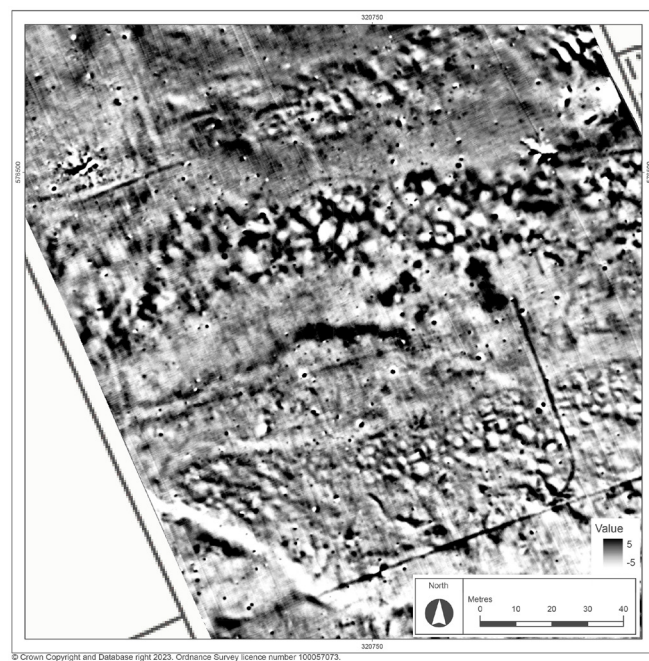


Fig. 8: The magnetometry survey plot shows the evidence for Camp III and the ditch that extends north-north-west from the south-south-east side of Camp II

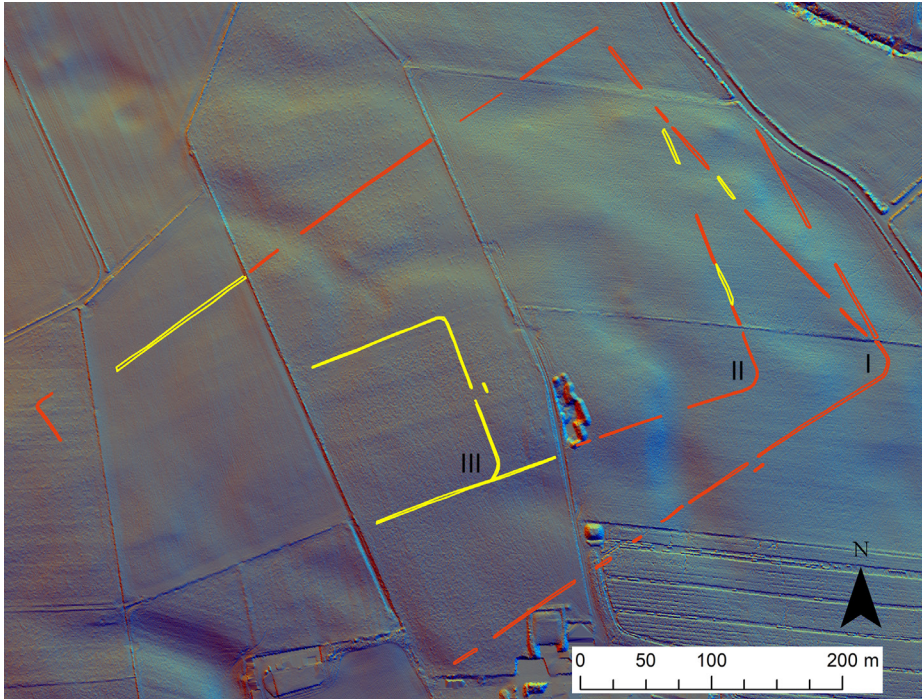


Fig. 9: Preliminary plot of selected crop mark and magnetometry anomalies showing the three camps on Middlebie Hill against a LiDAR-derived multi-direction hillshade visualisation. The additions to the evidence based only on magnetometry are indicated in yellow, illustrating the significant additions to knowledge from the RGK survey

9 There are other linear anomalies in the geophysical survey data. Some of these relate to 19th century field boundaries, others are likely to be trackways, and yet others may be geological in origin, but there is also potential for further elements of the Roman period works on Middlebie Hill to be identified as detailed analysis progressed – including ascertaining if there is further evidence to define the west side of Camp III.

