



Arts & Humanities
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**REPORT ON TOPOGRAPHICAL SURVEY & DEM
MODELLING AT CASTELPORZIANO**

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Introduction

High-precision topographic modelling in the coastal zone of Castelporziano has been in progress since 2005, beginning with the area between the westward boundary of the estate ('Villa del Confine') as far as the eastern limit of the *vicus Augustanus*, which was covered during the September 2005 and April 2006 fieldwork seasons. This was followed in the September 2006 fieldwork season by a 60 metres margin beyond the eastern limit of the *vicus Augustanus* together with a 100 metres zone on the inland (northern) side of the Via del Telefono, along its entire length, so as to include the line of the Via Severiana and its associated terrain.

In April 2007 a second topographic model was initiated in the area in and around the so-called fish farms (CPS D5 and D6), c. 1.2 kms south-east of the Vicus, to include a transect from about 200 m. inland to the ancient coastline. A series of fixed points along the intervening stretch of the via del Telefono link the two areas.

In 2008 season, the collection of data for the second model continued from the 9th to 19th April. When we arrived, however, major forestry work was being carried out by the estate along the via del Telefono from Tor Paterno as far as the Via delle Riserve Nuove, trimming the overhanging trees and using heavy-duty machinery to clear a 5 m. wide margin of the shrubbery on either side of the road. This seemed likely to destroy all the fixed points which had been set up along the road in the vicinity of the fish farms (and in fact all but W128 were destroyed) so the first priority was to use them while they still existed to survey the course of the Via Severiana and its branch towards the sea, and accessible areas on both sides of the road, while also setting up some alternative points away from the danger zone. Work then continued on the seaward side of the fish farms, around D4 and towards D3.

The current state of the whole model, comprising the two areas, is reproduced in Fig. 1.

Aims and Objectives

The two parts of the model aim to map both the archaeological and natural features of the present landscape in order to form the basis for both the more detailed documentation and analysis of Roman occupation along the ancient sea front (c. 200 BC-c. AD 500) and the study of its environmental and geomorphological context (carried out by Prof. Helen Rendell, Loughborough University).

It is intended to use the models to explore and explain how the architecture of the Roman villas, the associated *vicus Augustanus* and a possible harbour responded to the continuing evolution of the coastline and to the environmental changes associated with this development.

Methodology

Since the site is heavily forested, the most feasible way of recording the surface co-ordinates is using a total station and a prism. The dense foliage impedes the use of a reflectorless laser setting for the total station, differential global positioning system and also remotely sensed images.

Instead a traditional topographical survey is conducted where one person operates the total station while a second person positions the prism on the surfaced to be surveyed in a grid-like formation with 0.3-5 metres intervals between each measurement.

The Total Station employed is a Leica TPS400

Results

The area surveyed this season around the so-called fish farms (CPS D4-D6), including a ca. 120 by 100 metres section north of the Via del Telefono, now covers an area of approximately 53.000 square metres within which 3160 points have been taken and used to create a three-dimensional digital elevation model (DEM).

The topographical survey of the fish farms in its current state is reproduced in Fig. 2.

The course of the Via Severiana together with the three-dimensional digital elevation model (DEM) created on the basis of the topographical survey is reproduced in Fig. 3.

Future work

Further survey work is planned around the so-called fish farms, especially to the west (CPS D3) and on the north side of Via del Telefono, so as to include the line of the Via Severiana.

More work is also needed beyond the eastern limit of the *vicus Augustanus* for a further 100 metres in order to place it in relation to the next adjacent villa (CPS C1).

