



Universiteit
Leiden
The Netherlands

Colonial landscapes : demography, settlement organization and impact of colonies founded by Rome (4th-2nd centuries BC)

Pelgrom, J.

Citation

Pelgrom, J. (2012, January 12). *Colonial landscapes : demography, settlement organization and impact of colonies founded by Rome (4th-2nd centuries BC)*. Retrieved from <https://hdl.handle.net/1887/18335>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/18335>

Note: To cite this publication please use the final published version (if applicable).

Appendices

1. The results of traditional, site-orientated survey projects⁷⁵⁶

Table 14: Survey of surveys in colonies founded before the Latin War.

Colony	Description of survey
Fidenae	The territory was investigated systematically in the context of the larger <i>Latium Vetus</i> Project. In an area of roughly 15 sq. km., an average density of more than 3 settlement sites per sq. km. was recorded. ⁷⁵⁷ On the grounds of their size, a substantial number of these sites are interpreted as representing villages or clusters of more than one farm. ⁷⁵⁸
Signia	In the territory of Signia, an archaeological inventory compiled in the mid-1980s covering an area of roughly 160 sq. km. mapped a total of 155 sites (density of almost 1 site per sq. km.). ⁷⁵⁹ The publication does not give any precise information about the chronology of these sites and states only that most were occupied in the Republican period.
Sutrium	Around the colony of Sutrium, approximately 84 sq. kms were surveyed under the direction of Duncan. ⁷⁶⁰ Only one site has been identified dating to the 5 th -4 th centuries, and 32 Republican sites (density of 0.4 sites per sq. km.). ⁷⁶¹ Similar low densities are recorded in a topographical study published in 1980 in the <i>Forma Italiae</i> series, which concentrated mostly on the south-east part of the territory. According to this study, the rural settlements recognized all date to the late Republican and Imperial periods. ⁷⁶²

⁷⁵⁶ This section describes the results from site-orientated surveys conducted in Roman colonial territories in Italy after the Second World War. Survey projects which have used more intensive off-site sampling strategies are described in the next section. For several reasons, here no further categorization based on survey intensity has been attempted, although it is very likely that there are significant differences in the quality of the various survey projects described (on this see section 2.4.2.) Information on used survey strategies is often only very sparsely published, if at all. Especially in the Italian survey school, it is not yet common practice to describe sampling strategies. Nevertheless, as Terrenato 1996 has argued most of these projects used comparable survey strategies to those of Anglo-Saxon site-orientated surveys (this conclusion is supported by the fact that retrieved site densities of Italian and Anglo-Saxon projects are often, but not always, rather similar). Even when information on the adopted survey method is provided (see section 2.4.1. for a brief description of this), this is more often than not done in a very generic manner and it is mostly impossible to figure out basic information such as what areas precisely have been actually field walked.

⁷⁵⁷ Quilici and Quilici Gigli 1986, tav. CLXXXI. The research project was launched in the mid-1970s by the Department of Etruscan-Italian Archaeology of the Italian Research Foundation (CNR). Most of the southern half of the *Ager Fidenates* is urbanized nowadays and could not be surveyed systematically. At the time of the survey, the northern part of the territory was used for agricultural purposes and was ideally suited to a field survey (Quilici and Quilici Gigli 1986, 260 and tav. CLXXIV).

⁷⁵⁸ Most of the recognized sites were already occupied in the pre-colonial period and had generally been founded during the sixth century. A possible explanation of this unexpected settlement stability the researchers claim is that most of the systematically surveyed area was not part of the land confiscated by Rome and settled by colonists. They locate the confiscated land in the southern part of the Fidenate territory, which is closest to Rome. However, because of modern building activity, most of this area was not surveyed systematically. Therefore it is impossible to monitor the impact the Roman conquest and colonization had on this part of the territory (Quilici and Quilici Gigli 1986, 388-393, tav. CLXXXI).

⁷⁵⁹ Cassieri and Luttazzi 1985. See also Attema and Van Leusen 2004, 166-167.

⁷⁶⁰ Duncan 1958; Potter 1979.

⁷⁶¹ Potter 1979, 96 Table 6. Fig 7a in Duncan 1958, 94 shows 38 dots.

⁷⁶² Morselli 1980. Only a few tombs could be dated before this period. Following a geological study (Hutchinson 1970), Morselli argues that most of this area was covered by forest until at least the mid-third century.

Colony	Description of survey
Nepet	<p>The territory of Nepet was surveyed as part of the <i>Ager Faliscus</i> Survey, which covered an area of circa 165 sq. km.⁷⁶³ A total of 104 5th to 4th century sites has been identified (density 0.6) and 142 sites with black gloss pottery dating mostly to the third century (density 0.85).⁷⁶⁴ In the 1990s circa 40 sq. km. located to the south-east of Nepet were resurveyed by the <i>Gruppo Archeologico Romano</i>.⁷⁶⁵ The survey revealed that the flourishing pre-Roman landscape underwent a dramatic drop in site numbers immediately following the conquest and colonization of the area. Only 16 sites are datable to this period, all of which are located at some distance from the <i>oppidum</i> of Nepet (density 0.4). In the third century, site numbers rose to 33 (density 0.8). In total, 106 Republican sites have been identified (density 2.65). Yet another survey was conducted in the territory immediately surrounding the town of Nepet as part of the Tiber Valley Project. Between 1999 and 2001, a total of 2.02 sq. km. was intensively surveyed.⁷⁶⁶ In this area, 16 sites had been discovered by the previous surveys. Eleven of those could be relocated. The final survey results are not yet published, but preliminary studies suggest that the territory was intensively occupied in the Roman Republican period.⁷⁶⁷</p>

⁷⁶³ Frederiksen and Ward-Perkins 1957.

⁷⁶⁴ Potter 1979, 90, Table 3 and page 97, Fig. 27. A study of the black gloss pottery from the *Ager Faliscus* by Morel demonstrated that 75% dated to the third century. This conclusion is confirmed by a recent re-study of all the South Etruria Survey suggests that most black gloss pottery collected during the surveys belongs to the third, rather than to the second, century (Di Giuseppe 2008, with references).

⁷⁶⁵ Camilli, et al. 1995.

⁷⁶⁶ Di Gennaro, et al. 2002; Di Gennaro, et al. 2008.

⁷⁶⁷ Di Gennaro, et al. 2008, 882-883.