10 The variability in the evidence between the aerial photographic evidence and the geophysics is of interest (Fig. 9) and will be further explored in future. For the crop-marking, the impact of the distribution of responsive crops is self-evident (see Fig. 7, Left), but the reasons for other variability in aspects of the registration in the crop-marking and the geophysics are less clear. For example, the northwest side of Camp I is significantly less clear in the geophysics than from the crop marks. Equally, the extension of the northwest side of Camp I in the magnetometry data suggests a slight dislocation in the projected line to the northwest corner of the camp as recorded from crop-marking. This observation invited a re-examination of the aerial photographs, which has cast doubt on the certainty that this corner is firmly evidenced. The combination of aerial photographic and geophysical survey evidence demonstrates the value of integrated multi-sensor survey and data sources and is an approach that has been adopted to good effect elsewhere in southwest Scotland¹⁷. At Middlebie, specific issues where multiple sources of information may be analysed to explore ambiguities include the northwest and north-east corners and the northwest side of Camp II, for which the aerial photographic evidence is less compelling than for other parts of the Camps. Thus, while in places, evidence from these sources concurs, in other places one or other data source provides unique information. The reasons for this are undoubtedly complex and may include selective truncation of features over time and local variation of cropping and soils.

17 Cowley et al. 2020; Hanson et al. 2019.

Summary and Future Research Directions

11 The geophysical survey work during 2021 is being analysed at the time of writing (Summer 2023) and will be fully reported in the future. However, the interim results presented here have significantly increased current knowledge of the landscape around Middlebie Hill, while the LiDAR-based survey has contributed to our knowledge of settlement patterns in eastern Dumfriesshire and added a significant number of new sites to Scotland's National Record of the Historic Environment (NRHE). From a data understanding and management standpoint, the newly identified sites have increased the corpus of known sites by more than 20 %, representing a significant addition to the record. The successful combination of survey methods demonstrates the benefits of integrated multi-sensor, multi-scalar approaches to the landscape. These contributions to a greater understanding of the Iron Age and Roman period settlement systems and landscapes provide a basis for further joint work between HES, the University of Edinburgh, and the RGK. These learning outcomes can also inform project design to explore other similar landscapes in Scotland, wherever there is an overlap of heritage management requirements, research objectives and current research questions of the RGK.

12 Moreover, the results and methodology of the project reported here have provided a pilot study for overarching landscape archaeological studies. This has directly informed an ongoing follow-up project entitled »Beyond Walls: Reassessing Iron Age and Roman Encounters in Northern Britain« (2021–2024), funded by the Leverhulme Trust¹⁸. Within the framework of »Beyond Walls«, settlement trends and transformations before, during, and after the period of direct Roman presence are being analysed in an area stretching from south of Hadrian's Wall to north of the Antonine Wall. The multi-scalar approach applied within the »Beyond Walls« project uses a variety of landscape archaeological methods in combination with an ambitious dating programme to improve our understanding of the encounters between Indigenous communities and Roman power at the northernmost frontier of the Empire.

13 The work carried out as part of the British Academy funded project »On the Edge of Empire« project discussed here directly informs the analysis of a case study in the »Beyond Walls« project. It has also presented the RGK with an opportunity to connect several magnetometry surveys that had been carried out over the past 10 years into a larger research design. The 2021 survey shows the successful application of this approach, producing significantly more detail on the Roman presence in the study area – most striking of all, the discovery of a previously unknown temporary camp. Future fieldwork around Middlebie will focus on extending geophysical survey coverage to further explore the Iron Age settlement landscape and the impacts of the Roman presence in the areas, including tracing the course of the Roman road from *Blatobulgium*/Birrens towards Burnswark. To this end, further surveys are planned for the coming years, and the methodology is to be applied to other similar landscapes between Hadrian's Wall and the Antonine Wall in the future.

Acknowledgements

14 Our thanks to those who allowed access to the survey and to Dr Rebecca Jones for comments on the paper.

18 Cf. Fernández-Götz et al. 2022.

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CONTACT

Dr. Christoph Rummel
German Archaeological Institute,
Romano-Germanic Commission
Palmengartenstr. 10–12
60325 Frankfurt am Main
Germany
christoph.rummel@dainst.de
Orcid-iD: <https://orcid.org/0000-0001-5770-682X>
ROR ID: <https://ror.org/01fqayw81>

Dr. Dave Cowley
Historic Environment Scotland, John Sinclair House
16 Bernard Terrace
Edinburgh, EH8 9NX
United Kingdom
dave.cowley@hes.scot
Orcid-iD: <https://orcid.org/0000-0001-8197-260X>
ROR ID: <https://ror.org/01h5xyq84>

Prof. Dr. Manuel Fernández-Götz
The University of Edinburgh,
School of History, Classics and Archaeology
William Robertson Wing, Old Medical School
Teiot Place, EH8 9AG
United Kingdom
m.fernandez-gotz@ed.ac.uk
Orcid-iD: <https://orcid.org/0000-0003-2244-4924>
ROR ID: <https://ror.org/01nrxf90>

Jessica Schmauderer, M. A.
German Archaeological Institute,
Romano-Germanic Commission Palmengartenstr. 10–12
60325 Frankfurt am Main
Germany
jessica.schmauderer@dainst.de
Orcid-iD: <https://orcid.org/0000-0002-5151-1033>
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