

# Agrarian Archaeology in Northwestern Iberia

Local societies:  
the off-site record

edited by

Juan Antonio Quirós Castillo



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**Juan Antonio Quirós Castillo**

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# Contents

List of figures.....	i
List of tables .....	vi
Credits.....	vii
Contributors .....	viii
Abstract .....	x
Preface .....	xi
<i>Juan Antonio Quirós Castillo</i>	
<b>The Archaeology of the ‘off-sites’ in North-western Iberia .....</b>	<b>1</b>
<i>Juan Antonio Quirós Castillo</i>	
<b>The colonization of agricultural space in the territory of medieval Astorga: the agricultural space of Brimeda (Villaobispo de Otero, León, Spain) as attested by off-site ceramic material... 12</b>	
<i>Pilar Diarte-Blasco; Enrique Ariño Gil; Marta Pérez-Polo</i>	
<b>El registro <i>offsite</i> como fuente para la reconstrucción del paisaje antiguo. Dos ejemplos del entorno de la ciudad de Cabeza Ladrero (Sos del Rey Católico/Sofuentes, Zaragoza) .....</b>	<b>25</b>
<i>Ángel A. Jordán</i>	
<b>Intensive survey on the Valpierre plain (La Rioja, Spain): dynamics of an agrarian landscape from prehistoric times to the present.....</b>	<b>56</b>
<i>Enrique Ariño Gil; Javier González-Tablas Sastre; Rodrigo Portero Hernández; María de los Reyes de Soto García</i>	
<b>Roman rural landscapes in the north-eastern sector of the Duero basin. Field survey and aerial archaeology in the Pisuerga-Arlanzón basin .....</b>	<b>80</b>
<i>Jesús García Sánchez</i>	
<b>Pottery, settlement patterns and agrarian practices between Roman and medieval times in the Eresma and Voltoya valleys (Segovia, Spain).....</b>	<b>100</b>
<i>Juan Antonio Quirós Castillo, Lorena Elorza González de Alaiza, Maite I. García-Collado</i>	
<b>The manure hypothesis, off-site records and the archaeology of agricultural practices in the Alava plain .....</b>	<b>127</b>
<i>Juan Antonio Quirós Castillo, Lorena Elorza González de Alaiza, Maite I. García-Collado</i>	

