



Tymon de Haas

The agricultural colonization of the *Pomptinae Paludes*: surveys in the lower Pontine plain

Early roman colonization

Our picture of the Roman conquest of the Italian Peninsula (roughly between the 6th and 3rd centuries BC) is largely based on historical sources that describe Rome as the power that first came to dominate its Latin allies and subsequently took the initiative for territorial expansion into areas inhabited by other tribes; the founding of colonies in alien territory was an important part of this expansion strategy. The colonies, however, were not only military strongholds, as they received considerable numbers of colonists that worked the surrounding *agri*.¹ Moreover, areas further away from the colonies were assigned directly to Roman citizens, presumably causing waves of 'agricultural colonization'.

From an archaeological point of view, the early phases of colonization are not well understood: remains of the oldest occupation phases of colonies is scanty at best, as excavations and/or topographic research have primarily uncovered remains of late Republican and Imperial date. Similarly, little is known of the development of the *agri* of these colonies, as most (topographic) surveys are concerned with monumental remains of villas and farms of later date. However, a more detailed study of earlier rural settlement would contribute to a better understanding of the process of colonization. This paper discusses such a detailed study of rural settlement in relation to the Roman colonization of the Pontine region.

The pontine region, the Pontine Region Project and intra-regional comparative research

The Pontine region is located on the Tyrrhenian coast of south Lazio, ca 60 km south of Rome (fig. 1). The region consists of various landscape zones: the volcanic Alban hills and the limestone ranges of the Lepini and Ausoni mountains delimit a large coastal plain which consists of a series of fossil marine terraces and, further inland, a filled-up and poorly drained fossil lagoon. This is the area traditionally known as the *palude pontine*.

The Pontine region is one of the first areas into which Rome and its allies expanded: colonies were founded along the Lepini mountains in the 6th to 4th century BC and functioned as important strongholds in the struggles with intruding mountain tribes, particularly the Volscians. A number of maritime colonies was established in the 4th century BC and after 338 BC, with the fall of the Volscian strongholds *Antium* and *Priv-*

¹ Maritime colonies, however, contained a small colonist population; Latin and citizen colonies usually received several thousands of colonists; see SALMON 1969.

vernum, the region was supposedly finally ‘pacified’. In this period, there may also have been an influx of colonists as a part of the agricultural colonization of the lower part of the Pontine plain.

The Groningen Institute of Archaeology (GIA) has been involved in landscape archaeological research in the region from the mid 1980s onwards with the Pontine Region Project (PRP). Within this long-term research project, intensive field surveys are employed to study the settlement history of the region, with Roman colonization as one of its main research themes².

The study presented here represents some of the most recent work carried out within the PRP and uses an intra-regional comparative perspective to better understand how settlement and land use developed in the light of Roman colonization³. For this, surveys are carried out in three sample areas situated in three major landscape zones: the coastal landscape around present-day Nettuno; the edge of the Lepini mountains surrounding Norma; and the lower Pontine plain west of Pontinia (fig. 2). In historical terms, the first two areas are part of the *agri* of *Satricum* and the maritime colony *Antium* and of the Latin colony *Norba*. The third area is strongly linked to the *via Appia* and it may have been part of the area where agricultural colonization took place. The settlement history of each of these sample areas is studied in relation to the local landscape, the adjacent colonies and major infrastructure. Local settlement histories are subsequently placed in their regional and interregional context. In the following, I will focus on the research in the third of the three case study areas, the lower Pontine plain.

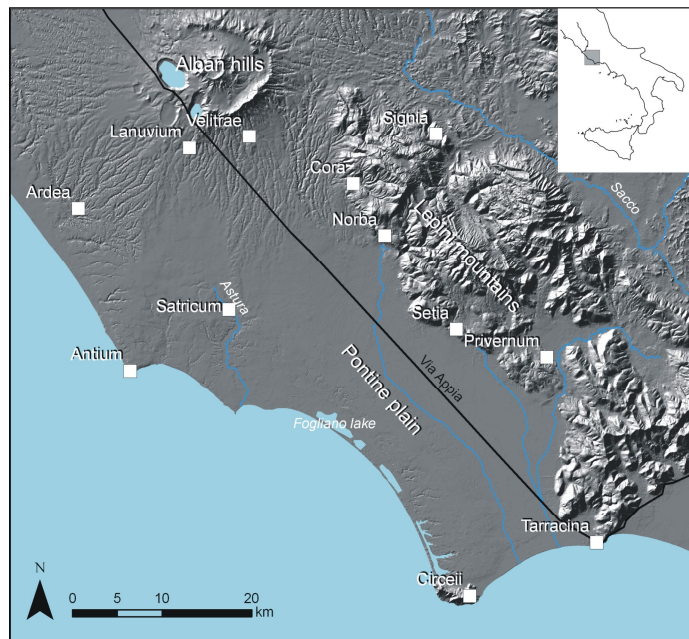


Fig. 1 - The Pontine region with main landscape units, Roman towns and the *via Appia*.

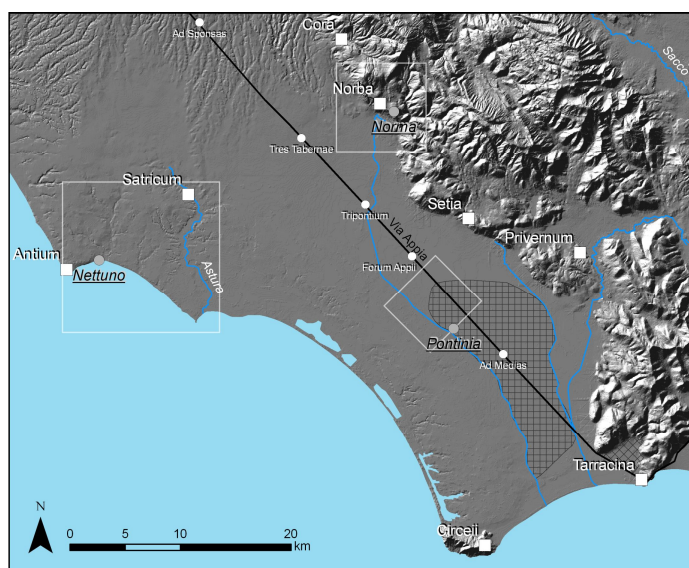


Fig. 2 - Location of the three study areas in relation to Roman colonies and centuriated areas (crosshatches).

