

# Carta Archeologica D'Italia – *Forma Italiae* Project: Research Method

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## Abstract

This paper presents the research method applied to the *Archaeological Map of Italy – Forma Italiae* project, comprising to date the *Ager Venusinus* project (completed) and the *Ager Lucerinus* project (ongoing). The methodology of the project is based on the extensive and systematic survey of the entire selected district. The countryside is systematically searched by groups of students and researchers in different seasons, time of the day, weather and visibility conditions, and status of cultivation of the ground. The GPS georeferenced data are integrated in a GIS specifically realised. The results of the research projects relating to the territory of the Luceria's colony, in Apulia, starting from the area of the medieval site of Montecorvino, in the Daunian district is presented. So far the part of the vast territory of Lucera studied concerns the area North-East of the ancient Latin colony. Discussed here are studies conducted on the western area, towards the Daunian subappennine and in particular focused on the territory of the municipalities of Lucera, Pietramontecorvino, Motta Montecorvino, and Volturino. This area, in fact, is the object of research that includes the whole of the Fortore River valley. The data emerging from recent surveys show a large population over the time-span from prehistory to the High Middle Ages. The settlements of the Neolithic and Bronze ages, so far identified, are placed on vast plains; on the northern sector of the territory, it is possible to catch a glimpse of traces of a village characterised by the typical C shaped ditch, with huts located inside. A very interesting part of our project regards Dauni and Samnite settlements in the period preceding the arrival of the Romans and

the Romanisation of the area. The most notable transformations in the ancient landscape were undoubtedly produced by the Roman intervention that gave birth to the new colony and the planning of the village centre, which consequently led to the reorganisation of a vast territory and the division of the rural area into a dense network of small properties assigned to the settlers.

**Keywords:** Archaeological Map, Ancient Landscape, *Limitatio* and *Centuriatio*, Aerial Photography, GIS

## The *Carta Archeologica d'Italia – Forma Italiae* project. Twenty Years of Survey and Application of Methods

This paper presents the research method applied to the *Archaeological Map of Italy – Forma Italiae* project, comprising to date the *Ager Venusinus* project (completed) and the *Ager Lucerinus* project (ongoing) (fig. 1). This project is a joint effort of the Sapienza University of Rome and the University of Foggia.

The idea of an Archaeological Map of Italy dates back to 1889 when, by Royal decree, the Bureau for an Archaeological Map of Italy was created. Giuseppe Lugli's publication in 1926 of the first volume of *Forma Italiae* represents the continuation of the initial Royal project (Sommella, 2009: 47-59). Many decades later, with the advent of information technology and satellite observation systems (GPS) a "new era" of archaeological mapping began and the "*Forma Italiae*", thanks to these technological developments, began to create the first Territorial