## List of figures

Figure 1.1.	Map of the cases study considered in this book.....	5
Figure 2.1.	Aerial photograph (1956) in which the regular plot around Brimeda can be seen (Spanish Army Geographic Centre, photo. 14931-R. 160 - July 27, 1956).....	13
Figure 2.2.	Dispersion of traditional earthenware and industrial stoneware in the area surveyed around Brimeda. Cartographic base of the National Plan for Aerial Orthophotography ( <a href="http://pnoa.ign.es/">http://pnoa.ign.es/</a> ).....	17
Figure 2.3.	Fragments of industrial stoneware recovered in the territory of Brimeda. ....	18
Figure 2.4.	Fragments of earthenware recovered in the territory of Brimeda. ....	18
Figure 2.5.	Fragments of common cooking ware recovered in the territory of Brimeda.....	19
Figure 2.6.	Fragments of common pottery decorated with burnished lines recovered in the Brimeda territory.....	19
Figure 2.7.	Dispersion of common cooking ware and common pottery decorated with burnished lines in the surveyed area around Brimeda. Cartographic base of the National Plan for Aerial Orthophotography ( <a href="http://pnoa.ign.es/">http://pnoa.ign.es/</a> ).....	21
Figure 3.1.	Localización de Cabeza Ladrero (Sofuentes/Sos del Rey Católico, Zgz.) .....	26
Figure 3.2.	Propuesta de delimitación del territorium de la ciudad de Cabeza Ladrero (Sofuentes/Sos del Rey Católico, Zgz.) y su relación con las ciudades romanas más cercanas .....	27
Figure 3.3.	Espacio prospectado hasta 2021.....	28
Figure 3.4.	Restos de una procesadora de grava creada para la construcción del Canal de las Bardenas sobre el sitio del Bronce de Tamborín I (Sos del Rey Católico, Zgz.).....	29
Figure 3.5.	Destrucción del paleosuelo original en Tamborín III (Sos del Rey Católico, Zgz.). Nótese cómo el afloramiento de arenisca se ha ido partiendo en pequeñas lascas irregulares que aparecen por toda la zona, sólo apreciándose en su grosor original en la cima de la colina. El resto del espacio está ocupado por el nivel de margas, poco fértil y fácilmente erosionable, que ha aflorado al exterior tras la destrucción de la arenisca.....	30
Figure 3.6.	Ejemplo de torrentera en medio de un campo de cultivo.....	31
Figure 3.7.	Hallazgo aislado de un fragmento cerámico vidriado vinculado a una pequeña cabaña ....	35
Figure 3.8.	Distribución de material en los sitios de Chavo (Sos del Rey Católico, Zgz.) (arriba) y Plana Baja (Sos del Rey Católico, Zgz.) (debajo).....	36
Figure 3.9.	Halo y distribución de artefactos en los sitios de Corral de Ibarra (Sos del Rey Católico, Zgz.) (arriba) y Corral del Santo (Sos del Rey Católico, Zgz.) (debajo) .....	37
Figure 3.10.	Distribución de los principales tipos cerámicos encontrados en Villavetre (Sos del Rey Católico, Zgz.): Dolia (arriba) y cerámica de mesa (abajo, círculo = CCO y rombo = TSH)....	39
Figure 3. 11.	Distribución ocupacional de los sitios identificados con cronología prehistórica en la cuenca del barranco del Santo (círculo: Neolítico; cuadrado: Calcolítico; estrella: sin datación).....	40
Figure 3.12.	Distribución ocupacional de los sitios identificados con cronología prehistórica en la meseta de Sentis (círculo: Neolítico; cuadrado: Calcolítico; estrella: sin datación).....	40
Figure 3.13.	Ocupación neolítica conocida en la zona prospectada.....	42
Figure 3.14.	Dispersión de registro offsite prehistórico.....	42
Figure 3.15.	Dispersión de registro offsite prehistórico en el entorno de Alto Vico I y Chacona I (Sos del Rey Católico, Zgz.) .....	44
Figure 3.16.	Ocupación romana altoimperial en la zona prospectada.....	45
Figure 3.17.	Distribución del registro offsite de cronología romana .....	46
Figure 3.18.	Hipótesis de distribución de fundi vinculados a villae rusticae .....	47
Figure 3.19.	Registro offsite de época romana y su relación con los fundi.....	48