² In its initial phases, the PRP focused on protohistoric and Roman central settlements and their surroundings along the Lepini mountains and in the volcanic area north of Cisterna di Latina (ATTEMA 1993). In the mid 1990s, the project widened its geographical scope to the Alban hills and the Sacco valley with surveys around the colonies *Setia*, *Lanuvium* and *Signia* (ATTEMA and VAN LEUSEN 2004). These surveys used more standardized methods that are suited for comparative analysis. Surveys with similar methodologies continued on the edge of the Lepini mountains near ancient *Norba* (VAN LEUSEN 1998) and in the catchment of *Satricum*. In the late 1990s, the project turned to the coastal areas with intensive surveys near Lake Fogliano and surveys as well as site mapping projects east of Nettuno and in the lower Astura valley (ATTEMA ET ALII 2002; 2003).

³ See also DE HAAS 2008.

Agricultural colonization of the lower pontine plain or pomptinae paludes?

The Pontine plain consists of two distinct parts. A system of marine terraces of 6 to 8 km wide stretches out along the Tyrrhenian coast, while the area further inland has long been a lagoon that was cut off from the sea by the marine terraces; this lagoon has in the course of time been filled with peaty and clayey sediments⁴. Because it is situated at a lower altitude than the marine terraces, water cannot easily flow off to the sea, resulting in wet, marshy conditions, endemic malaria and in general it is thought to have had a very limited land use potential⁵. In antiquity, this lower part of the Pontine plain area was referred to as the *Pomptinae Paludes* and the historical sources describe various attempts at draining them⁶. However, the assignment of agricultural plots to colonists of the *tribus Pomptina* (created in 358 BC) and *Oufentina* (318 BC)⁷ indicates that the area was at least partly fit for agricultural use. The construction of the *via Appia* and the *Decennovium* canal also point to the successful drainage and exploitation of the area⁸. In later periods too attempts were made at draining the *palude pontine* (fig. 3)⁹. The most recent and successful of these projects, the *bonifica integrale*, took place in the 1930s and transformed the marsh into an intensively cultivated area with regular plots, an *ex novo* established infrastructure with towns, villages, and farms that were settled by carefully selected colonist families¹⁰.

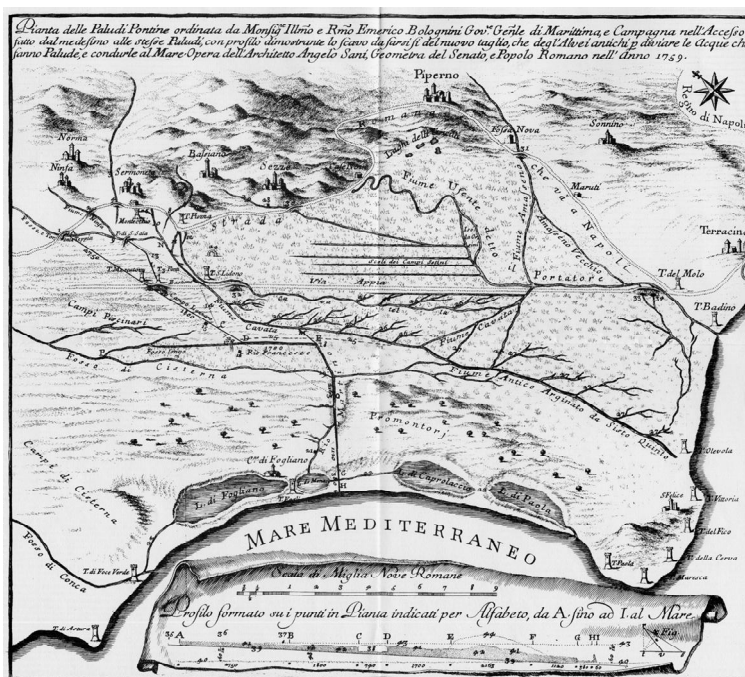


Fig. 3 - Map of the *palude pontine* made for a drainage project proposed by Emerico Bolognini (BOLOGNINI 1759).

The perception of the lower Pontine plain as marshy and unsuited for settlement and agriculture perhaps is one of the reasons it has received relatively little attention from archaeologists¹¹. However, traces of a centuriation grid may point to large scale reclamation and agricultural colonization of almost the entire lower plain (see fig. 2). The evidence for this grid consists of a number of east-west running Roman roads as well as parcelling traces with a similar orientation identified on aerial photographs and maps made before the *bonifica integrale*¹². The grid would have covered an area of some 230 km², divided into blocks of 10 by 10 *actus*. Cancellieri has proposed a date before the construction of the *via Appia* (312 BC), as it would otherwise have followed the orientation of this road¹³. According to her, the grid was laid out to distribute agri-

⁴ KAMERMANS 1991, 23/28.

⁵ BIANCHINI 1964; SALLARES 2002.

⁶ For example, by Cornelius Cethegus in the 2nd century BC, and in the 1st century BC by Caesar; for an overview of historical references to the *Pomptinae Paludes*, see HOFFMAN 1956.

⁷ Dates after CORNELL 1995, 382–83.