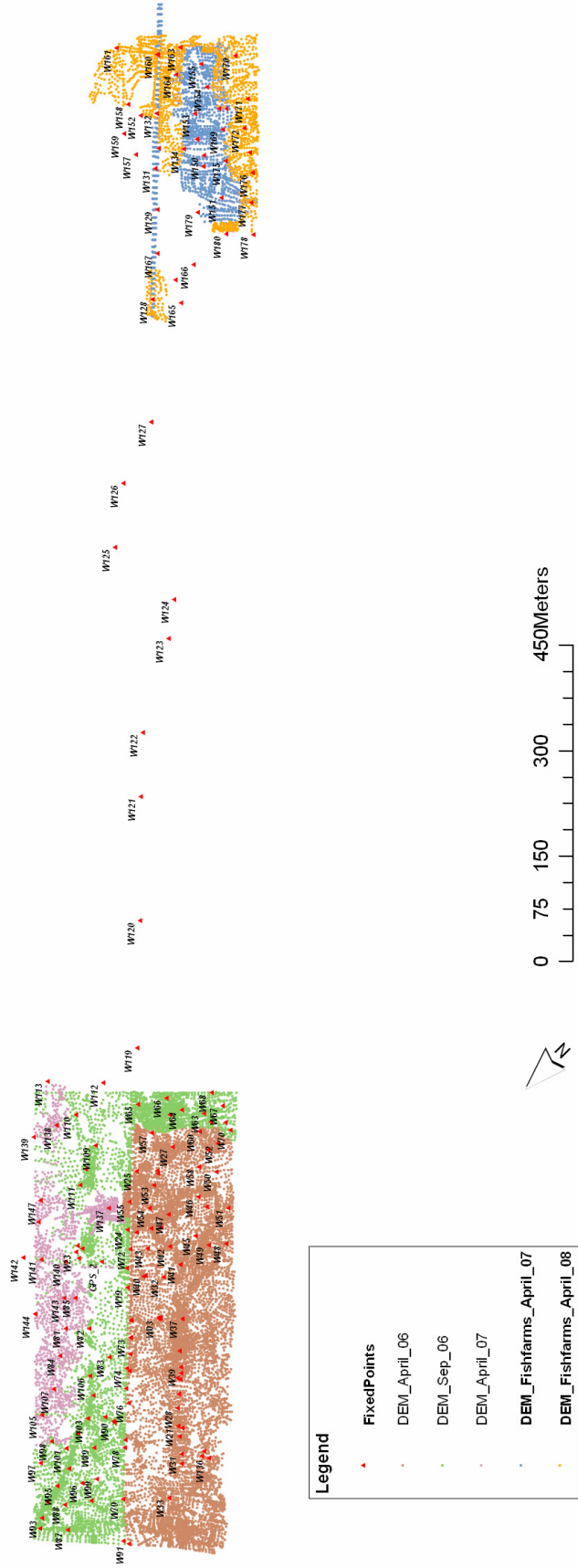


Fig. 1 Topographical survey of the vicus Augustanus and fish farms for the 2005-2008 fieldwork seasons.