Figure 3.20.	Halo (verde) y registro offsite (rojo) de villulae de época romana.....	49
Figure 4.1.	The Valpierre plain. Image from the National Plan for Aerial Orthophotography (PNOA).	57
Figure 4.2.	Valpierre Plain. Soil profile. Right bank of the River Oja at Villalobar de Rioja.....	57
Figure 4.3.	Traces of surface run-off in the western part of the centuriation (from the south). The road from Santo Domingo to Haro (1) and the 2006 road from Casalarreina to Ezcaray (2) are identified. In the background Castañares de Rioja. Aerial photograph of 1 June 2006.....	58
Figure 4.4.	Runoff lines with an S-N route in the western part of the Valpierre plain Image produced from satellite data (Google Earth, 23 May 2011) and projected on the 1.50,000 scale maps of the Spanish Army Geographic Centre (Series M-781), years 1964, sheets 169 (Casalarreina), 170 (Haro), 202 (Santo Domingo de la Calzada) and 203 (Nájera).....	58
Figure 4.5.	The centuriation on Libia on the Valpierre Plain. Archaeomorphological study projected on the 1.50,000 scale maps of the Spanish Army Geographic Centre (Series M 781), year 1964, sheets 169. Casalarreina, 170. Haro, 202. Santo Domingo de la Calzada and 203 (Nájera).....	60
Figure 4.6.	Map of the network of medieval roads reconstructed from documentary sources (in black), on the cartographic basis of the 1.50,000 maps of the Spanish Army Geographic Centre (Series M-781), year 1964, sheets 169 (Casalarreina), 170 (Haro), 202 (Santo Domingo de la Calzada) and 203 (Nájera) (in grey).....	60
Figure 4.7.	Valpierre Plain in the image from the American Flight of 1956-57. Frames 24202, 24200 (roll 239, 13-09-1956) and 45443, 45445 (roll 446, 5-06-1957). Source. Spanish Army Geographic Centre.....	63
Figure 4.8.	Surveying technique carried out on the Valpierre plain. Individual recording of fragments with GPS. Photo of 7 September 2016. ....	63
Figure 4.10.	Valpierre Plain. Distribution of flint findings. Middle Palaeolithic (squares), Upper Palaeolithic (circles), indeterminate chronology (triangles). Image from the National Plan for Aerial Orthophotography (PNOA).....	64
Figure 4.9.	Lithic tools recovered at Valpierre 1. Levallois flake, 2. Discoid nucleus, 3. Mousterian tip, 4. Thick nose endscraper, 5. Circular endscraper, 6. Straight tip, 7. Dihedral burin, 8. Simple sidescraper 9. Back blade, 10-11. Pyramidal nucleus, 12. Prismatic nucleus, 13. Globular nucleus.....	64
Figure 4.11.	Valpierre Plain. Distribution of the hand-made ceramics (circles) in comparison with the set of ceramic findings and location of the axe fragment in polished stone (square). Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA). ....	67
Figure 4.12.	Hand-made ceramic fragments from the Chalcolithic period recovered at Valpierre. ....	67
Figure 4.13.	Axe fragment in sillimanite recovered from the Valpierre plain. ....	68
Figure 4.14.	Pottery fragments from the late Roman and early medieval periods. 1-7. Late Hispanic terra sigillata, plain type, 8-9. Late Hispanic terra sigillata, moulded type, 10. ARSW, 11. Pompeian red ware imitation (Hisp. 37t form of late Hispanic terra sigillata), 12. Pompeian red ware imitation, 13. Grey or black pottery with polished surfaces. All the fragments come from the Gambomborra site. ....	68
Figure 4.15.	Fragments of common cooking ware recovered at Valpierre. Numbers 1-3 and 5. fabric 1, numbers 4, 7 and 8. fabric 3, number 6. fabric 4, number 9. fabric 7, number 10. fabric 8, number 11. fabric 10, number 12. fabric 9 .....	69
Figure 4.16.	Common grey pottery fragments recovered at Valpierre.....	71
Figure 4.17.	Valpierre Plain. Distribution of late Hispanic terra sigillata, plain type (circles), late Hispanic terra sigillata, moulded type (squares) and possible undetermined late Hispanic terra sigillata (triangles). Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos	