⁸ CANCELLIERI 1986; COARELLI 1990. In fact, the term *Pomptinae Paludes* may not have been coined before the Imperial period; see TRAINA 1990.

⁹ For an overview, see LINOLI 2005.

¹⁰ For an extensive description of this project, see KOEPPEN 1941; see also LINOLI 2005.

¹¹ With the exception of the *via Appia* and related monuments like bridges, milestones, monumental tombs: CANCELLIERI 1975; QUILICI 1989; BRUCKNER 1995; LILLI 1996; SEVERINI 200; see also papers in *Archeologia Laziale* X (1990).

¹² CANCELLIERI 1985; 1990.

¹³ CANCELLIERI 1990, 66–70.

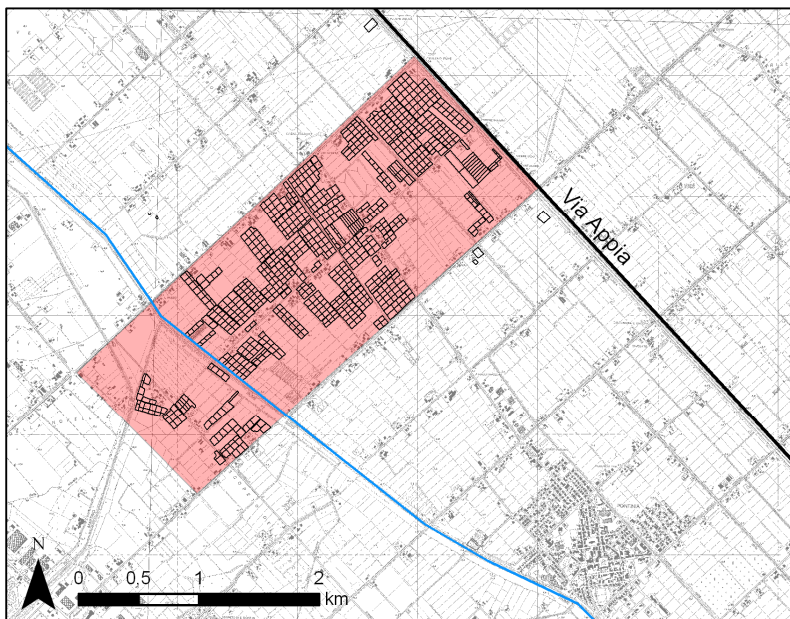


Fig. 4 - The survey transect west of present-day Pontinia with surveyed units.

cultural plots to members of the *tribus Oufentina* in 318 BC. However, there are also other historical events to which the centuriation could be related¹⁴ and archaeological evidence to confirm the proposed date and historical context lacks¹⁵.

Surveys in the pomptinae paludes

With this background, intensive surveys were undertaken, aiming to map rural settlement in a representative part of the *Pomptinae Paludes* and to interpret its settlement history in the light of the supposed agricultural colonization and, more specifically, to see whether there is archaeological evidence in support of a late 4th century BC date

for the centuriation. As the lower Pontine plain is very large and only limited time (and funding) was available, fieldwork was planned in a restricted area; a northeast-southwest oriented transect of ca 1.5 x 3.5 km west of present-day Pontinia (fig. 4). The transect is enclosed by the *migliara 45* and *migliara 46* roads, running from the *via Appia* to the edge of the marine terraces; the *collettore delle acque medie* (a canal) delimits the survey area here. Nowadays, cereals, corn and vegetables are grown in the area, although some fields are permanently fallow or used as pastures.

Methodology

The method used during the survey of this transect entails intensive and detailed coverage by dividing arable fields into regular units, by default of 50 x 50 m¹⁶. Each unit is traversed by five walkers evenly spaced at 10 m; all artefacts in their transect are collected. Supposing walkers cover a strip 2 m wide, this means that a 20% sample of the surface assemblage of each unit is collected. If artefact concentrations are encountered, additional samples are taken. Fields, units and sites are mapped using a handheld computer (PDA) with ArcPAD software connected to a GPS receiver. Notes on survey circumstances, field conditions and finds are kept in a field book.

Daily finds and data processing was aimed at preparing the data for easy preliminary analysis. Finds were washed, dried and subsequently classified, counted and weighed. The resulting data were stored in an

¹⁴ On the one hand, in other areas centuriation grids that do not follow the orientation of major roads postdate such roads; this implies that the grid does not necessarily predate the construction of the *via Appia*. This means that the grid could also be connected to later drainage projects. On the other hand, there are also other historical events earlier in the fourth century BC that could relate to land division schemes. For a recent overview of issues related to centuriation grids and their dating, see PELGROM 2008.

¹⁵ A few sites along the *via Appia* south of *Forum Appii* have been dated to the 4th - 1st century BC and *Forum Appii* was certainly occupied in the late 4th/early 3rd century BC; see BRUCKNER 1990, 195, 218–19. Several transects of the Agro Pontino Survey also run through the area, but these data have not been analyzed in detail for the Roman period; see KOOT 1991; HOLSTROM *ET ALII* 2004. Cancellieri has also mapped rural settlements in the Amaseno valley, but it is unclear if these would still fall within the centuriated area; see CANCELLIERI 1987.

¹⁶ See also VAN LEUSEN 2002.

