

## EARTHWATCH INSTITUTE ANNUAL RESEARCH REPORT

**Project title:** Roman Fort on Tyne

**Date completed:** March 2009

**Completed by:** Graeme Stobbs

**Period covered by this report:** 22<sup>nd</sup> June – 18<sup>th</sup> July 2008

Dear Earthwatch Volunteer,

Thank you for the interest you have shown in our research project at Arbeia Roman Fort, at South Shields on the River Tyne in Northeast England. My name is Nick Hodgson, and I am a professional archaeologist employed by the local Museums Service here on Tyneside. For a number of years, my colleagues, Paul Bidwell, Graeme Stobbs and I have had the privilege of conducting research on one of the most important Roman military sites in northern Britain. Perhaps as early as the first century AD, the Romans occupied the site at South Shields because it defended an excellent anchorage. The fort became part of the frontier system instigated in AD 122 by the emperor Hadrian: his famous wall starts only four miles west of South Shields, and runs for 80 Roman miles across the island of Britain.

There are, of course, several forts that can be visited on Hadrian's Wall, but what makes South Shields special is the permanent, large scale excavation that we are carrying out. This means that there are constantly new discoveries at the site, and that we are producing a more detailed picture of the inside of a Roman military base of the first to fourth centuries than has ever been gained before. South Shields is, therefore, a very exciting place to work.

We feel we are at the forefront of developments in our knowledge of the Roman occupation of north Britain, and we are constantly pioneering new techniques to deal with the complex of remains that face us: for no one before has attempted such large area excavations of a multi-period military site.

In 2009, we will be working in a new trench situated in the southern corner of the site, just beyond the fort wall. This trench will encompass the fort ditches, and beyond these an area where the civilian settlement (or *vicus*) may have encroached up to this side of the fort. This project will create an unrivalled opportunity to examine part of this settlement, most of which is still covered by modern housing: hence inaccessible to modern research, and poorly understood compared to the fort interior. There is also a pressing need to construct a new museum for the site and recent feasibility studies have been unable to locate a suitable area outside the boundary of the present fort park. Exploration in this part of the site is, therefore, required to evaluate the level of archaeological impact from any proposed new building and hence determine suitability of this area for any such development.

There is so much to do, and it is for this reason that we have again requested assistance from Earthwatch in order to help us complete the task. The Earthwatch volunteers of 1993-2007 have played an essential role, and impressed us with their skills, enthusiasm, and capacity for hard work. The opportunity is now yours to take part in a research project of the foremost importance, one which is revolutionizing our understanding of the Roman occupation of Britain.

Almost everyone who comes to South Shields, besides getting a lot out of the project, finds that the fort is a pleasant and attractive place to work. The site is set in a quiet residential area with views over the river Tyne and the North Sea. Shops, banks, and all conveniences are near to hand, and both the locals and the site staff are renowned for their hospitality.

There will be an excursion to the most impressive stretches of Hadrian's Wall along with a chance to visit either local museums or the cities of York, Durham or Edinburgh. In short, I am sure that besides finding our research project challenging and exciting, you will also be delighted with this fascinating north-eastern part of Britain.

Yours sincerely,

Dr Nick Hodgson, MA, PhD, FSA  
Principal Keeper of Archaeology

## Reporting on objectives

**Objective 1:** Discovery of, and information about, the earliest Roman settlement at South Shields

**Has work started on this objective?** Y: Completed in this area

**Progress report on this objective:** Work in 2008 helped to establish that there were no major structural remains belonging to this phase within the research area.

A general picture of the landscape that existed prior to the first stone fort being constructed was revealed: being an open landscape with vegetation, most probably grass.

**Objective 2:** Elucidation of the plan of the first stone Roman fort to be built at South Shields in c. AD 160

**Has work started on this objective?** Y: Completed in this area

**Progress report on this objective** In 2008 a further construction pit was examined which was similar in character to those revealed in 2007.