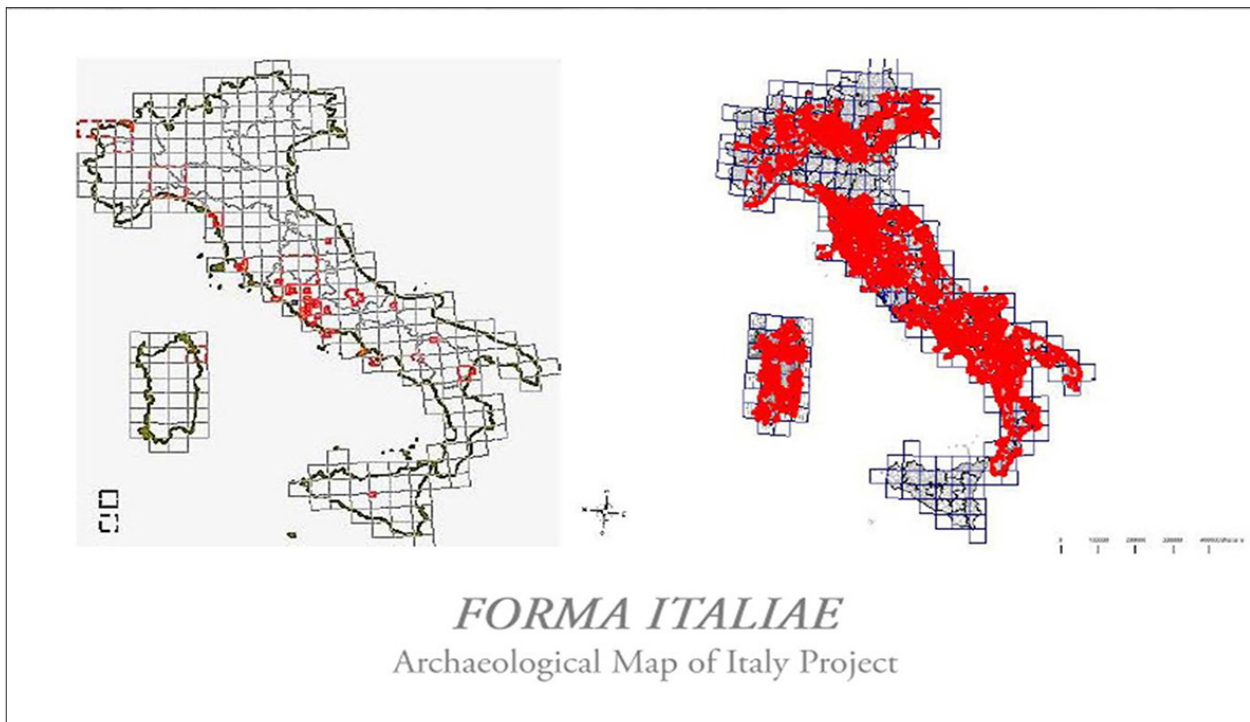


Fig. 1. *Forma Italiae* project.

Information System of archaeological matter in Italy.

The *Ager Venusinus* project, carried out over more than two decades (1989-2002), benefited from a rich synergy of institutional and human resources. The results of our investigation are published in the volumes *Forma Italiae: Venusia* (Azzena & Tascio, 1996: 281-97; Marchi & Sabbatini, 1996), *Ager Venusinus I* (Sabbatini, 2000) and *Ager venusinus II* (Marchi, 2010: 25-28) (fig. 2).

Many generations of students and scholars participated in the projects and many advanced technologies were tested. Our project, for example, represents one of the first applications of both GIS (Geographic Information System) and GPS (Global Position System) in archaeology. During the project we carried out an extensive and intensive survey of the ancient colony of *Venusia* in the Melfi district (Bottini, 1982: 152-60) between the Ofanto valley and the slopes of Mount Vulture.

The first volume published in the project, *Venusia*, contains an ample discussion of the tech-

niques and methodologies employed, the survey and data analysis (Azzena, 2004; Azzena & Tascio, 1996: 281-97). Other publications provide further information. Therefore a brief summary will suffice here.

This was one of the first archaeological projects in Italy to use GIS, experimenting with database input and with GIS applications. Our project also includes the creation of a dedicated GIS (*Carta Archeologica d'Italia* or *Archaeological Map of Italy-Forma Italiae*) (Marchi & Mazzei, 2012) (fig. 3). It is important to keep in mind that having the entire project with all its analytical data in the GIS makes cartographic references and indications of scale superfluous. All archaeological elements, both monumental and structural as well as scatters of material on the surface are georeferenced, their shapes and sizes perfectly represented.

Our project was also one of the first to work with Global Position System (GPS) (Azzena, 1992: 747-76). Between 1989 and 1992, studies and experiments were carried out on automatic systems for the acquisition, calculation and management of archaeological data relating to the *Forma Italiae*. This method was also used in the Project *Reper-*