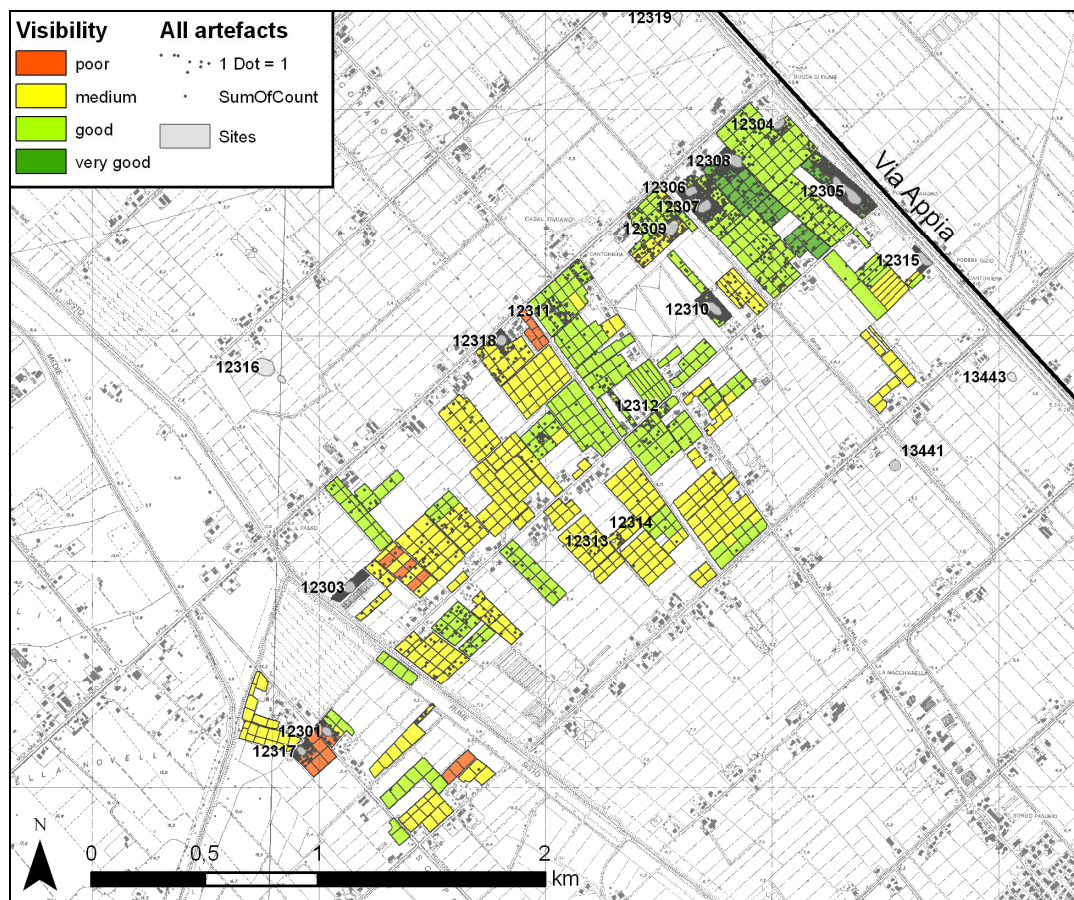


Fig. 5 - Distribution of artefacts and sites over the transect; colours indicating visibility estimates.

Access database together with the field information describing survey circumstances and the samples for each unit. This database is connected to map layers in a desktop GIS that provide distribution maps that were updated every day. Diagnostic artefacts from sites were selected for drawing and describing and provide the basis for a more refined dating of the sites.

Summary results

In total, 848 units with a total surface of ca 1.8 sq.km, ca 30% of the transect, were surveyed (figs. 4 and 5). Most units (66.8%) were (deep-) ploughed, 29.4 % were harrowed and only 4.0 % were located on fallow terrain. In general, ground visibility was good: in only 3.3 % of the blocks the visibility was described as poor, in 46.5% of the blocks as medium, in 45.0 % as good and in 5.2 % as very good. In general, fields to the north had a better visibility than those to the south: near the *via Appia*, some fields with very good visibility occur and most fields have good visibility; further to the south a few fields had bad visibility, whereas most had a medium to good visibility.

Artefacts were collected from 385 blocks (fig. 5), and 24 additional grab samples and diagnostic samples were collected from various sites. In total, 6733 artefacts with a total weight of ca 208 kg were collected. Lithics and handmade pottery occur in modest quantities; the bulk of the finds dates to the Roman period. Both in number and weight, tiles and pottery form the most abundant find categories. Although concentrations occur to the south and west, finds densities are highest in the northern part of the transect.

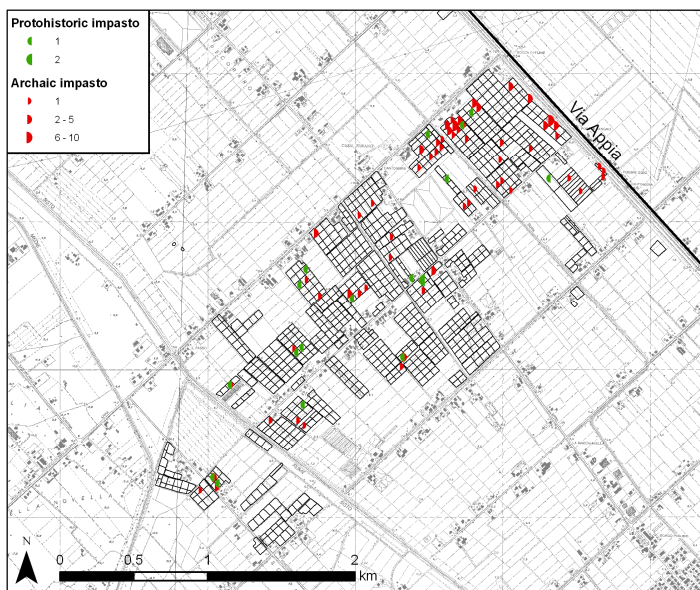


Fig. 6 - Distribution of protohistoric (green) and Archaic/post-Archaic (red) handmade pottery.