**Objective 3:** Investigation of pre-Roman Iron Age remains

**Has work started on this objective?** Y: Ongoing

**Progress report on this objective:** In 2008 the Iron Age horizon was revealed and recorded. Evidence of ridge and furrow cultivation, of a type known as 'Cord-Rigg', was seen to exist. Two alignments, separated by a boundary, were noted suggesting that the 2008 research area was situated over part of two separate and distinct fields.

Similar furrows were seen during previous Earthwatch research during the late 1990s in the former research area located to the south-east (Hodgson et al. 2001). Post-excavation analysis has shown that there is a correlation between the field boundary revealed in 2008 and the edge of the furrows seen in the former research area (Fig. 4). Datable material from these levels is lacking and work carried out in 2008 has raised the possibility that the evident field systems may pre-date the Iron Age settlement in this part of the site as they perhaps belong to the late Bronze Age.

**Objective 4:** Enhancing knowledge of the system of supply to the fort and port of South Shields by the recovery of quantifiable material from stratified and closely datable contexts **Has work started on this objective?** Y: Completed in this area

**Progress report on this objective:** The team members recovered a small amount of Roman material, mainly pottery and bone from an area examined close to the remains of granary

**Objective 5:** To recover the complete plan of the accommodation within the third century supply-base.

**Has work started on this objective?** Y: Completed in this area

**Progress report on this objective:** In 2008 work towards this objective took the form of uncovering a further portion of one of the granaries belonging to the third-century supply- base, granary C15: part of which had remained buried due to the logistics of site access. However, changes to the site architecture/infrastructure enabled the remaining part to be uncovered and recorded. Indeed, as a prelude to restoring this area of the site for public display all three granaries which lie within the 2005-8 research area had their records updated, by photography and drawing, before being backfilled and protected for the future over the winter of 2008-9.

**Objective 6:** Definition and extent and date of the extra-mural activity

**Has work started on this objective?** Y: Completed in 2007

**Progress report on this objective:** In 2008 no work was undertaken in respect to examining the form and nature of the extra-mural activity of the fort.

## Non-technical summary of results

Work continued within the eastern quadrant of the original 2<sup>nd</sup> century fort (Figs 1 & 2; Plates 1-8 in appendix), building upon information gleaned in previous seasons (2005-7), examining the pre-fort horizon.

### *Discovery of, and information about, the earliest Roman settlement in South Shields*

Work in 2008 began with a search for traces of evidence of the earliest Roman activity within the research area. This involved careful and painstaking cleaning of the whole area by the team members so that subtle changes in surface colour and texture could be seen. The results were very positive and a number of possible features were seen. Most of these had the appearance of post-holes, as their fills showed up as a different coloured material against the cleaned surface. Team members then began to examine these, initially by applying a half-section technique, where one side of the *in situ* fill of the post-hole was excavated and the remaining portion was then drawn in profile. Various team members then examined one or two potential post-holes each and were taught how to excavate and record these, including the completion of the on-site pro-forma record sheets.

Examination of the post-holes, once excavated, initially suggested that some were aligned with each other and may have formed the outline of a possible building, though with some apparent gaps. However, closer examination showed that many of these holes were residual from later phases and had been cut well down into the earlier surface. A full understanding of the few remaining post holes will not be known until post-excavation work is completed.

The cleaning of the pre-fort ground surface by the team also helped to establish its character. It was seen to have a distinctive dark reddish-brown colour, especially when the surface was moist. It was found to be made up of yellow sand, the upper 50mm of which was stained a reddish-brown colour from the former presence of vegetation. This former vegetation, which was presumably grass, had been growing there prior to the first stone fort being constructed, sometime around AD 160. Once construction began the surface was mostly buried by the various construction layers of an earthen bank, which was built against the fort's outer wall, and by a cobble and pebble street, that ran around the inside of the fort's defences. The vegetation, now sealed, began to decay leaving the darker colouration that was visible. Such deposits are referred to as having a degraded turf line, and indeed where part of this ground surface had been seen to have been cut out and stacked in neat rows, as a prelude to the construction of the foundation for the fort wall, the pieces are commonly referred to as turf blocks.