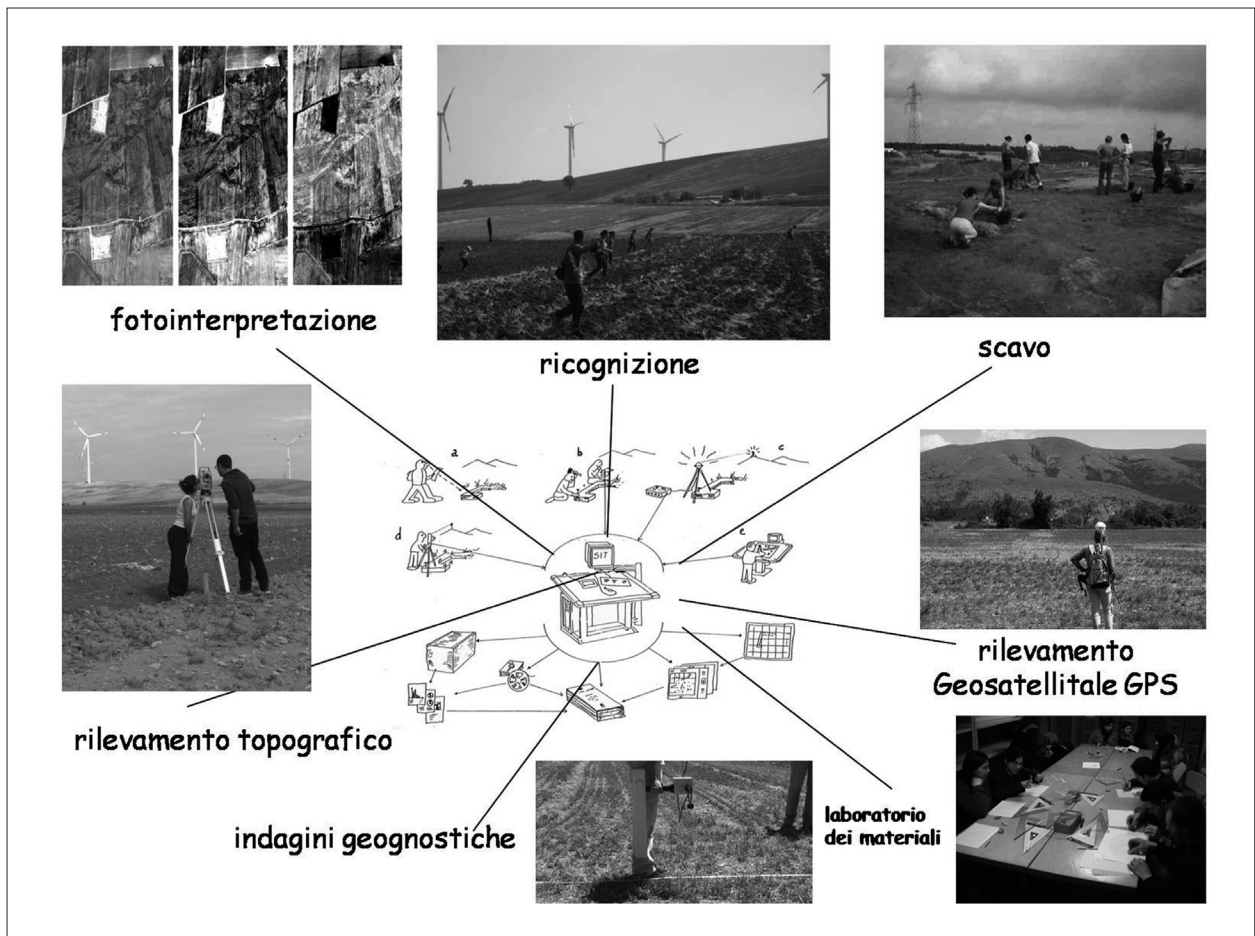


Fig. 2. The structure of GIS of “Forma Italiae Project” (Cartography Laboratory of Foggia).

torio bibliografico per la Carta Archeologica della Provincia di Roma (Amendolea, 2003; Marchi, 2005) and also in the *Project Census for an Archaeological Map of Italy* (Marchi, 2012). This project was carried out over several years (2002-2008) to create a new scientific and technical tool based on the work done previously in relation to the “Archaeological Map” of Italy. The importance of an archaeological heritage database is reinforced by the discussion on preventive archaeology, and more in general on “archaeological risk”, a topic currently considered of great relevance.

The *Project Census for an Archaeological Map of Italy*, started in 2002 with input from The Ministry of Cultural Heritage and Activities, in collaboration

with Sapienza University of Rome, with the participation of the University of Foggia, and was carried out in several operative phases. The project allowed for the realisation of a large integrated system, for protecting the heritage and preventing any damage. The project further provided an essential instrument for better knowledge and greater valorisation of the cultural heritage on Italian territory.

The program provided a “Register”, based on the cataloguing and georeferencing of bibliographic and archival material. The Census involved all of Italy, with the exception of some autonomous regions with special status and Emilia Romagna, that has had its own informative system for many years. The work progressed in phases, starting with the central-southern regions and finishing with the north regions.