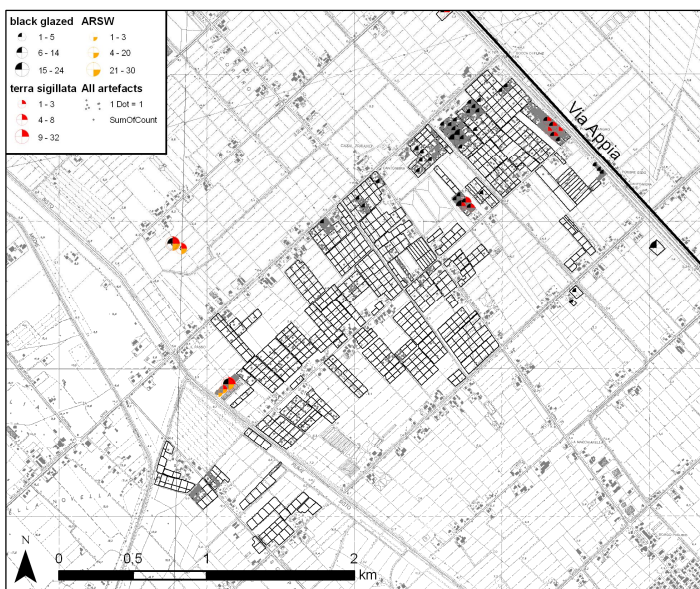


Fig. 7 - Distribution of Roman fine wares (black glazed ware, *terra sigillata* and African red slip wares); in the background distribution of all artefacts.

via Appia; five are clearly aligned along this road, whereas the others perhaps point to the existence of a secondary road at right angles to the *via Appia*. Few (and only small) sites are located in the central part of the transect, but there is a number of sites to the southwest.

These were probably the areas where settlement and (intensive) agriculture concentrated. Most fields in the central part yielded very few or no finds, perhaps indicating that these areas were less intensively used, for example as pasture¹⁷.

If we break down the distribution map into more detailed period maps, there are some significant patterns¹⁸. Of the handmade pottery (*impasto*) only a minor group is probably of protohistoric date (fig. 6, brown dots). These finds in most cases occur on Roman sites and may indicate that these already had protohistoric predecessors. A few pieces in relatively “empty” areas perhaps indicate that more protohistoric sites may be found using even more intensive and targeted surveys. Most of the handmade pottery, however, consists of augite tempered ceramics that are often considered Archaic (fig. 6, red dots). However, as they occur in low numbers and they may also occur in post-Archaic contexts, they are here not taken as conclusive evidence for Archaic settlement.

The majority of the Roman finds cannot be dated with much precision, but the frequency and distribution of fine wares (fig. 7) indicates that the bulk probably dates to the Republican period, as black glazed is by far the most common fine ware. *Terra sigillata* (mainly 1st century AD) and African Red Slip ware (mainly late 1st century – mid 3rd century AD) occur in lower numbers and fewer locations, notably along the *via Appia* and on the southwestern edge of the transect.

20 Sites were discovered and/or revisited during the survey (table 1)¹⁹. Most of these are located to the northeast, near the

¹⁷ There is some correlation between the find densities and visibility; however, in my view this cannot account for the large difference in find (and site) density. This leaves aside the fact that there are still considerable areas in the transect not surveyed, where there may be additional sites.

¹⁸ The distribution maps show the actual finds and have not been corrected for coverage or variations in visibility.

¹⁹ 16 sites were discovered during the block survey, two sites were discovered during targeted visits to possible site locations (see below). Two sites already mapped during the Agro Pontino Survey were revisited. Several more sites are known in the area, but these could not be studied for various reasons.

The sites vary in size between 170 and 6250 m² with three distinct size groups: four sites are smaller than 250 m², thirteen sites are between 1000 and 3000 m², while two sites are larger than 5000 m².²⁰ One of these consists of at least two separate nuclei. The artefact assemblages also show significant differences: the small sites yield few artefacts, mostly tile, storage pottery and coarse wares. The medium-size sites contain a wider range of artefacts including tile, brick, cement, cooking wares, table wares, and storage and transport vessels; a few also had *tesserae*, one may contain an *capuccina* tomb, while on one we collected *dolium* wasters and kiln debris. One of the two large sites shows evidence for more elaborate architecture (wall plaster, marble); the other had relatively large amounts of storage and transport pottery.

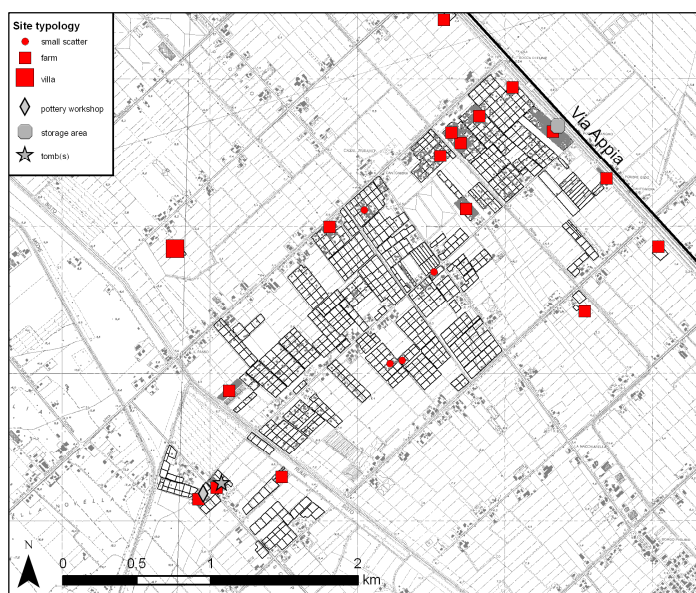


Fig. 8 - Distribution of site types over the survey area.