	2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA). .	71
Figure 4.18.	Valpierre Plain. Distribution of the common cooking ware. Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).....	72
Figure 4.19.	Valpierre Plain. Distribution of the common grey pottery. Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).....	72
Figure 4.20.	Traditional earthenware fragments recovered at Valpierre. ....	75
Figure 4.21.	Fragments of industrial stoneware (1, 3-5 and 8-11) and modern porcelain (2, 6, 7 and 12) recovered at Valpierre.....	75
Figure 4.22.	Valpierre plain. Distribution of traditional earthenware (white circles), industrial stoneware (black triangles) and porcelain (black circles). Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).....	76
Figure 5.1.	Study area in the Duero valley.....	81
Figure 5.2.	Sites mentioned in the text. La Serna (Olmillos de Sasamón); 2. Tisosa (Sasamón); 3. Trisla (Sasamón); 4. Carrecastrillo (Olmillos de Sasamón); 5. Mansegar (Manciles); 6. Quintanal (Tardajos); 7. Cuesta Grande (Buniel); 8. Molino de Arriba (Buniel); 9. Las Quintanas (Cavia).....	81
Figure 5.3.	Left, density of materials (general type) at Tisosa and Trisla. Right, density of materials (modern type) at Tisosa and Trisla. Interpretation of archaeological structures from G.E. and UAV photo. ....	86
Figure 5.4.	Above, density of materials (general type) at La Serna, and interpretation of archaeological structures on the G.E. photo. Below, archaeological items located in prospection. ....	88
Figure 5.5.	Left. Interpretation of the site of Mansegar on Google Earth photo dated 17 June 2019. Right Above, interpretation on the delimiting polygon of the Archaeological Inventory of Castilla y León. Right Below, traces of the site are visible in PNOA-NIR of 2011. ....	88
Figure 5.6.	Roman urban structure of Deobrigula in Quintanal, Tardajos.....	90
Figure 5.7.	Left, flood plain of the Arlanzón river with the location of A. Cuesta Grande, and B. Molino de Arriba. Right above, detail of the site of Cuesta Grande. Right below, reconstruction of the site of Molino de Arriba from a G.E. photo.....	91
Figure 5.8.	Left, archaeological structures at Las Quintanas on the Los Ausines river, Cavia. Right, detail of the archaeological complex at Las Quintanas, Cavia. ....	92
Figure 6.1.	The territory under scrutiny. Dots represents the archaeological sites, with the names of the main sites cited in the text. The polygon frames the space where the fieldwork took place.....	102
Figure 6.2.	Typical landscape of the territory between the river Eresma and Voltoya. In the background, the site of San Isidro. ....	104
Figure 6.3.	Map of the territory.....	105
Figure 6.4.	Intensive fieldwork at the site of La Trinidad.....	107
Figure 6.5.	Distribution of Roman sites in the territory.....	110
Figure 6.6.	The site of Matabuey/La Trinidad and the concentration materials for each period .....	111
Figure 6.7.	Post-Roman sites in the territory between the Eresma and the Voltoya rivers. ....	113
Figure 6.8.	Pottery scatter in the context of La Mata del Palomar. A) Pottery documented; B) Roman pottery scatter; C) Post-Roman pottery scatter; D) Medieval pottery scatter .....	114
Figure 6.9.	Pottery scatter in the context of La Trinidad. A) Pottery documented; B) Roman pottery scatter; C) Post-Roman pottery scatter; D) Medieval pottery scatter.....	115
Figure 6.10.	Medieval sites documented in the territory .....	116

Figure 6.11. Shrine of Santa Inés. This building was built on a Late Roman villa.....	117
Figure 6.12. Pottery scatter at the site of San Isidro/Domingo García. A) Total pottery scatter; B) Post-Roman pottery scatter; C) Medieval pottery scatter.....	118
Figure 7.1. Location of the Alava plain and the limits of the municipalities.....	129
Figure 7.2. Photographs of ploughed fields in the Alava plain. ....	130
Figure 7.3. Photographs of ploughed fields in the Alava plain. ....	133
Figure 7.4. Location map of the Topographic Units. ....	134
Figure 7.5. The deserted site of Quilchano (Etxabarri-Urtupiña, Álava).....	135
Figure 7.6. Dimensional standards used in the taphonomic study. ....	137
Figure 7.7. Classification of the degree of rounding of ceramics used in the taphonomic study.....	137
Figure 7.8. Classification of the degrees of alteration of the surfaces used in the taphonomic study..	138
Figure 7.9. Quantification of the number of fragments according to the defined chronological ranges. ....	139
Figure 7.10. Location map of the main localities mentioned in the discussion. ....	140
Figure 7.11. General view of the site of Zornoztegi (Agurain, Álava). ....	141
Figure 7.12. Chronologies of terraces and terraces for agricultural use investigated in the Basque Country. ....	142
Figure 7.13. Erosion of traditional agricultural surfaces caused by heavy machinery. ....	146