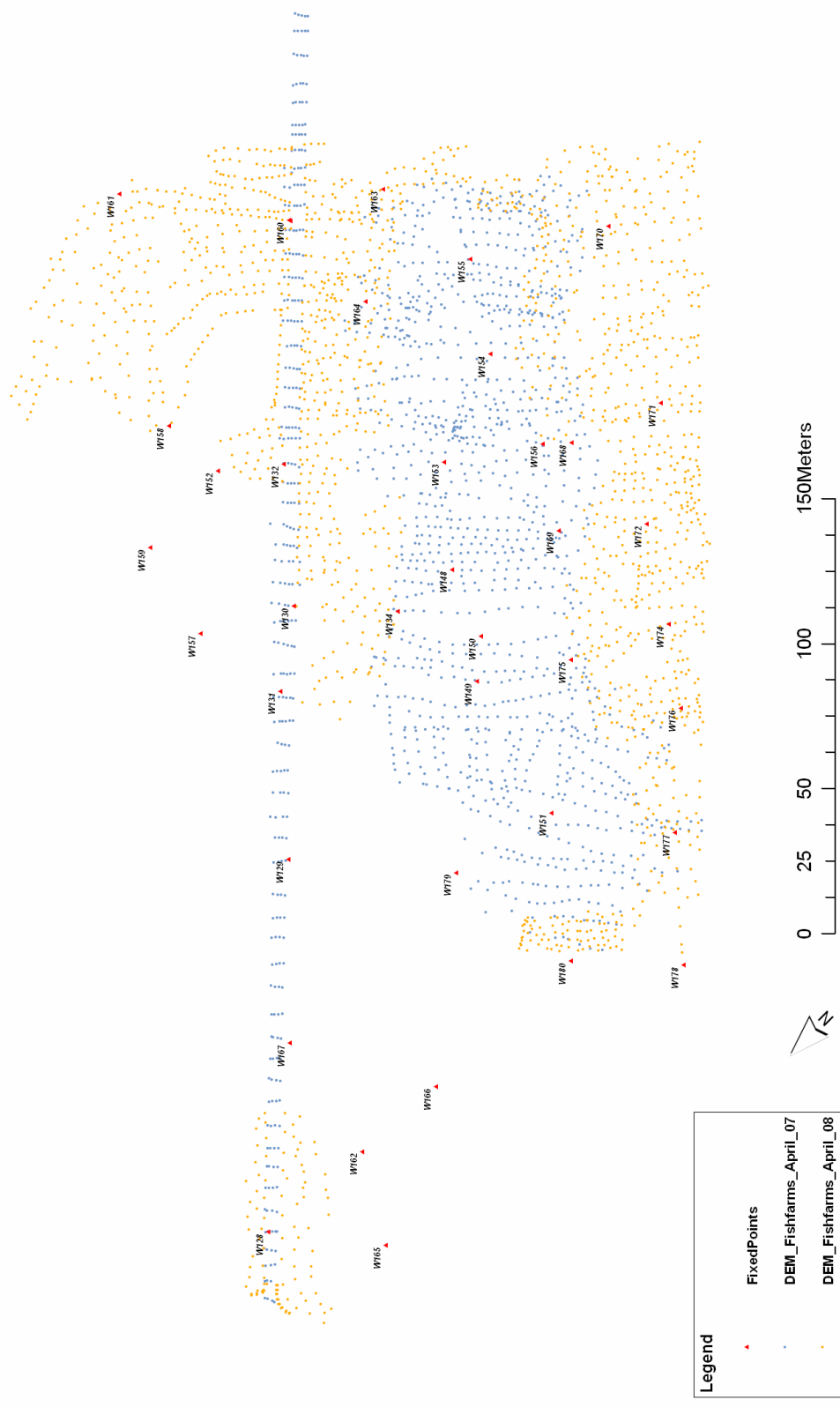


Fig. 2 Topographical survey of the fish farms for the 2007-2008 fieldwork seasons.

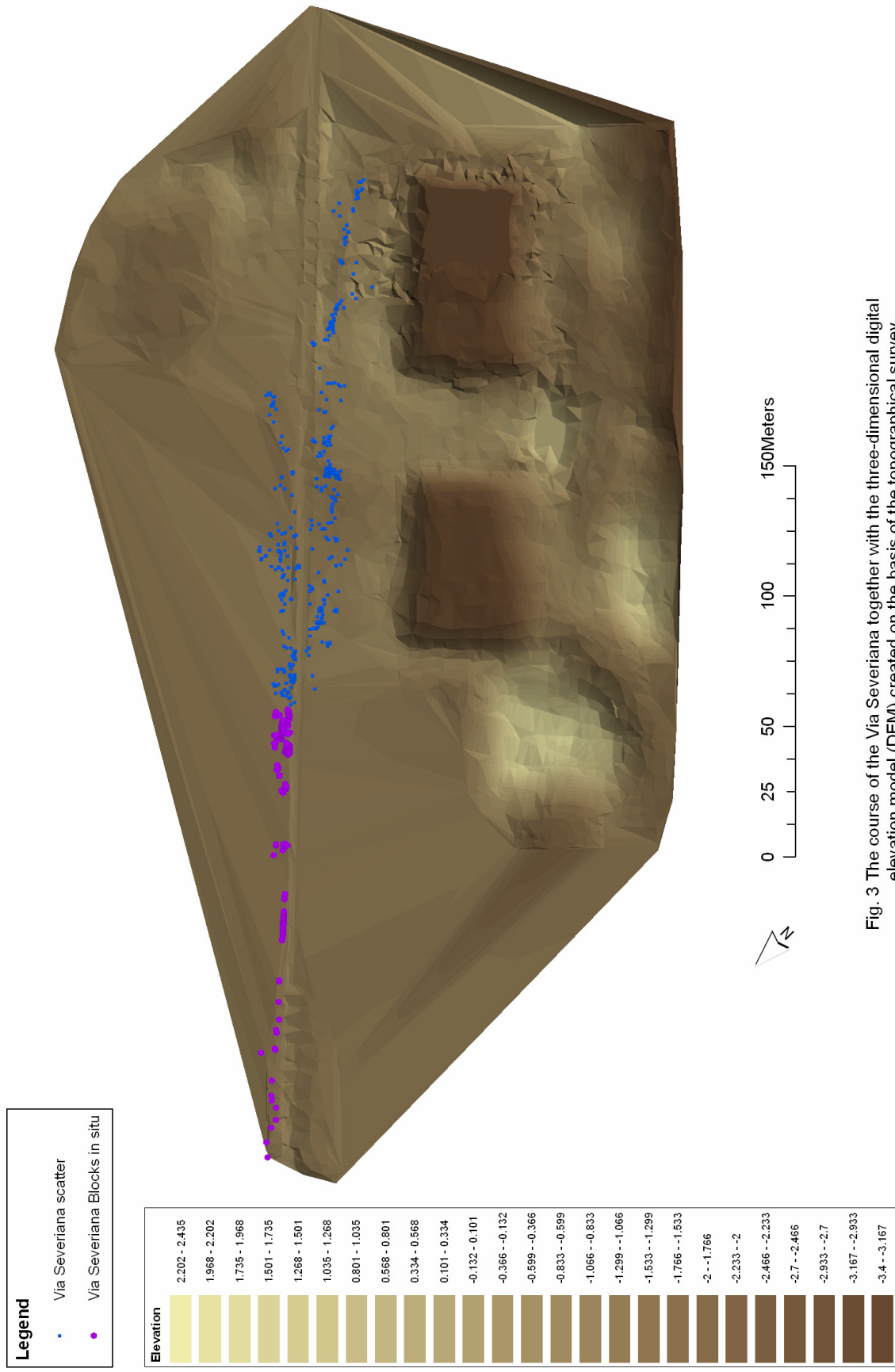


Fig. 3 The course of the Via Severiana together with the three-dimensional digital elevation model (DEM) created on the basis of the topographical survey.