Table 15: Survey of surveys in Latin colonies.⁷⁶⁸

Colony	Description survey
Cales	In the territory of the first Latin colony which was founded after the Latin War, two sample areas were investigated in 1980. ⁷⁶⁹ In the first, which is located circa 2 km. to the north-east of the <i>oppidum</i> , in the foothills of the Monte Maggiore, a total of 17 Republican settlement sites were identified (density 2.8), of which 8 produced pottery of the 3 rd century (density 1.33). ⁷⁷⁰ The area was already settled in the pre-Roman period with 5 recorded sites; four of which continued into the colonial period. ⁷⁷¹ Very different results were obtained in the second sample area, located in the fertile Campanian Plain at circa 2 km. to the south-west of Cales. Here only one Republican settlement and two tombs have been identified (density of 0.16). On average, the site density in the <i>Ager Calenus</i> during the late fourth and third centuries is 0.75 sites per sq. km. and 1.5 for all Republican settlement sites.
Fregellae	The territory of Fregellae was investigated (in the period between 1978 and 1998) by three separate survey projects. A team of Canadians under the direction of the late Edith Wightman surveyed the eastern part of the territory as part of the larger Lower Liri Valley Survey Project. ⁷⁷² A first sample area of circa 13 sq. km. was located between the Melfa and Liri Rivers, a little more than 1 km. to the south-east of the town walls of Fregellae. In this area, only four Republican settlements were identified (density 0.3); two of which contained pottery dating to the late 4th/ 3rd centuries (density of 0.15); both are large settlements. ⁷⁷³ No evidence for Late Iron Age settlement was discovered here. Farther upstream, at a distance of circa 6 km. to the north-east of Fregellae, another sample area was investigated by the Canadian team covering part of the mountainous territory of the modern village of Rocca d'Arce. In the circa 6.5 investigated sq. km., 15 Republican settlements have been identified (density of 2.3); 7 of which contained pottery dating to the early colonial period (density of 1.1). ⁷⁷⁴ The western part of the territory was covered by a British survey team. ⁷⁷⁵ In an area of 9 investigated sq. km., a total of 16 Republican sites were

⁷⁶⁸ There are topographical studies for some other Latin sites in this period which are not included in this review because it was impossible to work out the relevant site densities. In the territory of Hatria (circa 600 kms²) a topographical study has recorded a total of 50 Roman rural settlements and 6 larger settlements, which are interpreted as villages (Menozzi and Martella 1998, 41-44). Topographical and intensive field survey has been conducted in the territory of Paestum. The intensive survey has concentrated only on the Archaic period (Skele 2002), with further references. For Firmum see Pasquinucci and Menchelli 2004; Pasquinucci, et al. 2007. On the territory of Placentia see Dall'Aglio and Marchetti 1991, on that of Bononia: Scagliarini 1991; De Maria 1991. In the territory of Vibo Valentia, topographical research has been conducted (Iannelli and Givigliano 1989). A total of 84 sites was mapped.

⁷⁶⁹ Compatangelo 1985.

⁷⁷⁰ Compatangelo 1985, tav. I. According to the main text (page vii and 7), the sample areas measured circa 20 sq. km. On the maps, however, they are considerable smaller (c. 6 sq. km.). Since the scale of the maps seems to be correct, I have used these sample areas for my calculations. The dating of the sites is based on the catalogue (page 19-65).

⁷⁷¹ E.g. sites 4/5; 7; 13/14; 16. Site No. 4/5 is large and is possibly best interpreted as a small village.

⁷⁷² Hayes and Martini 1994.

⁷⁷³ Hayes and Martini 1994, fig. 22. See also the site catalogue. The total area covered by Sample Area 1 (Zone 1) is larger than the 13 sq. km. used here. A substantial part is located to the east of the Melfa River, which was probably not part of the territory of Fregellae. The two sites are: No. 22 which covered an area of 0.5 hectares and is interpreted as a villa, and Site 28 which is classified as a major site. Since both sites have a long occupation history, it is impossible to establish how large they were during the period of colonization.

⁷⁷⁴ Zone 2 in Hayes and Martini 1994, fig. 27. Most of these sites were founded in the Pre-Colonial period and are not easy connected to the arrival of colonists in the area. This part of the territory is particularly rich of Iron Age settlements, besides a number of isolated farms a major fortified Iron Age settlement has been identified on Rocca d'Arce Hill (see Monti in Coarelli and Monti 1998, 105-92; the site is interpreted as the *arx fregellana*, i.e. the Volscian town called Fregellae). Moreover, just across the Melfa River, hence probably outside the territory of Fregellae, a very large village settlement with a chronology between the Iron Age and the Imperial periods was discovered (Site 113/119/120, Hayes and Martini 1994, fig 31). It seems likely that the rather dense Iron Age settlement network recorded in this area is somehow connected to these larger settlement realities.

⁷⁷⁵ Crawford, et al. 1986.

	identified (density 1.8). ⁷⁷⁶ The central part of the <i>Ager Fregellanus</i> was investigated fairly extensively in the 1990s by an Italian scholar. ⁷⁷⁷ In the circa 100 sq. km. investigated (of which large areas were urbanized or forested and not suitable to field survey), a total of 22 sites was mapped which contained black gloss pottery (density 0.22). ⁷⁷⁸ Most of these sites, which were located almost exclusively on the west bank of the Liri River, appear to be new foundations. A particularly high settlement density was recorded in the <i>località</i> Moricino, situated 1 km. to the north-west of Ceprano. Here in an area of circa 1.5 sq. km. a settlement density of c. 4 Republican sites per sq. km. was recorded.
Luceria	Part of the territory of Luceria was surveyed systematically in the late 1990s in the context of the <i>Valle del Celone</i> Survey Project of the University of Foggia, which set out to investigate the landscape of the excavated Late Roman settlement of San Giusto. ⁷⁷⁹ In total 35 sq. km. was covered, in which a total of 42 Republican settlement sites were identified (density 1.2). ⁷⁸⁰ Of these sites, 39 are interpreted as farms, three as villages. Half of the sites contained material dating to the late fourth/ early third century (density of 0.6). For the other sites the earliest ceramics dated to the 2 nd century. ⁷⁸¹
Suessa Aurunca	The territory, which was surveyed mostly singled-handed by Paul Arthur in the late 1970s and early 1980s as part of the Northern Campania Survey Project, also covered part of the <i>Ager Falernus</i> and the territory of the maritime colony of Sinuessa (see below). ⁷⁸² In the area of circa 30 sq. km. between Sessa Aurunca and the modern town of Piedimonte in the south and Cascano in the east, a total of 20 Republican settlement sites have been identified (density 0.7), of which two are interpreted as villages. ⁷⁸³ Only four of those sites contained ceramics dating to the late fourth/ early third century (density 0.1). ⁷⁸⁴
Interamna Lirenas	The territory surrounding Interamna Lirenas was investigated in the context of the Lower Liri Valley Survey Project (see above). In an area of slightly more than 40 sq. km. of investigated terrain, a total of 47 Republican settlements sites has been identified (density 1.1), of which 13 contained pottery dating to the early colonial period (density 0.3). The vast majority of these sites appears to have been a new foundation. With the exception of one restricted area to the south of the Liri River near the modern village of Sant'Apollinare, very few traces of Iron Age settlement have been identified in the research area.

⁷⁷⁶ Crawford, et al. 1986, 44, fig. 2 and 51. The total sample area measured 17 sq. km., but only 9 sq. km. could actually be walked; the centre of the research area is covered by woodlands. The sites are dated only generically to the Republican period, on the basis of the presence of black gloss pottery. A study of these ceramics by J-P Morel suggests they belong to the third century or to the first three-quarters of the second century and not later (hence after the destruction of the colony). Regrettably, it is still uncertain how many were occupied in the Early Colonial period. Especially since according to the literary tradition, Fregellae witnessed a period of demographic growth during the first half of the second century, it is possible that part of the discovered sites belong to this period. The survey team found no evidence of Pre-Roman occupation of the area, despite the fact that they had a Bronze Age/ Iron Age pottery expert in the team (Crawford, et al. 1986, 43).

⁷⁷⁷ Monti in Coarelli and Monti 1998, 88. The research was conducted with the aim of creating an archaeological map of territory of the modern town of Ceprano (which includes the ancient cities of Fregellae and Fabrateria Nova).

⁷⁷⁸ Coarelli and Monti 1998, tav. XIII. The area partly overlaps with the Canadian and British surveys.