## List of tables

Table 1.1.	Number of prospects carried out in the Basque Country between 1982-2015 .....	4
Table 1.2.	Representation of the different chronological periods in the non-sites presented in this volume (PR= Prehistory, RM= Roman; LRP= Late Roman Period; LA= Late Antiquity; EME= Early Medieval Period; HME= High Medieval Period; LME= Late Medieval Period; ME= Modern Age; CA= Contemporary Period) .....	8
Table 1.	Total numbers and percentages and of the ceramic productions recovered in the territory of Brimeda.....	19
Tabla 3.1.	Posibles fundi identificados en el territorio de Cabeza Ladrero .....	48
Table 4.1.	Typological classification and raw materials used for the Palaeolithic tools (Middle and Upper) recovered in the Valpierre survey. ....	65
Table 4.2.	Description of the common cooking pottery fabrics recovered in the Valpierre survey. ...	70
Table 4.3.	Total numbers and percentages (in grey) of the ceramic productions recovered in Gambomborra, Hill 663, Los Manatíos 1 and Los Manantíos 2. H-Mp. hand made TSHT plain pottery, t. late terra sigillata hispanica, plain type, TSHT mould t. late terra sigillata hispanica, moulded type, ARSW. African Red Slip Ware, TW. thin-walled pottery, PRWI. Pompeian red ware imitation, Lamps. lamps, CW. common ware, CP grey. common grey pottery, G/BW. grey or black pottery with polished or burnished surfaces, CCW. common cooking ware, EW. traditional earthenware, Ind. EW. industrial stoneware, Porce. porcelain.....	73
Table 6.1.	Exceptional sites detected during the survey.....	108
Table 6.2.	Diachronic patterns detected in the survey.....	119
Table 7.1.	Comparative table of some intensive surveys carried out in Northwestern Iberia.....	134
Table 7.2.	Number of plots allocated to each of the three defined categories .....	136



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## Abstract

This volume is devoted to the archaeological study of the societies and agrarian landscapes of Northwestern Iberia in terms of *longue durée*. The book brings together, for the first time, the results of some of the main projects carried out in recent decades from off-site records providing a fresh perspective for the understanding of historical landscapes. The papers evaluate the ‘manure hypothesis’ and other variables that have influenced the formation of pottery carpets in several territories of the Ebro and Douro basins. The interpretation of this record is done through critical integration with other historical, ethnographic and archaeological evidence. In thematic terms, the processes of early medieval colonization, the transformation of rural societies between the Roman and medieval periods, the agency of subaltern groups, the transformations of agrarian practices from a social perspective, and the morphology of agrarian landscapes from prehistory to contemporary age are analysed. In addition, off-site records singularities in non-Mediterranean spaces are considered. In summary, this volume introduces new topics, concepts and case studies useful for developing a multiproxy agrarian archaeology.

# Preface

Juan Antonio Quirós Castillo

This volume is dedicated to the study of the societies and landscapes of Northwestern Iberia from the perspective of agrarian archaeology. This is one of the most promising lines of research developed in the Iberian Peninsula filling the gap between the archaeological record and the traditional rural societies. To address this issue, different concepts, methodologies, and records have been used, which are not always easy to interpret due to the characteristics of the material footprint generated by agricultural practices. The critical integration of diverse information is proving to be the best way to overcome ambiguities and limitations.

Among other topics covered by agrarian archaeology, the interpretation of non-sites or off-sites records is one of the most controversial ones. This evidence has been defined in the context of intensive archaeological surveys, and their interpretation is complex because it is affected by a number of dynamics: the formative processes of archaeological deposits, agricultural practices, the degree of transformation of rural landscapes, etc.