In combination, the size estimates and the assemblages point at a site typology consisting of at least three classes (fig. 8): the large site with evidence for elaborate architecture probably represents a villa; the other large site may be a large storage facility, perhaps connected to a farm. The medium-size sites probably represent farms (one with connected burials), although one may be a pottery workshop producing *dolia*. The small sites probably represent more ephemeral structures, perhaps sheds or shelters.

Although not all diagnostic artefacts have been analyzed, a preliminary chronology of the sites can be presented here (fig. 9). Coarse ware shapes (*olle*, *teglie*) that are well known from 5th to 3rd century BC stratigraphic contexts at the settlement of *Satricum* (located some 20 km to the west; see fig. 1), occur on 17 sites²¹. A 3rd century date for at least four sites is indicated by early black glazed wares of the *atelier des petites estampilles*; two more sites have 4th or 3rd century BC coarse wares. Most diagnostic ceramics date from the 3rd century BC to the 1st century AD, with a peak in the 2nd and 1st century BC. Three sites contain coarse wares and African Red Slip wares that date to the 2nd and/or 3rd century AD. The villa has also yielded late 4th to 6th century AD material.

Reconstructing the landscape prior to the bonifica integrale

The present-day appearance of the lower Pontine plain with its infrastructure and parcelling system goes back to the land reclamations of the 1930s. For a better understanding of the archaeological remains recorded during the survey, it is of great importance to assess the changes in the landscape brought about by the *bonifica integrale*. Fortunately, prior to the interventions, the entire Pontine plain was mapped at a scale of 1:5000. These maps contain detailed elevation data, but also information on land use, water sources and previous parcelling and drainage systems. In digitized form they provide a very important background against

²⁰ The contour of each site was recorded with the PDA; no fixed finds density was used for this, as such densities largely depend on visibility circumstances. Although post-depositional processes may have caused dispersion of finds, the variations in size in my view are useful indicators for the interpretation of sites.

²¹ Such coarse wares occur both in the post-Archaic necropolis and in votive deposit 2; see GNADE 1992 and BOUMA 1996 respectively.



Fig. 9 - Diachronic changes in settlement.

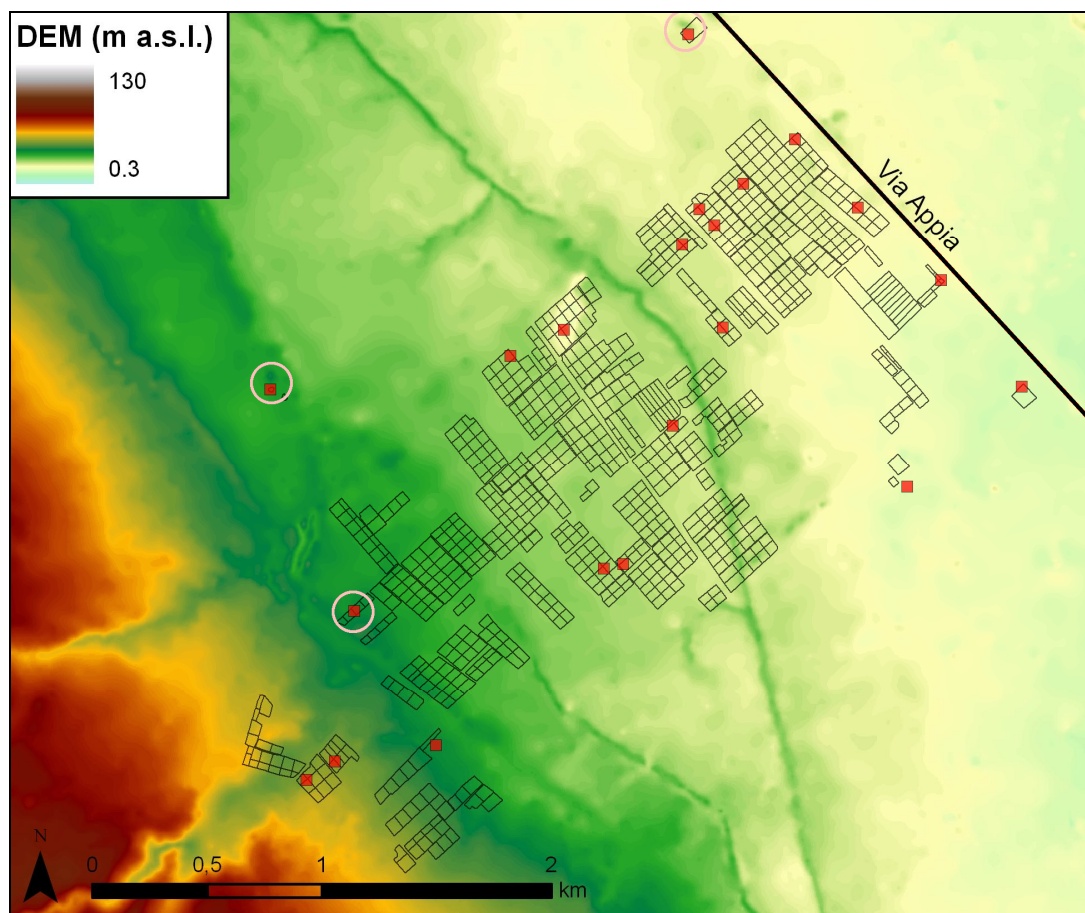


Fig. 10 - The survey area and sites on the DEM. Pink circles indicate some of the 'bumps' that represent sites (DEM courtesy H. Feiken).

which to analyze the archaeological data. Figure 10 displays the survey area and sites on a digital elevation model (DEM) that was created on the basis of these maps²².