⁷⁷⁹ Volpe, et al. 2004. Initially, only a small elongated transect was surveyed near the Torrente Vulgaro where a large pipeline was to be constructed. Soon afterwards, it was decided to survey two additional and larger sample areas: the first covering the territory around the San Giusto site, the second that between the Celone River and Monte Croce located c. 5 km. to the south-west of the San Giusto sample area.

⁷⁸⁰ Volpe, et al. 2004, 196 and 211 fig. 10. For size of sample areas page 190.

⁷⁸¹ Only two Iron Age sites were recognized and a total of 25 Bronze Age sites were mapped.

⁷⁸² Arthur 1991.

⁷⁸³ See Arthur 1991, fig. 22 and the site catalogue.

⁷⁸⁴ All except one of these 3rd century sites were founded in the Pre-Roman period. Village Site C5 appears to be a new foundation.

Colony	Description of survey
Venusia	The territory of Venusia was covered by two survey projects, both published in the <i>Forma Italiae</i> series. The immediate surroundings of the colonial town centre were investigated by Marchi and Sabbatini. ⁷⁸⁵ In an area of slightly more than 130 sq. km., a total of 223 Republican sites were mapped (density 1.7), of which 34 contained pottery datable to the early colonial period (density 0.3). ⁷⁸⁶ The second <i>Forma Italiae</i> volume covers the territory to the north of the River Matinella between the modern towns of Lavello and Montemilone. ⁷⁸⁷ In the circa 100 sq. km. investigated, a total of 103 Republican sites has been identified (density 1) of which only 5 contained pottery datable to the early colonial period (density < 0.1). ⁷⁸⁸
Cosa	A first large-scale survey of the entire territory of Cosa (roughly 500 sq. km.) was initiated in 1974 by the Wesleyan University under the direction of Stephen Dyson. ⁷⁸⁹ In this area, of which nowadays roughly 50 % is cultivated, a meagre 63 Republican sites (density 0.1) were mapped, of which only 2 produced pottery datable to the early colonial period. A couple of years later, the territory was subjected to another large-scale, more intensive survey by a joint Italian and British team. ⁷⁹⁰ The ambitious Albegna Survey Project, which also covered the territories of the later colonies of Saturnia and Heba, resurveyed almost one-third of the total colonial territory (roughly 160 sq. km.), concentrating on the fertile valle d'Oro area, located immediately to the north of the colonial town centre. The project mapped a total of 38 settlement sites which contained pottery datable to the early colonial period, of which 24 are located in the survey transects (density 0.15). ⁷⁹¹ Occupation in this period is considered probable for another 34 sites (density then rises to 0.4). ⁷⁹² If all Republican settlements are included, the density rises to 1.8 per sq. km. Few traces of pre-Roman settlement have been identified in the Valle d'Oro area. Etruscan settlement within the boundaries of the <i>Ager Cosanus</i> was confined mostly to the peninsula of Orbetello, where a large nucleated settlement has been identified, and in the more mountainous areas in the north of the territory. ⁷⁹³

⁷⁸⁵ Marchi and Sabbatini 1996.

⁷⁸⁶ According to the researchers, 95% of all Pre-Roman sites ceased to exist at the beginning of the third century Marchi and Sabbatini 1996, 19 fig. 4 and 114. This situation is most clearly visible in the Mass. Casalini area, where in Pre-Roman times a very dense cluster of settlements existed, which all disappeared after the foundation of Venosa, leaving the area almost empty of habitation. The pattern of settlement transformed radically from being a rather clustered site configuration into a dispersed site distribution pattern. The newly founded sites are in general very small, $\frac{2}{3}$ is smaller than 200m² and 1/3 of the total sample is even smaller than 100m²; an obvious decrease in size in comparison with the settlements of the Pre-Roman period (Marchi and Sabbatini 1996, 102 fig. 62). Only very few larger sites have been identified (see fig. 62). A final significant change regards location preference. While most Pre-Colonial sites are located on hill slopes; most settlements of the Republican period are located in the plains (Marchi and Sabbatini 1996, 116 fig. 81).

⁷⁸⁷ Sabbatini 2001.

⁷⁸⁸ If the second century is included, the number rises to 88 (Sabbatini 2001, 58 note 29). Of the 21 Pre-Colonial sites, 33% continued into the Colonial period (Sabbatini 2001, 58 fig. 22). However, most sites which contained ceramics datable to the third century were founded in the Pre-Colonial period. The new sites are generally much smaller than those founded in the Daunian period (Sabbatini 2001, 59 fig. 24). But, in contrast with what was recorded to the south of the Matinella River, the majority of these sites are located on the slopes and tops of hills (Sabbatini 2001, 60 fig. 25).

⁷⁸⁹ Dyson 1978.

⁷⁹⁰ Final results in Carandini, et al. 2002, with further references.

⁷⁹¹ Carandini, et al. 2002, 107 fig. 40 and page 115 tav. 14. Slightly different numbers in Cambi 1999.

⁷⁹² The period of maximum settlement numbers is the second century with 75 sites (Witcher 2006, fig. 3).

⁷⁹³ Carandini, et al. 2002, 84-85 tav. 8; Perkins 1999, fig. 10.3.

Colony	Description of survey
Brundisium	In the territory of Brundisium, a large systematic survey was conducted. Circa 65 sq. km. to the west of the colonial town centre was investigated under the direction of Manacorda of the University of Siena. ⁷⁹⁴ In this area, 37 sites dating to the early colonial period (250-150) were recognized (density 0.6). This settlement intensifies notably in the late Republican period (150-50) to 92 sites of which 5 are villages (density 1.4). ⁷⁹⁵
Cremona	A topographical study of the eastern part of the territory of Cremona mapped a total of 127 Roman settlement sites in an area of c. 400 sq. km. between the Oglio and Po Rivers (density of 0.3). ⁷⁹⁶ Most sites date to the late Republican/ early Imperial period and it is postulated that this part of the territory was only reclaimed in the late Republican period.
Thurii-Copia	Surveys have so far concentrated only on the northern and central part of the territory. In the 1960s, under the direction of Lorenzo Quilici, a total of 800 sites were mapped in an area of circa 500 sq. km. Almost no sites were identified in the coastal plain (measuring c. 150 sq. km.), which can be explained by the fact that an alluvial deposit of 8 to 6 metres covers the Classical archaeological strata. In the c. 350 sq. km. of inland, a total of circa 400 Hellenistic-Roman sites was identified (density 1.1). ⁷⁹⁷

⁷⁹⁴ For final publication see Apro시오 2008.

⁷⁹⁵ See Apro시오 2008, 113.

⁷⁹⁶ Vullo 1995, fig. 7.

⁷⁹⁷ Quilici 1967, 150 fig. 3. More than 460 Hellenistic-Roman sites are listed on the map; about 60 are located in the coastal plain.

