

L'AEROFOTOTECA NAZIONALE RACCONTA...

The Role of the Air Photographic Archive at the ICCD in Interpreting the Archaeology of the Tiber Delta and the Isola Sacra

by *Kristian Strutt*

Between 1998 and 2012, the Portus Project investigated the archaeology of Rome's Imperial port and its surrounding area through archaeological fieldwork. The project, directed by Prof. Simon Keay at the Department of Archaeology, University of Southampton, was a collaborative effort involving the Universities of Southampton and Cambridge, the British School at Rome and the Parco Archeologico di Ostia Antica together with other organisations. A significant portion of the project work in the field consisted of non-intrusive archaeological survey, comprising geophysical survey (Fig. 1), fieldwalking and topographic survey (Fig.2). The first years of the project (1998-2004) consisted of geophysical survey and fieldwalking around Portus and the environs of the Imperial port (the results of which are published in Keay et al. 2005). Subsequent survey (2008-2012) was also conducted in the area between Portus and Ostia Antica, the Isola Sacra, to investigate the nature and extent of the archaeological remains linking Portus to the city of Ostia (results of the Isola Sacra survey are due for publication this summer in Keay et al. forthcoming). The project covered much of the overall landscape with geophysical survey (Fig. 3), and the work provided an opportunity for utilising an integrated approach to landscape



Fig. 1 - Fluxgate gradiometer magnetometry being carried out on the Isola Sacra (photo: K. Strutt).

archaeology, drawing not only on the main field methods used in the profession, but using other datasets available from archive sources, including satellite imagery, LiDAR and archaeological database entries, work which also formed the basis of the author's doctoral research (Strutt 2019). Use of archive data also provided the opportunity to access and analyse the air

photographs held by the ICCD, providing the most useful dataset for the archive-based analytical work, and results crucial to the full interpretation of the archaeology between Portus and Ostia.

Previous Use of Air Photos in the Tiber Delta

The use of air photographic images for archaeology is not



Fig. 2 - Topographic survey being conducted using a GPS with base station and rover (photo: K. Strutt).

new, with pioneering work being conducted in the first years of the 20th century in particular (Crawford 1928; Crawford and Keiller 1928; Guitoli 2003), and a balloon flight forming the basis of early aerial photographs of the ancient city of Ostia in 1911 (Shepherd 2006). The nature of the development of aerial photography, and in particular the advent of the technique for military use, meant significant developments in the technology. The intense action in the Mediterranean during World War II also meant that a large number of photographs were taken by different air forces, principally the Luftwaffe, the Royal Air Force and US Airforce (Shepherd 2013; 2013a). The location of the Tiber delta and Portus means that the area formed the focus of intensive reconnaissance photography during WWII, much of which has been deposited at the ICCD. The photographs were taken from different altitudes, under different lighting conditions, and at different times of the year, allowing the researcher to analyse material under varying ground conditions, where sub-surface archaeology may show up only in certain seasons or under particular crops. These air photographs in the area of the Tiber delta formed the focus in some of Bradford's (1957) work, demonstrating the form of the Trajanic Harbour at Portus and the associated Claudian Canal. The approach devised by the Portus Project in reassessing this landscape also provided an opportunity to integrate the air photographic records held at the ICCD.

The Portus Project and the Survey of the Isola Sacra

The primary use of the air pho-

tographs from the Aerofototeca at the ICCD was to secure high and low altitude photographs for the area surrounding Portus. Different swathes of photography, digitised in the archive, were geo-referenced using ArcGIS software, to form a background of air photos for the project (Fig. 4). Many of the archaeological features in the vicinity of Portus showed in these images, in which the RAF photos were used. Features showing in the photographs were digitised, allowing the overlay of these features with our geophysical survey interpretations. These, together with the interpretations of satellite imagery, overlaid with data from the archaeological gazetteer, formed the basis of the analysis and interpretation of the landscape (Keay et al. 2005; Keay et al. 2014; 2014a; Keay et al. forthcoming; Strutt 2019).

While this methodology provided contextual information on a number of sites and features in this landscape, many showed both in the results of the geophysical survey and in the air photographs. One particular

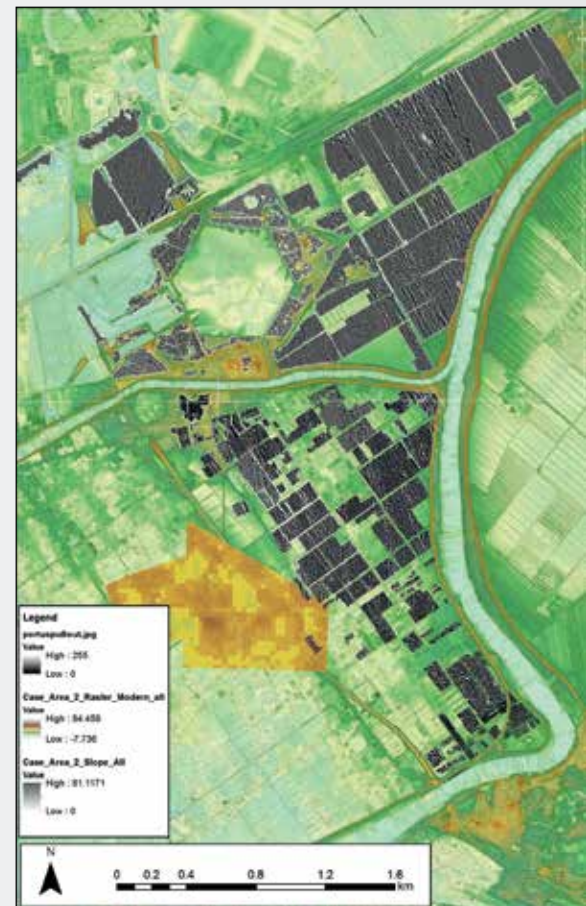


Fig. 3 - Coverage of geophysics for the area of Portus and the Isola Sacra, showing the magnetometry and the large-scale landscape approach taken by the research.