Survey results in the light of the DEM

The DEM shows that the northeastern part of the transect, where most sites are located, is situated at ca 4.5 to 5 m a.s.l. (pale to light green areas). From here the terrain gradually rises to the southwest, where a steeper slope (dark green and yellow areas, 8-20 m a.s.l.) represents the transition from the lower plain to the higher marine terraces (red areas, >20 m a.s.l.). A number of sites are situated on this transition, two on the south bank of a stream that enters the lower plain. This transition is also the area in which settlement continued after the lower lying parts were abandoned in the 1st and 2nd centuries AD.

Several other aspects of the DEM catch the eye. First of all, a linear elevation runs through the transect from northwest to southeast. This elevation may represent a former canal that was led through this area as part of a practice called *colmatage*, intended to improve soil conditions by flooding the surrounding terrain. After such floods, sediments present in the water would remain and ground level would be raised, thus

²² All elevation points and contours as well as all springs, canals and ditches from map sheets I8-10, K8-10 and L8-10 were digitized. The DEM was created on the basis of the elevation contours and points using the Topo to Raster tool available in ArcGIS.



Fig. 11a/b - Traces of the centuriation grid on (a) the pre-bonifica DEM and on (b) a detail of the northeast part of the transect on an aerial photograph made in 1936 (courtesy IGM, Florence).

improving environmental conditions²³. Recent research may show that this canal was part of reclamations of the medieval period²⁴.

Of interest too are the 'bumps', small areas that rise up to 1.5 m above their surroundings, visible in the DEM in various places. Both the regular survey and targeted visits to such bumps show that some of these contain archaeological remains. In some cases the bump itself may consist of archaeological debris layers, but a coring on site 12303 (fig. 5) showed that soil was also brought in from elsewhere before this site was constructed. Perhaps this was done in order to improve the run-off of water, or perhaps even to reduce the risk of flooding. This site contains ceramics that date from the 1st century BC onwards, perhaps also from the 3rd/2nd century BC. This indicates that at least from the 1st century BC onwards there were problems with drainage even in higher areas.

Traces of a Roman centuriation grid?

Although the centuriation grid as published by Cancellieri runs only halfway into the survey transect, there are also traces on the pre-bonifica maps to the west (fig. 11); Additional traces within the transect were also observed on aerial photographs of 1936; Taken together, the maps and photographs indicate that the centuriation grid probably extended further northwest than previously thought. The exact boundaries of the grid will have to be established by analysis of additional map sheets and aerial photographs.

Concluding remarks

The archaeological evidence presented here shows that the surveyed part of the *Pomptinae Paludes* was intensively used in Roman times. The distribution of sites and off-site artefacts indicates that in the Republican period large parts of the area were cultivated from dispersed farms. Most of these were founded sometime between the 5th and 3rd centuries BC. From the early Imperial period onwards their number declines strongly, with only a few farms and a villa inhabited in the 2nd and 3rd centuries AD. Perhaps these now exploited larger landholdings and/or had shifted to more extensive forms of land use.

²³ Cf. SEVINK ET ALII 1991, 41; Sevink pers. comm.

²⁴ Sediments in this canal have been radiocarbon dated within GIA's *Hidden Landscapes project*; Feiken pers. comm.

The study of pre-bonifica maps contributes to our understanding of the archaeological remains discovered during the survey: not only do they help identify potential site locations (visible as 'bumps' on these maps), they also prove useful in explaining changes in settlement. Whereas in the Republican period sites occur both in relatively low and high parts, settlement in the 1st century AD clearly concentrated along the *via Appia* and on higher grounds to the southwest. After the 1st century AD sites occur on these higher grounds only. Even on these relatively well drained higher grounds there may have been a need to build on artificial elevations – small 'dwelling mounds'. It thus seems likely that the cause for the abandonment of the lower parts must be sought in deteriorating drainage conditions.

The pre-bonifica maps and aerial photographs also provide additional evidence for the existence of a centuriation grid that has tentatively been linked to a late 4th century agricultural colonization of the lower Pontine plain. The field survey presented in this paper shows that on archaeological grounds it is possible that the grid was part of an early agricultural colonization of the area. However, as the peak of settlement lies in the 3rd to 1st centuries BC, it is also possible that the centuriation is connected to a later restructuring of an already settled area.

It should be kept in mind that the survey covers a relatively small area on the northern fringes of the centuriation; the area further to the southeast lies even lower and hydrological conditions may have been even worse. We could thus also imagine an alternative scenario, in which settlement had expanded up to the very edges of the *Pomptinae Paludes* in the 5th and 4th century BC, which were reclaimed by laying out a centuriation grid and cultivated by new farmers in the 3rd and/or 2nd century BC. This scenario is of course highly speculative, and obviously more research is needed to test various possible scenarios. On the one hand, revisits to sites in the transect could help in providing more detailed dating evidence for sites in this part of the centuriation. On the other hand, systematic surveys should be expanded into adjacent areas in order to evaluate whether other parts of the lower Pontine plain were also settled in the 5th to 3rd centuries BC or later. In my view this is the only way in which we can date the centuriation grid with more certainty and thus understand better the historical context of the agricultural colonization of the *Pomptinae Paludes*²⁵.