Also seen within this pre-fort ground surface, and distributed in no particular pattern, were small mounds made up of a compact fine sand. Most of these were examined by members of the 2007 field season and the remainder during 2008. At present they remain an enigma, as archaeologically they are nothing more than small mounds of compacted sand within the pre-fort horizon. Suggestions range from ant hills, to some kind of effect caused by the presence of small trees.

The work of the team members in 2008 completes the examination of the pre-fort ground surface in this area and although no datable artefacts were found within the sand it is clear from both the recent work and from that undertaken previously that the sequence of this sand layer begins around about the mid-Iron Age and ends with the construction of the first stone Roman fort.

### *Elucidation of the plan of the first Roman Fort to be built at South Shields in c. AD 160.*

The work of the Earthwatch team members in 2007 greatly increased our knowledge and understanding of the plan of the first Roman fort to be built here and also revealed much additional detail about the construction sequence and the techniques that the military employed. In 2008, team members helped reveal a further piece of evidence in the form of an oval shaped pit, measuring approximately 2.00m by 1.50m by 0.30m deep. This pit was similar in size and character to those found in 2007 and undoubtedly belongs to the construction phase of the first known fort of around AD 160.

The purpose of such pits is uncertain and it appears that they were dug and then backfilled in a short space of time. The fill of the 2008 pit, when carefully excavated by team members, was found to have been backfilled with a mixture of the material through which it was dug: including the degraded remains of the pre-fort ground surface, seen as pieces of turf blocks. Also within the backfill were three very small sherds of Iron Age pottery, which were perhaps residual pieces that may have come from the disturbance of the Iron Age soil horizon. Such pottery is very rare from the Iron Age levels at South Shields and as such represents an important find.

### *Investigation of pre-Roman Iron Age remains*

Initial work upon the pre-Roman Iron Age levels in 2008 involved the team members removing the darker sand level of the pre-fort ground surface down to the underlying yellow sand to look for traces of early cultivation. Previous research work on the site by Earthwatch teams in the area immediately south-east of the current excavation had revealed traces of ard marks (an ard is a simple type of plough). There, the use of a plough or ard had cut deeper through the darker sand and the point of the ard had pulled this darker material into the clean yellow sand. Changes in the direction of the

ploughing over time could be seen from the criss-cross pattern of the marks.

However, in 2008, despite the careful cleaning of the yellow sand by the team, no trace of ard marks was seen suggesting that this particular area of pre-fort ground had not been cultivated by the use of a plough or ard.

Once it was established that there was no evidence of ard cultivation the yellow sand was excavated by the team members to reveal the Iron Age horizon beneath. This consisted of a light-grey coloured sandy clay, on the surface of which were the remains of hand-dug narrow ridges and furrows belonging to an Iron Age cultivation practice, termed cord-rigg cultivation. This was where fields used for the growing of crops (wheat, barley, oats, rye and also probably vegetables) had hand-dug ridges (for planting) and shallow furrows (for drainage). A similar form of cultivation returned to parts of the British landscape in the medieval period (and remained until Napoleonic times) but with broad ridges often over 3 metres in width.

The finding of this evidence by the team members in 2008 was of major importance as the opportunities to examine extant field systems of Iron Age date is extremely rare therefore providing a unique opportunity for study. The delicate cleaning of the surface by the team had brought out these features, and two separate alignments of ridges and furrows were seen (Fig. 3). At the south-western end of the excavation area the furrows were aligned northwest-southeast, while at the north-eastern end they were aligned southwest-northeast. Also seen for the first time at this site was a strip of ground separating the two areas of furrows, which is usually termed a 'headland'. This was certainly the boundary between two adjacent fields and a very important discovery.

As part of the research, an examination of the plan of similar furrows (Fig. 4), which were found by Earthwatch teams in 1993 & 4 in the former research area to the southwest, revealed that the field division found this season lined up with the limit of the northwest-southeast furrows found previously. At that time no furrows were seen beyond that limit, although the roundhouse sat where there would have been another field.