The project also involved an updating for the regions subjected to census in the early phase

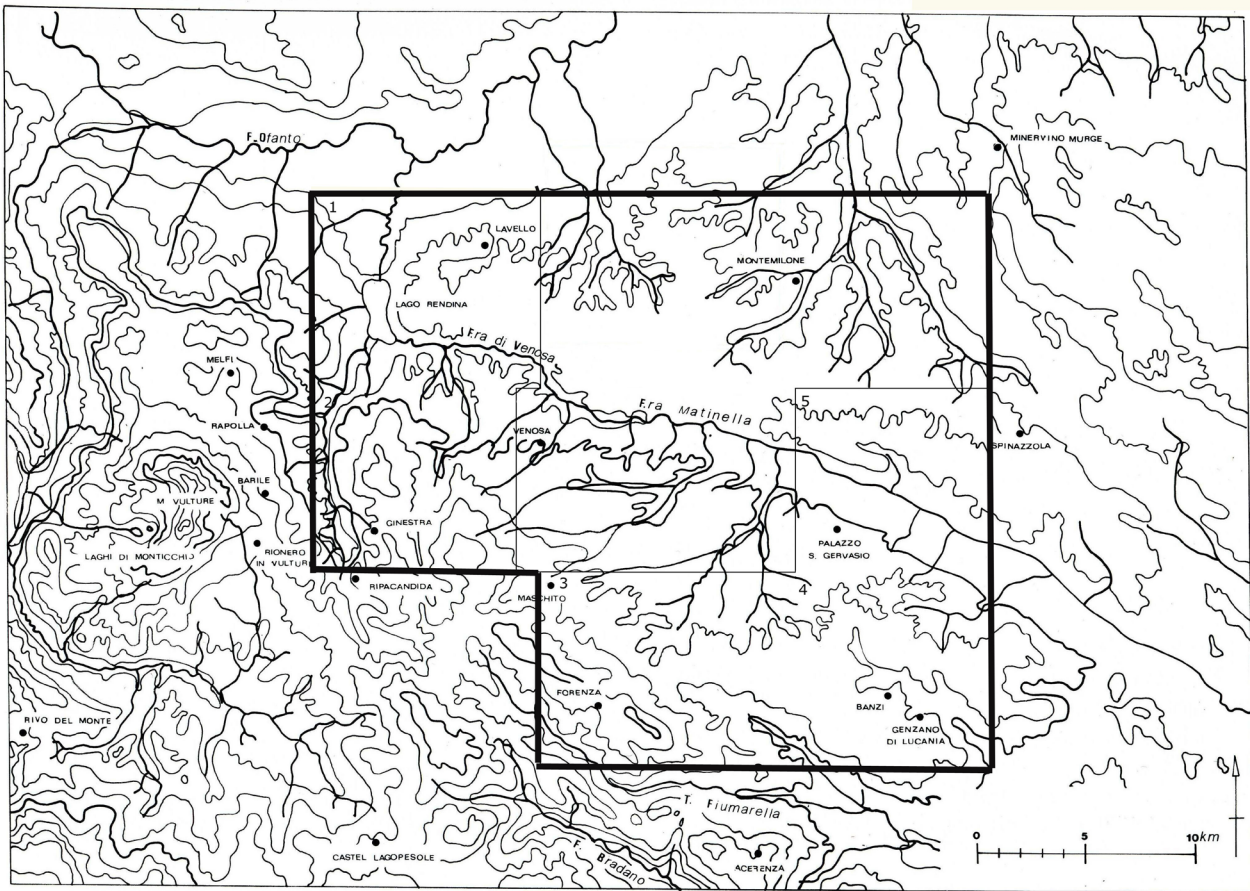


Fig. 3. Venosa, Melfi district in Basilicata: The *Ager Venusinus* project.

(Basilicata and Campania) and, in general, an overall continuous updating.

The census of the archaeological elements is based on published material for which a topographic localisation on a map is possible. To insure reliability, all data will be verified on site, the archaeological elements were selected based on two levels of trustworthiness: georeferencing and general localisation. The project led to the census of almost 30,000 archaeological sites, chronologically ordered from Prehistory to the High Middle Ages. For this purpose a computerised system for data management was used composed of a GIS platform, associated to an alphanumeric archive and designed to soon become a web GIS.

The "Archaeological Map" helped us reconstruct the historical archaeology of the ancient

landscape from Prehistory to the High Middle Ages and promote the protection and cultural appreciation of the territory. The archaeological survey covered all the phases of territorial occupation, according to the criteria of systematic methodology. This type of survey is considered more useful than one restricted to a particular chronological period.