Table 16: Survey of surveys in citizen colonies.⁷⁹⁸

Colony	Description survey
Antium	The lands directly surrounding the town of Antium have been investigated rather unsystematically and only 2 certain and 4 possible sites, which can be dated to the period 350-250, have been recognized in a radius of 3 km. around the town. ⁷⁹⁹
Minturnae	The territory of Minturnae was investigated in the late 1980s by three Italian students for their doctoral theses. ⁸⁰⁰ In total, 11 sites have been recognized in the territory to the west of Minturnae alongside the via Appia (density of circa 1 site per sq. km.), of which 5 are interpreted as Republican settlements (density 0.45). To the north-east of Minturnae, another 22 sites have been recognized, resulting in a density of circa 0.6 sites per sq. km., of which 13 produced Republican pottery (density 0.4).
Sinuessa	Sinuessa was investigated as part of the Northern Campania Survey (see above). In the coastal area between the Roman colony and the modern town of Mondragone (c. 10 sq. km.), a dense network of settlement was identified: 27 sites produced Republican ceramics (density 2.7), but only three of these could be dated certainly to the third century (density 0.3). No pre-Roman material has been identified on the vast majority of these sites. ⁸⁰¹
Pyrgi and Alsium	The lands surrounding Pyrgi and Alsium were investigated by an Italian team in the late 1980s and early 1990s as part of the larger <i>Ager Caeretanus</i> Survey Project (with a total sample area of 400 sq. km.). The south-eastern part of this territory was investigated first and covered part of the territory of the later citizen colony of Alsium, founded in 247. In the 92.5 sq. km. which was covered, a total of 797 sites was identified (density of 8.6 sites per sq. km.). Of these, 54 settlement sites (density 0.58) produced pottery dating to the 5 th and 4 th century (of which three large ones) and 124 dating to the 3 rd and 2 nd century (density 1.34). Furthermore, the survey data revealed a strong continuity of Etruscan sites into the Roman period. ⁸⁰²
Volturnum	In Volturnum, an area of circa 10 sq. km. located to the south of the Volturno River was investigated. ⁸⁰³ A total of 14 Republican settlement sites was mapped (density of 1.4), most of which did not produce ceramics antedating the second century. Only two sites contained pottery dating to the late fourth and third century and only one larger village is dated to the late Archaic period.

⁷⁹⁸ For some other citizen colonies in this period, there are topographical studies which are not included in this review because it was impossible to work out the relevant site densities. For example, a substantial part of the territory of Ostia was surveyed in the early 1990s as part of the Malafede Survey (Arnoldus-Huyzendveld, et al. 1995), but so far publications have focused on the Pre-Historic period. The territory of the Roman colony of Castrum Novum has also been investigated in the context of the *Forma Italiae* series (Gianfrotta 1972). This early study was carried out fairly unsystematically and the chronological resolution is very coarse (e.g. Etruscan or Roman).

⁷⁹⁹ The territory was investigated by Liboni. See Attema, et al. 2009, 20-21 for a discussion of this research and page 68, fig. 8.1 for the sites dating to the early colonial period.

⁸⁰⁰ In Coarelli 1989.

⁸⁰¹ Arthur 1991. In the area between Sinuessa and the modern village of Piedimonto, Republican settlement is more diffuse (density of circa 1 Republican site per sq. km.); only one third-century site was identified (density c. 0.1).

⁸⁰² Enei 1992; Enei 1995; Enei 2001.

⁸⁰³ Crimaco 1991.

Colony	Description survey
Tempsa	<p>Research in the territory of Tempsa has revealed almost no traces of late Republican rural settlement. The recent <i>Forma Italiae</i> volume, which covers a substantial part of coastal area of western Calabria, records a total of 21 sites with black gloss pottery (density 0.3), in the circa 70 sq. km. of territory between Oliva and Savato Rivers (the probable territory of the colony of Tempsa).⁸⁰⁴ Only 1 of these sites could be dated with certainty to the Colonial period (200-50) and another 3 were probably occupied in this period (density of less than 0.01). The vast majority of sites seems to have been abandoned before or soon after the Second Punic War.</p>
Croton	<p>The territory of Croton was surveyed in the 1980s by a combined Italian-American research team under the direction of Joseph Carter of the University of Texas.⁸⁰⁵ Special attention was paid to what is known as the Capo-Colonna area; a peninsula with terminates in the well-known sanctuary of Hera. Recent studies have convincingly argued that the Roman colony was founded on this location.⁸⁰⁶ During four survey campaigns (1983 to 1986), a total of 30 sq. km. was covered and c. 460 sites were identified (density 15.3). More precise chronological information is available only for the 1985 survey campaign, during which an area of 4 sq. km. was investigated and 64 sites were recognized (density 16).⁸⁰⁷ Only 6 farm sites and one larger site, which could have been an administrative centre of the sanctuary, were dated to the Classical Greek period (5th and 4th centuries), while a total of 14 late Republican settlement sites was identified (density 3.5; all new foundations). In the rest of the territory of Croton, site dynamics reveal the opposite trend: high site numbers in the Classical-Early Hellenistic period and a steep drop in the Republican period.⁸⁰⁸ This flourishing late Republican landscape is possibly connected with the foundation of the colony. The relatively low settlement numbers in the Classical period is tentatively connected by Carter to a passage of Livy (24.3), who mentions grazing lands for the animals of Hera in the area.</p>

⁸⁰⁴ La Torre 1999.

⁸⁰⁵ Carter 1990. For full bibliography see: http://www.utexas.edu/research/ica/publications/crot_biblio.htm.

⁸⁰⁶ On this see Chapter 5.

⁸⁰⁷ Carter 1986.

⁸⁰⁸ Carter and D'Annibale 1993.

Colony	Description survey
Saturnia	The territory of Saturnia was investigated as part of the large-scale Albegna Valley Survey Project (see above). Around the Colonial <i>oppidum</i> , an area of circa 15 sq. km. was systematically surveyed, in which 35 settlement sites dating to the period 200-50 (density 2.2) were mapped. ⁸⁰⁹ The vast majority of these sites appear as new foundations. ⁸¹⁰ In the Poggio Semproniano area, located 5 km. to the north of the Colonial town centre, settlement density was significantly lower (almost 1 site per sq. km.). Moreover, a stronger continuity was recorded here between the third and second centuries: almost 50 % of the sites continued into the Colonial period. ⁸¹¹ A slightly higher settlement density was recorded in the southern part of the <i>Ager Saturninus</i> . In the sample transect located circa 2 km. to the south of the colonial town centre a settlement density of 1.3 was recorded. ⁸¹² Almost all these sites appear to be new foundations. ⁸¹³
Mutina	In the north-eastern part of the territory of Mutina, several topographical studies have been conducted in the last few decades. The results of these different initiatives have recently been brought together in a single publication. ⁸¹⁴ In an area of circa 300 sq. km., a total of 312 Roman sites was mapped, of which 270 are interpreted as settlements (density of 0.9). ⁸¹⁵ For 197 of these sites, diagnostics were collected which enabled a more precise definition of the period of occupation. Eighty-eight sites contained pottery dating to the 2 nd and early 1st centuries (density of 0.3 sites per sq. km.). ⁸¹⁶ It is uncertain how many of these were new foundations, since the Pre-Roman material collected has not been published. Higher settlement densities were recorded in the immediate surroundings of the city of Mutina. In the archaeological map of the modern communality of Modena (182 sq. km.), which is available on the Internet, a total of 328 extra urban Roman settlements have been identified (density 1.8), of those 189 were founded in the 2 nd century (density 1); 60 sites could only generically be dated to the Roman period. In total 92 Iron Age settlement sites were recognized. ⁸¹⁷
Luna	Luna was surveyed in the late 1970s. During two campaigns, an area of 18 sq. km. was investigated to the north-west of the city of Luni and the Magra River. ⁸¹⁸ A total of 15 Roman sites was mapped (density 0.8), mostly located in the lower hill zone, of which seven contained black gloss pottery (density 0.4). ⁸¹⁹ Most of these sites had scatters measuring between 1,000 and 1,500 m ² , two, however, were larger (4000-5000 m ²) and are interpreted as larger settlements. No pottery scatters dating to the pre-colonial period were recognized.