The evidence also shows that cultivation of the fields had ended before the sand layer had accumulated over them, as the lines of ridges and furrow were disturbed. This may be an effect of attempting to lay out further ridges at right angles to those that existed or from the abandonment of ridge cultivation: which would have led to the ridges decaying naturally. Further evidence to suggest the latter came from the existence of small mounds scattered randomly across the fields.

These mounds upon the Iron Age horizon were found to be similar in size and shape to those encountered within the pre-Roman Iron Age sand (described above, 4.1.1) except that they were formed from was the same material as that of the ridges. Like the other mounds, and despite careful examination by team members, their exact nature and function is still a mystery. Perhaps they represent where trees or large shrubs had existed within the landscape. Unfortunately the nature of the soil does not allow organic residues to survive for scientific analysis.

An alternative theory to the abandoned cord-rigg cultivation, within both the 2008 area and in the previous research area, is that this cultivation may date instead to the Bronze Age, and that the Iron Age settlement, consisting of the previously encountered roundhouse (fig. 4), may have been imposed upon the previously abandoned field system. This is now evident from re-examining the previous evidence, where an Iron Age boundary gully that cuts across the earlier furrows.

The discovery of the field systems during the 2008 season is very important as it provides new evidence of the complexity of land division surrounding an Iron Age settlement, while also providing evidence that there are no further roundhouses belonging to the settlement in that area. The Earthwatch teams contributed tremendously towards completing the research in this area. Examination of a portion of the Iron Age layer produced evidence of carbonised plant remains (which will eventually be sent for analysis) and a few residual flints (mainly flakes from nodules and some possible scappers).

*Enhance knowledge of the system of supply to the fort and port of South Shields by the recovery of quantifiable material from stratified and closely datable contexts*

The team members recovered a small amount of Roman material, mainly pottery and bone from an area examined close to the remains of granary C15 (see below, 4.1.5).

*To recover the complete plan of the accommodation within the third century supply-base*

Earthwatch team members helped uncovering a further portion of one of the granaries belonging to the third-century supply-base - granary C15 - part of which had remained buried due to the logistics of site access. However, changes to the site infrastructure enabled the remaining part to be uncovered and recorded.

The team members also recorded the standing stratigraphic section that lay along the north-

western edge of the excavation. This was achieved by first cleaning the multiple layers to reveal their colour and texture, after which each layer was drawn, examined and recorded. This successfully completed the exploration and recording of the visible remains of the granaries and the surrounding layers, which were subsequently protected by a plastic membrane before being backfilled. This is a method of preservation which will leave the granaries in this corner of the site and their surrounding layers in a naturally sustainable condition until resources allow for further investigation.

#### *Definition of the extent and date of the extra-mural activity*

In 2008 no work was undertaken in respect to examining the form and nature of the extra-mural activity of the fort.

Also, as a prelude to completing the research in this area (after which the area will be restored for public display) the team members assisted in updating the records of the south-eastern ends of the three granaries that protrude into the research area, by means of photography and drawing.

#### **How do these data contribute to achieving conservation impacts?**

Archaeological remains are often as endangered and threatened as the present natural environment. The Roman fort at South Shields is a Scheduled Ancient Monument and part of the UNESCO Hadrian's Wall World Heritage Site. The Hadrian's Wall World Heritage Site requires careful conservation and management to ensure that as a cultural resource it will be available for future generations. Yet no-one knows for certain just how much of the archaeology of Hadrian's Wall has survived, and detailed work on the archaeology of the Wall and its forts is very much in its infancy. The *Roman Fort on Tyne* project, the most extensive sustained excavation of the interior of a Roman fort in Britain, aims to provide a more secure basis of knowledge which can inform future plans for the management and conservation of the fort at South Shields and the rest of the World Heritage Site. For example, analysis of the results from the excavation of the *vicus* (civil settlement) outside the fort walls has revealed the fact that the plan of the entire settlement is likely to survive at a depth of between 1.5 and 2m beneath the buildings and streets of modern South Shields. Yet this area outside the walls is not included in the scheduled ancient monument area and does not have statutory protection. The knowledge of the surviving ancient environment gained from The *Roman Fort on Tyne* project is passed on to conservation officers of the local authority who will use the information to ensure that future building development and intrusive work will only take place after appropriate archaeological mitigation and recording of threatened remains.