SiteID	Survey method	Sampling method	Size	Finds	Date	Interpretation
12301	Block survey	Standard, grab and diagnostic samples	1370 m ²	<i>Impasto</i> (plain and red augite); tile (ao three refittable large tiles); amphora; dolium; coarse ware; depurated ware; <i>terra sigillata?</i> ; glass flask; Iron nail; grinding stone	Possibly Protohistoric and 6 th -4 th century BC; probably 3 rd century BC – 1 st century AD; possibly 2 nd century AD	Farm/tomb(s)
12303	Block survey	Standard and diagnostic samples	2100 m ²	<i>Impasto</i> (red augite); tile; <i>opus spicatum</i> brick; cement; amphora; coarse ware; depurated ware; black glazed; <i>terra sigillata</i> ; African red slip ware; vessel glass; Iron nail	Possibly 5 th -2 nd century BC; certainly 1 st century BC – 3 rd century AD	Farm
12304	Block survey	Standard sample	1470 m ²	<i>Impasto</i> (red augite); tile; amphora; coarse ware; depurated ware; black glazed; possibly bronze object	Possibly 5 th – 1 st century BC	Farm?
12305	Block survey	Standard, grab and diagnostic samples	5600 m ²	<i>Impasto</i> (red augite); tile; <i>opus spicatum</i> brick; dolium (ao red augite) amphora; coarse ware; depurated ware; black glazed; <i>terra sigillata</i> ; Iron nail; possibly slags	Possibly 5 th – 3 rd century BC; certainly 2 nd century BC – 2 nd century AD	Farm/storage area?
12306	Block survey	Standard sample	1630 m ²	<i>Impasto</i> (red augite); tile; dolium (red augite); amphora; coarse ware; depurated ware; black glazed (ao <i>petites estampilles</i>)	Possibly 5 th century BC; certainly 4 th – 2 nd century BC; possibly 1 st century BC – 2 nd century AD	Farm

²⁵ Surveys have been undertaken in these areas by Margherita Cancellieri and her students, but these have not yet been published.

12307	Block survey	Standard sample	2460 m ²	<i>Impasto</i> (red augite); cement; tile; dolium (red augite); amphora; coarse ware; depurated ware; black glazed (ao <i>petites estampilles</i>); Iron nails; loom weight	Possibly 5 th /4 th century; certainly late 4 th century BC – 1 st century AD; possibly 2 nd century AD	Farm
12308	Block survey	Standard sample	2640 m ²	<i>Impasto</i> (red augite); tile; dolium (ao red augite); amphora; coarse ware; depurated ware; black glazed (ao <i>petites estampilles</i>); flat basalt stone	Possibly 5 th /4 th century; certainly late 4 th – 1 st century BC; possibly 1 st – 2 nd century AD	Farm
12309	Block survey	Standard sample	2840 m ²	<i>Impasto</i> (red augite); tile; <i>opus spicatum</i> brick; dolium (ao red augite); amphora; coarse ware; depurated ware	Possibly 5 th – 1 st century BC	Farm
12310	Block survey	Standard and diagnostic samples	2350 m ²	<i>Impasto</i> (red augite); tile; dolium; amphora; coarse ware; depurated ware; black glazed (ao <i>petites estampilles</i>); <i>terra sigillata</i> ; vessel glass	Possibly 6 th – 4 th century BC; certainly late 4 th century BC – 1 st century AD; possibly 2 nd century AD	Farm
12311	Block survey	Standard sample	220 m ²	<i>Impasto</i> (red augite); tile; amphora; coarse ware; depurated ware; black glazed	Possibly 5 th – 3 rd century BC	Small scatter
12312	Block survey	Standard sample	210 m ²	<i>Impasto</i> (red augite); tile; dolium; coarse ware; depurated ware	Possibly 5 th – 3 rd century BC?	Small scatter
12313	Block survey	Standard sample	240 m ²	<i>Impasto</i> (plain and red augite); tile; dolium (red augite); coarse ware	Possibly 6 th – 3 rd century BC	Small scatter
12314	Block survey	Standard sample	170 m ²	Tile; coarse ware; depurated ware	?	Small scatter
12315	Block survey	Standard and diagnostic samples	1920 m ²	<i>Impasto</i> (red augite); tile; dolium (ao red augite); amphora; coarse ware; depurated ware; black glazed	Possibly 5 th /4 th century BC; certainly 3 rd century BC – 1 st century AD; possibly 2 nd century AD	Farm
12316	Site (re)visit	Grab and diagnostic samples	6250 m ² (two cores)	Tile; brick (ao <i>suspensurae</i> ?); painted wall plaster; green marble slab; amphora; dolium; coarse ware; depurated ware; black glazed; <i>terra sigillata</i> ; ARSW; vessel glass; oil lamp; Iron nail; slag; glass water?	Possibly 5 th /4 th century BC; certainly 3 rd century BC – mid 3 rd century AD; possibly second half 4 th – early 7 th century AD	Villa
12317	Block survey	Standard sample	1240 m ²	Tile; dolium (ao red augite); amphora; coarse ware; depurated ware; dolium wasters; slags	Possibly 4 th -start 3 rd century BC ?	Farm/pottery workshop
12318	Block survey	Standard and grab samples	1750 m ²	Tile; dolium; amphora; coarse ware; depurated ware; black glazed	Possibly 5 th /4 th century BC; certainly 3 rd -1 st century BC; possibly first half 1 st century AD	Farm
12319	Site (re)visit	Diagnostic samples	1710 m ²	<i>Impasto</i> (red augite); tile; <i>tesserae</i> ; dolium (ao red augite); amphora; coarse ware; black glazed; <i>terra sigillata</i>	Possibly 3 rd -1 st century BC; certainly 1 st century AD?	Farm
13441	Site (re)visit	Diagnostic samples	Unclear	<i>Impasto</i> (plain and red augite); tile; amphora coarse ware; depurated ware; black glazed	Possibly 6 th – 1 st century BC	Farm?
13443	Site (re)visit	Diagnostic samples	1200 m ²	<i>Impasto</i> (red augite); cement; tile; brick; <i>tesserae</i> ; dolium; amphora; coarse ware; depurated ware; black glazed	Possibly 6 th – 1 st century BC	Farm

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Tymon de Haas
University of Groningen
Groningen Institute of Archaeology
Postraat 6
9712 ER Groningen
the Netherlands
E-mail: t.c.a.de.haas@rug.nl

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