⁸⁰⁹ Based on Carandini, et al. 2002, 170 tav. 25. Twenty-two of these are interpreted as small houses (casa 1), 7 as larger houses (casa 2), 4 villas and one village. Based on the table in Carandini, et al. 2002, 140, which lists all sites mapped in the *Ager Saturninus*, almost half of the sites represented on the map has the status of possible site (See also Attolini, et al. 1991, fig 4, which also records 3 village sites in the area, and Cambi 1999).

⁸¹⁰ Only 4 settlement sites have been identified in the area which produced pottery from the 3rd century; with the exception of one, all of those sites continue into the Colonial period.

⁸¹¹ Compare tav. 14 and 25 in Carandini, et al. 2002. Most of these sites originated in the Etruscan period (see Carandini, et al. 2002, fig. 40).

⁸¹² Carandini, et al. 2002, 169, tav. 24.

⁸¹³ In this area almost no traces of Pre-Colonial settlement were recorded (Carandini, et al. 2002, tav. 14 and fig. 40). Only two tombs/ houses possibly predate the Colonial period.

⁸¹⁴ Corti 2004 (with references).

⁸¹⁵ Corti 2004, 154. The area covered is located between the Secchia and the Tresinaro Rivers and corresponds to the territories of the moderns communalities of Carpi, Soliera, Campogalliano and part of the territory of Modena (that of the frazione Ganacetto) and San Martino in Rio.

⁸¹⁶ Based on site catalogue and tables of collected materials (Corti 2004, 293-306).

⁸¹⁷ <http://urbanistica.comune.modena.it/prg/qc/archeo/1d3-SchedaturaSitiArcheo.pdf>. (last accessed: 1-8-2010)

⁸¹⁸ Delano Smith, et al. 1986.

⁸¹⁹ Delano Smith, et al. 1986, 101 Table 3. At one site (9) black gloss pottery was not identified during the survey, but was retrieved by excavation.

Colony	Description survey
Heba	<p>The settlement density in territory of Heba was investigated as part of the Albegna Survey Project (see above). In the lands immediately surrounding the colony, on average 1.8 settlement sites per sq. km. were mapped.⁸²⁰ Two kilometres to the west, the density decreases to slightly more than 1 site per sq. km.,⁸²¹ to rise again to 1.4 site per sq. km. in the coastal area of the former Etruscan city of Doganella.⁸²² For all, transect settlement density in the Colonial period is significantly higher than that recorded for the 3rd century. Especially in the immediate surroundings of the colonial town centre, very few traces of third-century occupation were encountered. The coastal areas were inhabited more intensively in the Pre-Colonial period; most of these sites continue into the second century.</p>

⁸²⁰ Carandini, et al. 2002, 166, tav. 23. The survey area is circa 15 sq. km..

⁸²¹ Carandini, et al. 2002, 166, tav. 22. The survey area of circa 15 sq. km..

⁸²² Carandini, et al. 2002, 166, tav. 22. The survey area of circa 22 sq. km..

Table 17: Survey of surveys in areas of viritane settlement.

Viritane area	Description survey
Ager Veientanus	<p>Roughly 300 sq. km. of the probable territory was investigated as part of the ambitious South Etruria Survey Project.⁸²³ A first synthetic study of the results was published by Potter in 1979. He listed a total of 127 sites for the 5th to 4th centuries and 242 sites for the 3rd to 1st centuries,⁸²⁴ resulting in densities of respectively 0.42 and 0.81 sites per sq. km.. Particularly striking was the fact that no evidence for a disruption in the settlement organization was noticed following the period of the Roman conquest of this territory. The transition from the Etruscan to the Roman period was instead characterized by a gradual expansion of settlement and intensification of land use.⁸²⁵ Recent restudy of the ceramics collected during the South Etruria surveys, however, suggest a rather different picture.⁸²⁶ On the whole, it appears that site numbers in the period 480-350 are 42 % lower than suggested by Potter. Therefore, the period is now characterized by a steep drop in site numbers (65 % of sites was abandoned in this period), only to rise again in the period 350-250. On the basis of these studies, settlement density must be adjusted to c. 0.25 for the period 480-350 and 0.7 sites per sq. km. for the period 350-250. After the Second Punic War, settlement density drops again to roughly 0.25 sites,⁸²⁷ only to rise again steeply in the period 150 to 30 when Republican settlement density reached its maximum, just exceeding 0.8 sites per sq. km.</p>
Ager Falernus	<p>Four surveys have investigated different parts of the <i>Ager Falernus</i>. The northern part was investigated by French researchers in the 1970s. In an area of circa 80 sq. km., a total of 20 sites with black gloss pottery has been indentified (density of 0.25).⁸²⁸ Not much later, the area was re-investigated by an English research team under the direction of Paul Arthur. This project covered an extensive territory of circa 150 sq. km., centering on and around the Monte Massicio. Circa 60 sq. km. of this sample area is located to the east of the Monte Massicio and can be considered part of the ancient <i>Ager Falernus</i>.⁸²⁹ In this area only 4 settlement sites dating to the Colonial period were mapped (density of less than 0.1), of which two are interpreted as villages. The maximum number of Republican settlements is recorded for the late Republican period (200-50), a total of 60 sites are datable to this period (density of 1 site per sq. km.). The southern part of the <i>Ager Falernus</i> was covered by two Italian surveys. The first, which concentrated on the citizen colony of Volturnum (see above), mapped 12 settlement in the coastal area to the north of the Volturno (c. 30 sq. km.) which is considered part of the <i>Ager Falernus</i> (density 0.4), among which one large village site (No. 5).⁸³⁰ Most of</p>

⁸²³ The South Etruria Project covered almost 1,000 sq. km., which included besides the *Ager Veientanus*, the ancient *Ager Capenas*, *Ager Faliscus* and *Ager Sutrinus*. (see in general on this project Potter 1979, 1-9). The *Ager Veientanus* was defined as the territory between the Monti Sabatini, the *via Flaminia* and the *via Cassia*, which is circa 300 sq. km. (Potter 1979, 4 map 1). It is uncertain how much of this territory was actually investigated by field walkers and how precisely the sites were defined (the methodology section in Potter 1979, 10-14 is not very clear in this regard).

⁸²⁴ Potter 1979, 90 Tables 3 and 96, Table 4.

⁸²⁵ Only a fraction of the old sites was abandoned and 131 sites were founded in this period.

⁸²⁶ The restudy is done in the context of the Tiber Valley Project (see in general on this project Patterson and Millett 1998; Patterson, et al. 2000). For a preliminary re-evaluation of the settlement evolution see Patterson, et al. 2004 and Di Giuseppe 2008.

⁸²⁷ That only a minority of the black gloss pottery collected during the South Etruria Survey dated to the second century had already been concluded by Liverani 1984. A restudy of a selection (600) of the total amount of black gloss shards collected demonstrated that 80 % dated to the late-4th to early-3rd century and only minority dated to the second century. The study of Di Giuseppe 2008 more or less confirms this view (although less marked).

⁸²⁸ Vallat 1983; Vallat 1987. For a review of this research and that of Arthur (cf. below) see Fentress 1993.

⁸²⁹ Arthur 1991.