Our research was carried out according to the scheme established for the *Forma Italia* using the IGM (Istituto Geografico Militare – the national mapping agency for Italy) 1:25000 maps. In the field we used the Regional Technical Map (Carta Tecnica Regionale, CTR) available in a scale of 1:10000 or 1:5000.

For some towns, but not all, digital aerophotogrammetric maps are available. In many cases, it was possible to integrate orthophotos. In all cases, we used cadastral maps, which are fundamental for determining areas that should be protected,

even though they contain no altimetric information and are sometimes outdated, because of which they are not easy to use in the field.

The mass of data gathered (more than 3000 items for the Ager Venusinus project and 1200 points for the Ager Lucerinus project) allowed us to refine techniques and methods for constructing a database. We experimented with many formats for entering data regarding both sites and materials.

The main objective determining our methodologies was that of gathering extensive, intensive and systematic data, completely covering the chosen territory. The debate regarding topographic research methodologies was quite intense, the controversy pitting them against sampling survey methods. Our research results clearly demonstrated the validity of our methodology, which allowed us to obtain 90% more information regarding the starting point. In the areas where we gathered data, we were able to identify the existence of a much older settlement than what the published data indicated, with a ratio of one to 50 concerning published and unpublished data (Azzena & Tascio, 1990: 207-22; Marchi, 2005: 80-81; Marchi & Sabbatini, 1996; Quilici & Quilici Gigli, 2001; 2003: 28-31; Tartara, 1999).

In the initial phase, we used a multiple source data retrieval approach (bibliographic, archival, epigraphic, archaeological, etc.) recording much of the information by reducing it to generic symbols, distinguishing only location type (precise or generic). The scarcity of material gathered in the early stage of the project made clear the need for a more detailed survey of the territory itself.

Aerial photographs were fundamental for the identification of archaeological evidence, such as crop marks, in the territory. Materials from the RAF photographic coverage for the area (1943-1947) and from IGM were unquestionably useful.

We relied heavily on historic maps and, where possible, georeferencing of maps in order to identify elements no longer visible in the landscape, especially regarding roads and the shape of the landscape.

Following the "Forma Italiae project" methodology, based on an extensive and systematic

survey of the whole selected district, we systematically scanned the countryside on foot (the team consisting of three-five researchers) and returned to some areas in different seasons, when the ground was in different states of cultivation, in different weather, visibility conditions and at different times of the day.

Most sites were indicated by a dense scatter of material on the surface. In these cases, type and stage of cultivation had to be taken into account so that our data collection efforts were taken when there was maximum visibility on the terrain. This approach allowed us to create a map of visibility of the area.

Since cereals predominate in the farming of the fields in the territory we were researching, the ideal period for our investigation was from the end of the summer through the autumn when the fields had been harvested, thus offering the greatest visibility. Where grapes and olives are farmed, as where the fields are not farmed, the best periods are winter and spring. We classified the areas where we found scatter according to size and density of scatter.

It is important to note that when indicating the size of an area, we considered only the zone with the greatest concentration of material, where excavation was most likely to reveal structures. We were able to define the types of settlements (rural structures, farms, *villae*, *vici*) by combining the following types of data: size of the area and characteristics of the scatter, whether construction materials (bricks and tiles, building stone, clay, etc.) or decorative elements (floors, plaster). In general, in the case of small areas, less than 100 m<sup>2</sup>, but often also of larger ones, from 100 to 200 m<sup>2</sup>, containing very poor building materials suggesting the presence of walls made from perishable materials, we opted to use the term "rural structure", by which we mean, using the terminology of ancient Roman sources (Di Giuseppe, 2005: 8-9), *casae* or *tuguria* (Livy, 3.13; 3.26; 42.34; 5.53.8; Plin., *HN* 16.14; Verg., *Ecl.* 1.69; Columella, *Rust.* 12.15.1; Festus, s.v. *tugurium*) or *villulae* (Cic., *Att.* 8.9.3; 8.13.2; 12.27; 16.6.2; Apul., *Met.*, I.21). We used the term "farm" only for large areas where