example illustrates the absolute necessity of integrating the historic air photographs with the project survey data. Our survey of the Isola Sacra had provided



Fig. 4 - A composite of RAF air photographs from the Aerofototeca of the ICCD.

evidence of a possible ancient canal crossing the area between Portus and Ostia (Keay et al. 2011). As the survey progressed it was not always possible to gain access to survey particular areas of the landscape. Analysis of modern satellite imagery proved that much of the survey area had been built on in the latter part of the 20th century. It was to the historic air photographs that the project team turned in an effort to glean as much evidence of the archaeology as possible. The RAF photographs showed very little on the Isola Sacra, in direct contrast to the area around Portus. However, investigation of the photographs taken by



Fig. 5 - Photograph taken by the Aeronautica Militare (AM_1957_149_1_23_62640_0 a) showing Portus, Ostia and the Isola Sacra. It is these photos that show, faintly, the line of the Roman canal across the Isola Sacra.



Fig. 6 - Composite image with the results of the magnetometry overlaid on the Aeronautica Militare air photo, showing the coverage of the geophysics, and how the tracing of the east side of the canal would not have been possible without integrating methods.

the Aeronautica Militare in 1957 revealed photographs that indicated a faint linear feature across the study area (Fig. 5). As the survey progressed on the ground, the results of the magnetometry were integrated in our GIS with the images taken by the Aeronautica Militare, showing that the feature marked the eastern side of an ancient Roman canal, traversing the Isola Sacra from Portus to the bank of the Tiber opposite Ostia. Varying access to land meant that much of this area could not be surveyed, and thus the air photographs formed a critical component of the analysis and interpretation for the archaeology of the area (Fig. 6).

The archives of the Aerofototeca at the ICCD proved crucial to the full analysis of this important archaeological landscape, and the combination of different techniques provided a strong methodological approach to the study of the area.

REFERENCES

- Bradford, J.S.P. (1957), *Ancient Landscapes: Studies in Field Archaeology*. London; G. Bell and Sons.
- Crawford, O. G. S. (1928) *Air Survey and Archaeology*. Norwich: Ordnance Survey.
- Crawford, O. G. S. and Keiller, A. (1928) *Wessex from the Air*. Oxford: Clarendon Press.
- Guaitoli, M. (2003) *Lo sguardo di Icaro. Le collezioni dell'Aerofototeca Nazionale per la conoscenza del territorio*. Roma: Campisano.
- Keay, S., Millett, M., Paroli, L. and Strutt, K. (2005) *Portus*. London: The British School at Rome and Soprintendenza Archeologica di Ostia.
- Keay, S., Millett, M. and Strutt, K. (2014) 'The canal system and Tiber delta at Portus. Assessing the nature of man-made waterways and their relationship with the natural environment', *Water History*, 6(1), 11–30.
- Keay, S., Parcak, S. and Strutt, K. (2014a) 'High resolution space and ground-based remote sensing and implications for landscape archaeology: the case from Portus, Italy', *Journal of Archaeological Science*, 52, 277–292.
- Shepherd, E. J. (2006) 'Il "Rilievo Topofotografico di Ostia dal Pallone" (1911)', *Archeologia Aerea* 2, 15–38.
- Shepherd, E. J., Leone, G., Negri, A. and Palazzi, D. (2013) *La collezione aerofotografica British School at Rome (BSR) conservata in ICCD-Aerofototeca Nazionale (AFN). Report 2013 sullo stato di avanzamento delle attività*. Rome. Ministero dei Beni e delle Attività Culturali e del Turismo.
- Shepherd, E. J., Palazzi, D. S., Leone, G. and Mavica, M. M. M. (2013a) 'La collezione c. d. USAAF dell' Aerofototeca Nazionale. Lavori in corso', *Archeologia Aerea*, 6, 13–32.
- Strutt, Kristian, David (2019) *Settlement and land use in the Tiber Delta and its environs 3000 BC – AD 300*. University of Southampton, Doctoral Thesis. <https://eprints.soton.ac.uk/433953/>

ABSTRACT

The air photographic archive of the ICCD provides an essential resource for archaeological research in Italy and the Mediterranean. This paper reviews the use of archive material for the Portus Project, and its role in interpreting the ancient landscape of Portus and Ostia at the mouth of the river Tiber, where analysis of air photos was integrated with geophysical survey and archaeological fieldwork.

KEYWORDS

ARCHAEOLOGY; GEOPHYSICS; PORTUS; MARITIME ARCHAEOLOGY; ROMAN; LANDSCAPES; MAGNETOMETRY; AIR PHOTOGRAPHS; ICCD

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