⁸³⁰ Crimaco 1991, (esp. Tav. XXVI and XXVIII).

	<p>these site date to the 2nd century and later. Only three sites (including the village) produced late-fourth- and early-third-century material (density of 0.1 sites per sq. km.). Farther inland, an Italian research team from the Universities of Naples and Bologna has recently carried out a survey, as part of the <i>Carta Archeologica e ricerche in Campania</i>, of a considerable tract of land between the Volturno River and the Agnere Channel.⁸³¹ In an area of circa 25 sq. km., the researchers located a total of 18 Republican sites (density 0.7). Only three sites produced material dating to the Colonial period (density 0.1); the vast majority of these sites date to the second century and later.</p>
Lower Sabine area	<p>In the Lower Sabine territory, several systematic surveys have been conducted. The territory of Eretum was investigated as part of the South Etruria Survey Project.⁸³² The total area covered measures c. 40 sq. km., in which 55 Republican sites have been discovered (density 1.4), the majority of which date the period 350-250 according to a recent re-study of the material.⁸³³ Twenty-seven Archaic sites were mapped, most of which continued after the Roman conquest of the area. The territory of Cures Sabini was investigated in the context of the <i>Forma Italiae</i> series.⁸³⁴ In total, 167 sites have been mapped in an area measuring little less than 100 sq. km.. The vast majority of these sites is located in the lower lying areas, in the territory immediately surrounding the <i>oppidum</i> of Cures (area of about 45 sq. km.). Here a centuriation grid has also been identified (10x10 <i>actus</i>). The density of Republican settlement in this area reaches 3.7 sites per sq. km.; for the total area the density is 1.7 sites per sq. km.. Only a few of these sites (in total 25) could be dated convincingly to the third century, the period of the conquest and division of the territory. Settlement density in the centuriated area for this period drops to 0.56; for the whole survey area to 0.26 per sq. km.. Part of this territory was re-surveyed intensively in 2000 (for results see Table 18 below). The territory to the north of Cures is covered by two partly overlapping surveys, respectively the Farfa Survey, covering a fairly mountainous area, and the Galantina Project, which concentrated on the lower areas around a branch of the River Tiber. In the Farfa Survey, conducted in the mid-1980s, a sample area of 35 sq. km. was investigated, of which 11.4 was actually walked.⁸³⁵ In total, 39 Republican sites have been identified (density 3.4), of which only 8 could be securely dated to the 3rd century and 6 were probably occupied in this period (density 0.4 settlements per sq. km.).⁸³⁶ In the Galantina region, an area of c. 40 sq. km. was investigated, within which 10 sites are dated certainly to the period 350 to 250 (density 0.25) and another 10 yielded material which could be dated only generically to the Republican period (total density of Republican sites 0.6).⁸³⁷ In both research areas, most Sabine settlements continued to exist after the conquest of the area.⁸³⁸ Finally, a topographical investigation of the territory of Forum Novum has recently been published in the <i>Forma Italiae</i> series.⁸³⁹ In an area of circa 35 sq. km., a total of roughly 9 settlement sites has been identified with clear traces of occupation in the Archaic period (density 0.26) and 38 sites (1.1) produced Roman pottery (most of which produced black gloss potter datable to the Republican period).⁸⁴⁰ Most sites which were occupied in the pre-Roman period show continuity after the Roman conquest of the area. The transition between the Sabine and Roman periods does not appear to have been very disruptive for the existing settlement organization and is characterized above all by a further intensification of rural settlement.⁸⁴¹</p>

⁸³¹ Guandalini 2004.

⁸³² Ogilvie 1965.

⁸³³ See fig. 6 and fig. 11 of Di Giuseppe 2008.

⁸³⁴ Muzzioli 1980.

⁸³⁵ Leggio and Moreland 1986; Moreland 1987 and Moreland 2008.

⁸³⁶ Moreland 2008, 861 fig. 2.

⁸³⁷ Agneni, et al. 2005; Barchesi, et al. 2008.

⁸³⁸ For Farfa see Leggio and Moreland 1986, 336 fig. 2. For Galantina, compare fig. 7 and 13 in Agneni, et al. 2005.

⁸³⁹ Verga 2006. See also Verga 2002 for an earlier synthetic study of the survey results.

⁸⁴⁰ Verga 2002, fig. 1 and 2.

⁸⁴¹ Verga 2002, 83.

2. The results of small-scale, intensive surveys⁸⁴²

Table 18: Survey of small-scale intensive surveys in colonial territories.

Colony	Description survey
Signia	In the circa 3.3 sq. km. investigated territory, a total of 47 sites were recognized (density of 14 sites per sq. km.). ⁸⁴³ Of these, 27 contained more than 5 pieces of pottery dating to the Late/ Post Archaic period which corresponds roughly to the period of the Roman colonization recorded by the sources (density c. 8 sites per investigated sq. km.). Ten sites had already been occupied in the Proto-Historical period and 17 were new establishments. Most of these new sites are located in the eastern part of the territory. According to the authors, the recorded settlement intensification is not necessarily connected to the installment of the Roman colony. The beginning of the process can be traced back to the Pre-Roman period and is more likely to have been connected to a wider, regional process of urbanization and rural occupation which characterized several areas in central-west Italy during the sixth century (colonized and non-colonized).
Antium and Satricum	Part of the territories of Antium and Satricum was covered by the Astura and Nettuno Survey Projects, which concentrated above all on two sample areas: the <i>Quarto delle Cinfonare</i> area, which was probably part of the territory of Satricum, and the <i>Campana</i> area, which was most probably part of the settlement of Antium; the total area covered measures 8.16 sq. km.. ⁸⁴⁴ A total of 9 rural sites produced pottery belonging to the period 500 to 350, ⁸⁴⁵ corresponding to the early colonial period (density 1.1 sites per sq. km.), and another 35 sites were possibly occupied in this period (if indeed so, settlement density rises to 5.4). The transition from the Archaic to the Early Roman periods is marked by a sharp decline in site numbers: 80% in the case of certain sites and circa 35 % if possible sites are included. Almost all of the sites, which could be dated between 500 and 350, were already occupied in the previous period. This sharp decline in site numbers could be a reflection of the difficult socio-political situation in the region in this period of persistent warfare. On the other hand, the researchers emphasize that the pottery of this period is difficult to recognize. The recorded drop therefore could partially be explained as the result of dating difficulties. This explanation is supported by the fact that the settlement density in the following period (350 to 250) climbed back to 2.5 certain sites per sq. km. and to 10 if possible sites are included.
Norba	The sample area investigated in the territory of Norba measures 2.95 sq. km. and is located in the foothills alongside the <i>via Pedemontana</i> . ⁸⁴⁶ For the early colonial phase (500-350) a settlement density of 6.8 sites per sq. km. was recorded. Moreover, the survey demonstrated that there was a strong continuity between the Archaic and Roman colonial phases. Only six or seven sites out of 41 Archaic sites were abandoned and four new sites were established.

⁸⁴² See Section 2.4.2. for a discussion of the sampling strategies used in most small scale off-site surveys.

⁸⁴³ Attema and Van Leusen 2004, 166-173 esp. fig. 7 and 22.

⁸⁴⁴ Attema et al. 2007/2008 and Attema et al 2009. This territory was previously investigated by Italian scholars who mapped circa 280 sites in an area of roughly 100 sq. km. (2.8 sites per square km.). See de Haas 2009 (in Attema et al. 2009) for an overview of these previous studies. Some of these previously recognized sites were revisited and restudied by the Groningen research team.