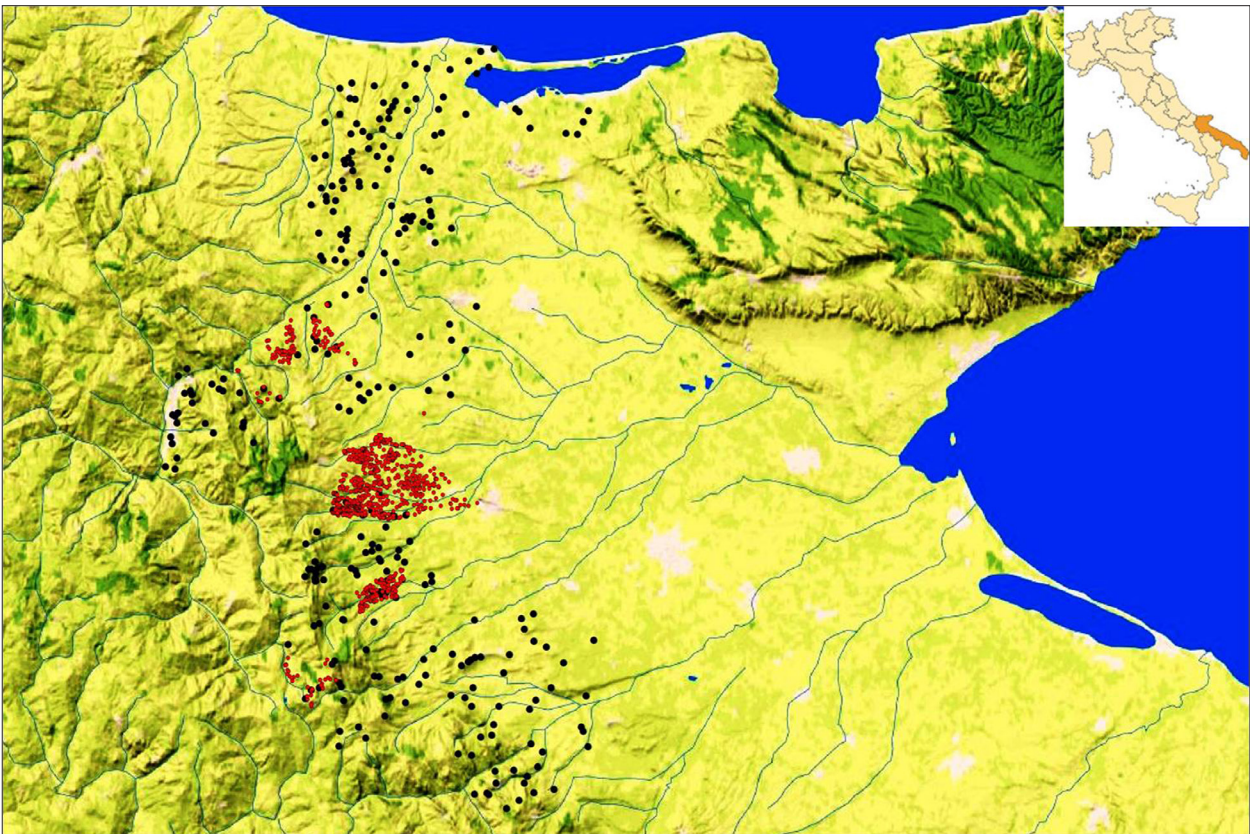


Fig. 4. Daunian district of Apulia. A archaeological map created by the *Ager Lucerinus* project: DTM (Cartography Laboratory of Foggia).

we found documentation of specific agricultural activities. We identified as “villas” areas larger than 1000 m<sup>2</sup> presenting multiple structures, each with a different function (residential, productive, storage) and scatter of high quality materials (marble, mosaics, etc.).

Further on our terminology, we analysed the concepts of “topographic unit” (Belvedere, 1994; Carandini, Carafa & Capanna 2007: 13-25; Manacorda, 2007; Quilici & Quilici Gigli, 2003: 45) by which we meant an archaeological point. We accept the definition of an ‘entity clearly defined in space and culturally and chronologically interpretable’ (Plog, Plog & Wait, 1978: 389-94) and “off site”, a much debated term in the field of “survey”.