#### **What is/ are the significance/ benefits of your research at the following levels?**

- **Local (to the area of the research site)**

Fundamental significance; as it provides educational resource for local schools and students, attracts visitors to area of high economic deprivation and unemployment, provides opportunities for training programmes for long-term unemployed, provides employment, and raises the national and international profile of South Tyneside.

Between January 2007 and September 2008 the research site has been the focus of a vocational training scheme for locally based undergraduates, graduates and post-graduates being part of a Cultural Sector Development Initiative funded by the Arts Council Northeast using money from the European Social Fund (ESF).

- **National / Regional**

The project contributes to the management and conservation of Hadrian's Wall World Heritage Site; sets standards for archaeological research, publication and training; provides a resource for archaeological departments of two regional universities (Newcastle and Durham); publishes archaeological data of national significance: see, for example, frequent citations of evidence from South Shields in the most recent book length scholarly treatment of Roman Britain (Mattingly 2006).

- **International**

The results of the excavations have attracted international attention among professional archaeologists and those concerned with the presentation and display of heritage sites.

## Communication of results

**Printed:** peer reviewed scientific publications; books / book sections; reports, management plans or policies; fact sheets, brochures, leaflets, pamphlets, posters, academic dissertations, annual reports, proceedings of conferences or workshops; letters; newsletters.

Publication type: **Academic Journal**

Author: **N Hodgson**

Full reference: **'After the Wall-Periods: what is our historical framework for Hadrian's Wall in the twenty-first century?' in P. Bidwell (ed.), Understanding Hadrian's Wall (Papers from a conference held at South Shields, 3-5 November 2006, to mark the publication of the 14<sup>th</sup> edition of the Handbook to the Roman Wall), South Shields, 2008, pp11-23.**

Audience: **Popular/scholarly**

Acknowledged Earthwatch? Y/N: **N**

PDF submitted? Y/N: **Y**

Publication type: **Academic Journal**

Author: **N Hodgson**

Full reference: **'The Development of the Roman Site at Corbridge from the first to third centuries AD' in *Archaeologia Aeliana* ser. 5, 37 (2008), 47-92.**

Audience: **Popular/scholarly**

Acknowledged Earthwatch? Y/N: **N**

PDF submitted? Y/N: **N**

Publication type: **Academic period Journal**

Author: **N. Hodgson**

Full reference: **a summary account of the 2008 work in 'Roman Britain in 2008' *Britannia* xl (published December 2008)**

Audience: **Popular/scholarly**

Acknowledged Earthwatch? Y/N: **Y**

PDF submitted? Y/N: **Y**

Publication type (from the list above): **Newsletter**

Author: **The Arbeia Society, an independent charitable trust which promotes interest in the Roman archaeology of Tyneside and northern Britain in general, continues to publish the *Arbeia Magazine* quarterly. This contains illustrated and accessible accounts of recent findings, and is sent to members of the Arbeia Society worldwide (not to be confused with *The Arbeia Journal*, a peer-reviewed academic periodical which the Arbeia Society also helps to finance).**

Full reference:

Audience: **Popular**

Acknowledged Earthwatch? Y/N: **Y**

PDF submitted? Y/N: **N**

**Mass media:** broadcast production; film; TV, radio, print (newspaper/ magazine coverage); Press releases; press conference; interview, article creation; press trip

Publication type: **Magazine coverage**

Author: **N. Hodgson**

Title: **'Rebuilding a Roman Fort\*' *Current Archaeology* 215 (2008), pp34-39**

Audience: **Popular**

Acknowledged Earthwatch? Y/N: **Y**

PDF submitted? Y/N: **Y**

**\* In November 2008 this article was short listed for the Current Archaeology Awards under the category Best Research Project, and subsequently was voted the winner. In February 2009 PI Paul Bidwell accepted the award at a presentation held in Cardiff.**

**Meetings and conferences:** presentations/ lectures; conferences; workshops; training sessions; discussions; local community meetings and events.