⁸⁴⁵ Based on Attema et al. 2009, 65 fig 7.2

⁸⁴⁶ See Van Leusen, et al. 2003-2004; Attema and Van Leusen 2004, 173-180. In 1995, a more traditional site survey was conducted in this region (King 1995, Van Leusen, et al. 2003-2004, 306 for methodology, field walkers were spaced at intervals of 3 to 4 metres.). In an area of just over 1 sq. km., 8 small sites have been identified by the presence of early types of coarse wares which have been dated in the Early Colonial period (500-350). At first, no Early Colonial (Post-Archaic) material was identified and sites were dated to the Republican period. A restudy of the sites has resulted in the recognition of material dating to the Early Colonial phase (500-350) on 8 sites. Most of these sites cluster together in the south-eastern part of the research area, close by a fortified hill-top site and were already occupied in the Pre-Colonial period.

Colony	Description survey
Setia	About 0.83 sq. km. of terrain in the territory of Setia has been investigated intensively. ⁸⁴⁷ For the early colonial phase (500-350), a settlement density of around 20 sites per sq. km. was mapped. Very few sites of the Pre-Colonial period were discovered and most sites dating between 500-350 appear as new foundations.
Ager Pomptinus	A total of 18 settlement sites which contained Republican material was identified in a small- scale intensive survey in the <i>Ager Pomptinus</i> . The investigated sample area measured 1.8 sq. km. (density of 10 sites per sq. km.). Of these, 6 were certainly occupied between 350 and 200 (density 3.3 per sq. km.) and another 12 are possibly datable to this period. ⁸⁴⁸
Reate	Between the late 1980s and early 1990s, a vast area to the north of Reate, covering the eastern part of the Rosea Plain, was systematically surveyed by an English survey team. ⁸⁴⁹ In total 22 sq. km. were investigated, of which roughly half in the plain and the rest in mountainous area farther to the east. A total of 51 Republican settlement sites was discovered, almost all of which were located in the lower lying areas (density of 2.3). Settlement density in the plain exceeds 6 sites per sq. km.. The mountainous area on the other hand was virtually void of settlement in the Republican period. In the Pre-Roman period, settlement densities were slightly lower: 1.7 overall and 3.8 in the lower lying areas. Most Sabine sites continued after the Roman conquest (in total 32 continued, only 8 were abandoned). Hence, the period did not witness any dramatic disruption, but is characterized instead by settlement intensification.
Cures	In the territory of Cures, a small-scale intensive survey was conducted in 2000. This survey covered an area that had been previously investigated by Muzzioli (cf. above). ⁸⁵⁰ The sample area measured roughly 4 sq. km., of which little less than 50% was accessible (1.7 sq. km. was actually walked). A total of 14 mid-Republican sites were mapped (although only 6 sites had been recognized by Muzzioli in the same area). The settlement density, at least in this restricted area, was therefore considerably higher (c. 8.24 sites per sq. km.) than what was suggested by the study of Muzzioli (c. 3.5 in this area). This also applies to the Archaic period. In the <i>Forma Italiae</i> , only one Archaic site was mapped in the sample area, while during the restudy a total of 9 sites was recognized dating to this period. Nor in the territory of Cures is any major disruption of the settlement pattern recorded after the conquest of the area. Almost all Sabine sites continued in the Roman period, but many new sites are founded. ⁸⁵¹
Thurii-Copia	In 2000, the Groningen University team re-surveyed part of the territory of Thurii which had been investigated earlier by Quilici (cf. above). ⁸⁵² Two different survey strategies were employed: 125 hectares were surveyed using a high-intensity, off-site survey strategy and 315 hectares were investigated using a more conventional field based site survey. Nineteen sites were identified by the intensive survey (density of 15.2). The density of sites which presented evidence for Hellenistic/Republican occupation was just below 5 per sq. km.. In the extensive survey, 12 sites were mapped (density of 3.8), of which only two contained material which could be clearly dated to the colonial period.

⁸⁴⁷ Attema and Van Leusen 2004, Van Leusen and Attema 2004 173-180. For site densities: Attema and Van Leusen 2004, 188 fig. 22.

⁸⁴⁸ See De Haas 2008.

⁸⁴⁹ Coccia and Mattingly 1992a and Coccia and Mattingly 1995.

⁸⁵⁰ See Di Giuseppe, et al. 2002, fig. 4.

⁸⁵¹ Di Giuseppe 2008, 444 fig. 6.

⁸⁵² Van Leusen and Attema 2001-2002, 412-413.

Colony	Description survey
Potentia	The territory of Potentia was investigated in the context of the Potenza Valley Survey Project. ⁸⁵³ The coastal transect around the colony of Potentia covered 34 sq. km. of terrain, of which only 3.9 sq. km. were investigated by an intensive off-site survey strategy. Here a total of 30 Roman settlement sites was identified, of which 12 contained black gloss pottery datable to the second century (density 3).

⁸⁵³ Percossi, et al. 2006.

3. The compatibility between the archaeological record and the text-based expectancy using a basic site=colonist equation

This appendix explores the compatibility between the archaeological record and the text-based expectancy if the conventional model of colonial settlement organization is adopted. For this comparison I use a basic site=colonist equation which complies with the conventional understanding of colonial landscapes. This text explains more in detail the conclusion reached in Chapter 2.4 (visualized in Graphs 13-16) that if we would accept a truly scattered model of Roman colonial settlement arrangement, the recovery rates of traditional site orientated field surveys are mostly below 10% and 30% if all Republican sites are included. For a deconstruction of the conventional view on Roman colonial settlement organization see Chapters 3 and 4.

1. *Priscae coloniae*

The territories of only four 'old Latin colonies' (Fidenae, Signia, Sutrium and Nepes) have been investigated by large scale surveys whose results can be contrasted with the text-based expectancy.⁸⁵⁴ However, for none of these territories are the colonial population figures transmitted by Livy.⁸⁵⁵ I deal with this practical problem by using the average of Livy's population figures (2,167 colonial families) as a reference. Given the probable population size of Rome at that early stage in its history, the likelihood that the population number used reflects actual number of migrants from Rome is remote (although not impossible). Nevertheless, since the sources for this period make very clear that a considerable part of the indigenous population continued to live in the colonial territories of this period and that some of the other Latin communities possibly also sent colonists to these newly conquered areas, the estimate which results from Livy figures, although based on very fragile evidence, might not be that far off.⁸⁵⁶ Whatever the case might be, the calculations result in fairly plausible amounts of arable land per family (c. 3 hectares; densities of 15 to 20 families per sq. km).⁸⁵⁷ Since many of these colonies have fairly large fortified *oppida* (around 40 hectares), in theory a substantial proportion (50-30%) could have had an urban base, resulting in expected rural densities of roughly ten families per sq. km. This is not the case for either Nepes and Sutrium which have *oppida* of around 10 hectares. These are unlikely to have housed more than 10 to 15 per cent of the hypothetical population. Consequently, expected rural population densities are higher (> 12 per sq. km).

Such densities have not been documented in large-scale surveys (cf. Appendix 1). Only in the case of Fidenae is the historical expectancy approached. The compatibility with the text-based

⁸⁵⁴ The very old topographical studies conducted before World War II and those investigated intensively using an off-site survey strategy (which are discussed in Chapter 2.4) are not included in this section.