The initial phase of our project concerned the creation of an Archaeological map of the

area which allowed us to document a constantly evolving situation. During the entire period of our project, the area was repeatedly subjected to large scale structural and infrastructural projects (for example, the Fiat factory on the Melfese plain, the Bradanica road and windmill farms on the hill-sides). Our work, which predated these projects, allowed us to document the situation before it was altered, and in some cases, like that of the Fiat factory (Azzena, 2001: 77-86), served as the archaeological risk map.

The area of *Ager Lucerinus* presents an ancient complex and varied landscape, and the archaeological map created offers a valuable instrument of protection in this area constantly threatened by the spread of wind farms. In fact the data processed by the GIS Laboratory of Archaeological Cartography, according to the Archaeological Superintendence, have been used for *Piano Paesaggistico Territoriale della Regione Puglia* or *Puglia’s Regional Landscape Plan* (Marchi et al, in press).

We were able to document situations where radical changes in the landscape had occurred due

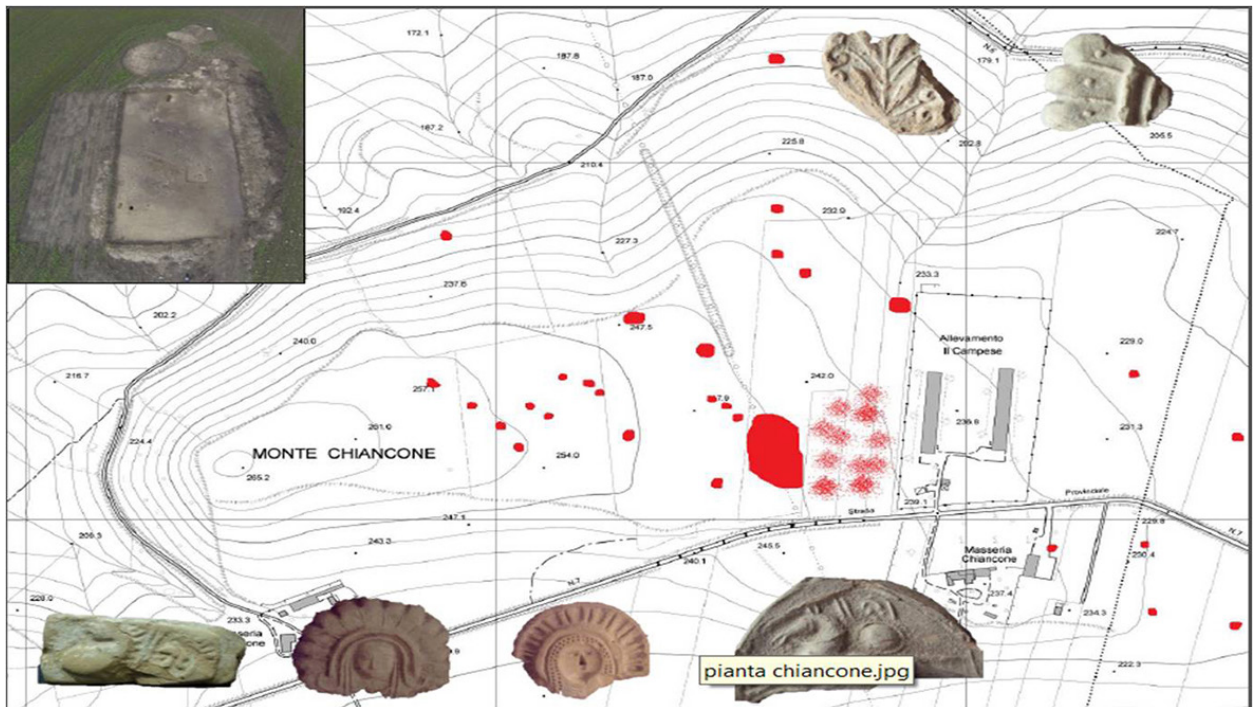


Fig. 5. The archaeological map of the Chiancone site: Lucera (Foggia) territory (Cartography Laboratory of Foggia).

to agricultural interventions (planting of grape or olive groves which require digging deep holes and continual ploughing). We were also able to contribute to actions to safeguard and protect areas of great archaeological interest.

### The *Ager Lucerinus* Project (2006-2014)

Project director: M.L. Marchi. Team members: D. Buffo (2008-2010), L. Carbonara (2008-2011), A. Castellaneta (2013-2014), I. Fabiano (2013), G. Ferlazzo (2013-2014), G. Forte (2006-2014), M. Laurenzana (2012-2014), L. Lecce (2013-2014), G. Savino (2013-2014) and A. Piergentili (2013-2014).