Publication type: **Training sessions**

Author: **Graeme Stobbs and others**

Title: **various aspects of the research excavations**

Audience: **students attending vocational training during 2008 as part of a Cultural Sector Development Initiative funded by the Arts Council Northeast using money from the European Social Fund (ESF).**

Acknowledged Earthwatch? Y/N: Y  
PDF submitted? Y/N: N

**Educational resources:** lesson plans; resource packs

Publication type: **Training sessions**

Author: **Ray McBride**

Title: **Processing Roman pottery**

Audience: **archaeology students from Newcastle University School of Historical Studies undertaking undergraduate module in Roman Pottery (Tutor Dr Kevin Greene)**

Acknowledged Earthwatch? Y/N: Y

PDF submitted? Y/N: N

## Educational Opportunities

Does your project directly or indirectly involve the following groups in your research topic?

- Local communities
- Students
- Early career scientists
- Other groups

Our research work enhances the educational value of the site and also involves the above groups both directly and indirectly. Alongside the site museum, the various full-scale reconstructions, the Timequest interpretative exhibition, the ongoing research excavations and the displayed consolidated remains form the fundamental element in the range of amenities that make the site informative, enjoyable, and educational to school parties and adult visitors alike. Attached to the museum is a small but dedicated team of Learning and Outreach officers who manage and organise events involving local communities and schools, and also, through outreach, take the results of our work and the benefits of our museum to those who find it impossible to visit in person

At least three students used the site as a basis for their A-level projects. One in particular featured the comparison of the Iron Age remains located and excavated by previous Earthwatch teams in the early 1990s with similar sites within the region.

A specific pre-field season talk is given on site to the general public by one of the project Principal Investigators, which is supplemented by a post-season talk, both of which outline the main results of the research.

Between January 2007 and September 2008 the research site has been the focus of vocational training scheme for locally based undergraduates, graduates and post-graduates being part of a Cultural Sector Development Initiative funded by the Arts Council Northeast using money from the European Social Fund (ESF) and aimed at providing the opportunity to learn about our research methods and principles and provide valuable practical experience to those who are potentially heading into a career in archaeology.

An Iranian student, who was on placement as a Positive Action Trainee (a scheme to get individuals who would perhaps not choose a career in museums into museum management), participated in the project from the perspective of looking into the understanding and workings of the excavation as part of the overall activity and processes associated with the site.

### **How does your research help these groups better understand the conservation of a sustainable environment?**

As well as the scientific results of our research being interesting and important to the international scientific community specialising in Prehistoric and Roman Archaeology, the results of the project are also applied for the benefit and well-being of the local community in that it improves the setting of this urban archaeological park, re-acquainting residents with an important aspect of their heritage, and attracting more visitors from outside the area to promote tourism in order to supplement the local economy and sustain the local environment as prescribed within the World Heritage Site management plan.

### **Has your project contributed to the completion of Masters' theses, or other educational research findings?**

Our research has also been used by some of the students participating in the Arts Council/ESF funded vocational training scheme, as part of their undergraduate dissertations.

Further, as our research is eventually disseminated to a wider, global, audience it is possible that our work has indirectly helped many postgraduate scholars.

## **Acknowledgements**

The Principal Investigators would like to acknowledge the generous support of the Arbeia Society, and of course EARTHWATCH and its members, without which the 2008 programme of research could not have taken place. A warm thank-you also to all the staff of TWM Archaeology who supervised particular aspects of the project or contributed to the smooth running of things, in particular Alex Croom, Eddie Dougherty, Liz Elliott, and Ray McBride. Indispensable volunteer supervision was provided by numerous individuals, especially Jim Frazer, Laura Moiser, Rebekah Watson, Jane Wallace. Jim Frazer also assisted greatly with the post-excavation. Various students participating in their field training as part of the Arts Council/ESF funded scheme helped out throughout the season, including Mariska Koenes, Natalia Foo, John Paul Marquis, David Nelson, Diana Pomme, Vicky Power, Lorna Trayler, Ilona Veldhuis, Marlou Wijk, Jamie Lee Wilson

### ***Bibliography***

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