⁸⁵⁵ In the case of Fidenae, colonial population figures are transmitted for the first colonization attempt of Romulus by two other sources (Dionysius and Plutarch). Obviously, information about this mythical time is best taken with a grain of salt, especially since both sources suggest totally different orders of size (300 and 2,500). On this see Chapter 2.2.

⁸⁵⁶ On this see Chapter 2.2.

⁸⁵⁷ Graph 4.

expectancy in a dot=colonist equation is almost 30 per cent. Taking into account the fact that several large sites (interpreted as villages) have been found and dated to the early colonial period,⁸⁵⁸ the compatibility rate might be adjusted upwards. Fidenae is an exception (on this also Chapter 2.4) and all other survey projects under discussion here have achieved much lower site recovery rates (see Graph 11). For the other colonies, the compatibility rates (based on an expected density of 12 colonial families per sq. km expectancy) for sites dated in the early colonial period are in the range of <1 to 5 per cent. Since the diagnostic ceramics for this period are not easily recognizable, there is a good chance that evidence of occupation in the period has not been noted, especially in the earlier survey projects.⁸⁵⁹ However, even if all Republican sites are included in the calculations, compatibility percentages remain well under 10 per cent for Signia and Sutrium and just over 20 per cent for Nepet.

2. Latin colonies

Approximately one-third of all the territories of Latin colonies have been investigated by archaeological field surveys. The oldest colonies especially have attracted considerable scholarly attention (more than half of all colonies founded in the late fourth century have been surveyed). This is also the period for which Livy provides detailed demographic information. In this period standard colonial populations consisted of 2,500, 4,000 or 6,000 colonists, which, with the exception of Luceria, result in densities of between ten to twenty colonists per sq. km. Since urbanization percentages for this period are unlikely to have exceeded 30 per cent, it can be expected that, taken over the whole, at least seven to eight colonial families populated one sq. km of the colonial territory. A review of the surveys conducted in late fourth century Latin colonies clearly demonstrates that only a fraction of the expected number of rural settlements has been detected (See Appendix 1). For sites which could be dated in the early colonial period (late fourth and third centuries) densities are below 1 per sq. km., which results in compatibility rates which are generally between 1 to 10 per cent (with an expectancy of 8 farms). The diagnostic pottery for this period is easily recognizable (for example, early black gloss forms). Nevertheless, even if it is assumed as some scholars have done (on this see Chapter 2.4), that first generation dwellings are easily overlooked because colonists lacked the means to acquire fine wares and that all Republican sites are included in the calculations, compatibility percentages remain well below 25 per cent, in most cases below 10 per cent.

A possible exception is Luceria. There three large villages have been detected (scatters which measured in-between 5-11 hectares) in an area of 35 sq. km. (density of 0.09) surrounded by several isolated farmsteads (density 0.6 per sq. km.). For this landscape to match the text-based expectancy it has to be presumed that each village housed about eighty families on average. Although this number

⁸⁵⁸ E.g. two large new sites were founded which are interpreted as Roman strongholds used to control the area (Quilici and Quilici Gigli 1986, 392. Also catalogue sites 114 and 245)

⁸⁵⁹ Van Leusen 2002, Chapter 9.

of people is perhaps on the high side, it is not impossible considering the large size of these settlements.

Low compatibility percentages result also for the colonies which were founded between Pyrrhus and the Second Punic War. All survey projects of these territories have retrieved low site densities (ranging between 0.1 and 0.6 for early colonial sites), which, if it is assumed that farm densities were comparable to those in the late fourth century, result in compatibility percentages of 1 to 8 per cent. This assumption rises to a maximum of little more than 20 per cent at best if all Republican sites are included.⁸⁶⁰

The literary information regarding the number of colonists sent out to the different Latin colonies after the Hannibalic War is complete and a direct comparison between the text-based information and the survey record can therefore be made. But, regrettably, little systematic field surveying has been undertaken in these colonies. Only for the territory of Thurii-Copia can such an attempt be made. If it is assumed that all sites which were recognized in Quilci's survey were also occupied in the early colonial period, the compatibility rate is about 30 per cent. The rub is that not only is such an assumption very unlikely, the text-based expectancy for this territory is very probably too low (below 4 colonist per sq. km, with an estimated 20% urban population) and it is highly likely that a substantial indigenous population also lived in this territory.⁸⁶¹ If the same population density expectancy as that used for the Latin colonies which were founded in the late fourth century is applied, the compatibility percentage drops below 15 per cent.

3. *Coloniae civium Romanorum*

The information in the sources about the number of colonists sent out to the so-called maritime colonies (300) is of little use for the current compatibility analysis, since a large proportion of these reported numbers of colonists can be fitted into the colonial *oppida*, and it is clear that a large number of non-colonial inhabitants lived in the hinterlands of these colonies. Nevertheless, for the sake of completeness, the results of the surveys conducted in these territories will be discussed but no attempt will be made to estimate compatibility percentages. Site densities in these colonies are comparable to those mapped in Latin colonies (for Republican sites on average 1.5 per sq. km –excluding Tempesa and Croton which yielded very low (<0.1) and very high densities of (3.5) respectively).

Establishing compatibility rates for the later citizen colonies of the so-called agrarian type is also problematic. Livy suggests that the standard number of settlers sent out to these colonies was

⁸⁶⁰ Although Livy's books which deal with this period in Roman history have been lost, it is generally assumed that the colonies of the third century had comparable populations to those founded earlier and after the Second Punic War (on this Chapter 2.). Modern studies suggest that the sizes of the colonial territories increased in this period which results in lower colonial population densities of around 10 colonists per sq. km (Graph 3). These estimates, as I have argued in the previous section, probably overestimate the sizes of colonial territories, and there is a good chance that the living spaces of non-colonial, indigenous populations have been included in these reconstructions. In any case, the sizes of colonial *oppida* in this period are generally considerably smaller and it is unlikely that more than 20% of the total population had an urban base. Probable rural population densities, therefore, are comparable to those estimated for the older Latin colonies.

⁸⁶¹ On this see Chapters 2 and 5.

2,000. Since these colonies are generally expected to have had very large territories and the maximum urbanization percentage would have been almost 50 per cent, the expected colonial population densities are very low (under 4 sites per sq. km.). Therefore, it is very likely that non-colonial people resided in the territories generally attributed to the citizen colonies. In fact, on the basis of the information in the sources about the small sizes of allotments distributed (all below 10 *iugera*), very densely populated landscapes should be expected.

On average, the surveys conducted in these territories have mapped densities of around one late Republican site per sq. km., which result in an average compatibility percentage of almost 70 per cent. However, if it is assumed that a substantial non-colonial population also lived in these large territories and overall population densities would have been similar to those in Latin colonies, the compatibility percentage drops significantly (to 12.5% if the density of 8 colonists per sq. km. calculated for Latin colonies is adopted).

4. Agri viritim divisi

As has come to light in Chapter 2.2.6, the available literary information suggests that the territories which were divided in viritane land distribution schemes were almost as densely populated as the contemporary Latin colonies but, since these areas often lack an urban centre, the expected rural population number is 20-30 per cent higher (c. 10-15 per sq. km.). Such densities have not been attained in large-scale surveys of these landscapes. In general, site densities for the early colonial period are below 0.3 per sq. km and, if all Republican sites are included, the average density is c. one site per sq. km. With a conservative text-based estimate of ten colonial families per sq. km. this produces compatibility rates of respectively <3 and 10 per cent.