This paper also introduces the main research results regarding *Luceria (Apulia)*, in the so-called Daunian district. In particular, we focused on the western area, towards the Daunian subappennine, which includes the municipalities of Lucera, Pietramontecorvino, Motta Montecorvino, Volturino,

Casalnuovo Monterotaro, Biccari, Roseto Valfortore (the entire Foltore River valley), adding to the analysis of the Lucera territory already carried out by our team in the northeastern area (Marchi, 2008; Marchi & Buffo, 2010; Marchi & Forte, 2012; Marchi, Castellaneta & Forte, 2014) (fig. 4).

The *Ager Lucerinus* project was carried out over a period of almost ten years. The main aim of this research was to perform a complete historical reconstruction of the anthropised landscape of the *Luceria* colonial territory. We also included the border area between the Tavoliere and Daunian subappennine relevant to understanding the limits between the so called Daunian and Frentani territories, according with ancient literary sources (Tolomeo, *Geogr.* 3.1.14; Pomponio Mela, 2.4.66; Strab. 4.3.8).

New data, emerging from recent surveys, show the presence of a large population over the time-span from Prehistory to the High Middle Age. We found 1200 archaeological points. These include Neolithic and Bronze ages settlements, located on vast plains. Traces of a huts village surrounded by the typical C shaped ditch are visible on the northern sector of the investigated area.

According to ancient written sources, this area

was under the so called Daunian influence, between the eighth and fourth centuries BC. Our new data seem to indicate a rather extensive human presence spread throughout the entire area. One particularly notable settlement is that of Masseria Torretta and Selva Piana-Carignani, located at the centre of a low plateau outlined by an abundant scatter of fragments, dated to the fifth-fourth centuries. Aerial photography reveals traces of a rectangular building which might be interpreted as an *oikos*.

A very interesting part of our project focused on the analysis of “native” settlements in the period preceding the Romans arrival and the resulting colonisation of the area. In this perspective, one of the most important case studies is the site of Chiancone, located in the nearby Lucera (Foggia Province) (fig. 5). The settlement, situated on a large plateau surrounded by steep slopes, covers about two hundred hectares. Like other “Daunian” settlements of the same period, Chiancone seems to be organised in alternate groups of dwellings and burials areas. Clusters of ceramics fragments (i.e. bricks, tiles, “Daunian” Matt-painted, Red-figure pottery, Black-gloss ware sherds) testify to the presence of a residential building, which might be dated between the seventh and the fourth centuries BC. Moreover, taking into account the dimensions of the site and the density of material found on the ground surface, we might be able to identify and interpret the function and distribution of several dwelling sectors. For example, many antefixes (i.e. a relevant specimen with a “knight” similar to an antefix discovered in the votive deposit at Lucera) as well as a mold may indicate the existence of a production centre (e.g. an antefix with nimbus which bears similarities with the Etrusco-Campanian samples identified at Arpi, Teano and Lucera).

This area also yielded the tomb of a “warrior” dated to the fifth century BC, on the base of the extraordinary grave goods. Among the thirty-five objects found, there were many ceramic vessels (i.e. an urn containing a dish, an olla, an Attic black-figure *kylix*, a so-called “Ionic-type” cup, datable to the final decades), defense weapons and skewers, placed nearby the feet of the deceased,

who was buried in supine position (Marchi et al, in press).

The major change in the ancient landscape was undoubtedly produced by the Roman intervention and the foundation of *Luceria*. The planning of the new colony consequently entailed the reorganisation of a vast territory and the division of the adjacent rural area into a dense network of small properties assigned to the settlers.

These transformations may be recognised, in particular, in the area of Selva Piana, where clusters of ceramics fragments allowed us to identify small buildings of 100-200 m<sup>2</sup> and in Fornello, where aerial photography clearly displays traces of centuriation.

The farms were later replaced by Early Imperial villas. Medium-sized rural settlements begin to spread and polynucleated structures, that is, structures consisting of several buildings close together, sometimes incorporating previous buildings, begin to appear. The number of settlements in the Early Imperial periods grew notably but is most evident in the recurring reoccupation of pre-existent structures. The medium-large villas which began to appear mark the beginning of the process that was completed in the mid-Imperial period with the emergence of *latifundia*.

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