This book takes into consideration the off-site records of Northwestern Iberia in the light of some archaeological projects carried out in recent years which, so far, have not been examined together. The works presented at a meeting held in Vitoria-Gasteiz in June 2019 are on the basis of this book, even though they are not the meeting proceedings. Some papers have not been included and other studies that were not presented in the workshop have been added instead. The discussions that took place at the Vitoria meeting are of particular interest and are accessible through the recordings made at the time<sup>1</sup>.

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# The Archaeology of the ‘off-sites’ in North-western Iberia

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## Abstract

This volume is dedicated to the study of the haloes of potteries and other archaeological remains recovered in surveys carried out in Northwestern Iberia, testing the ‘manure hypothesis’ and other factors aimed at the interpretation of these non-site records. In this chapter it is argued that the study of carpets of pottery located outside the sites is not only relevant to study the practices of fertilization and improvement of fields by pre-industrial societies, but also to investigate the agency of subaltern groups. Mediterranean archaeology has devoted great efforts to documenting and critically interpreting this record developing the ‘manure hypothesis’ to make sense of the dispersive domestic waste found in agricultural lands. However, this hypothesis has been not tested in Northwestern Iberia. What is more, this record has often been considered in a segmented chronological way, following the rigid academic compartmentalisations that end up making this document intelligible. The chapter introduces the general reference framework in which these works have been carried out and the themes addressed by the six chapters that make up the volume.

## Keywords

Intensive fieldwork, Manure hypothesis, Mediterranean Archaeology, Timeless Archaeology, Agency, Subalterns, Agrarian Landscapes, agro-silvo-pastoral economies

*Les déchets sont de faits sociaux totaux*  
Marc Conesa, Nicolas Poirier 2019, 292

## Introduction

In an important article published almost ten years ago devoted to the Archaeology of agricultural spaces, Victorino Mayoral Herrera and Luis Sevillano Perea concluded that it would be very necessary to promote periodic meetings to properly understand the carpets of potteries located ‘off-sites’ and, in general, on the themes covered by Agrarian Archaeology (Mayoral Herrera, Sevillano Perea 2013). In these years, a network of specialists has been formed around the *International Mediterranean Survey Workshops* (Attema *et al.* 2020), and other important meetings have been held, such as the one in Mérida dedicated to the Social Archaeology of Agrarian Spaces (Mayoral Herrera *et al.* 2021). In fact, studies in the field of agricultural archaeology or agriculture have known an important impulse in recent years in Iberia, especially after the growing incorporation of geo and bio-archaeological records and the replacement of the site paradigm for the landscape analysis (Fernández Mier 2018B; Fernández Mier 2018A; Peña-Chocarro *et al.* 2019; García Collado 2020; Narbarte Hernandez 2020; Grau Mira *et al.* 2021; Grau Mira, Sarabia-Bautista 2022).

The archaeological study of agriculture is not an easy task. The material footprint left by most forestry and agro-pastoral practices is ambiguous and often poor or even totally invisible. And yet, each generation of archaeologists has implemented new procedures, questions, concepts, and theoretical frameworks to explore the primary sector in pre-industrial societies. It is true that some components

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of the agricultural production cycle are more visible than others: storage facilities, processing sites, presses, cisterns, archaeobotanical or archaeozoological waste, pollard trees, milling, coal bunkers, stables, etc. In addition, the increasing implementation of Archaeological Sciences has greatly expanded the amount of information available. In a way, agrarian archaeology remains a subdiscipline of landscape archaeology under permanent construction.

But as far as agricultural spaces are concerned, they are accessible when terraces, irrigation channels, walls and delimitations, roads, intentional contributions of fertile deposits, etc. have been made. But it is often not that easy to establish the cultural biography of the fields and determine their chronology.

The centrality that agro-silvo-pastoral economies have had in pre-industrial societies explains why this is one of the most important fields to history landscapes and people in a more fruitful way. But this is still not one of the top priorities in research agendas.

In an extremely synthetic way, there are three main burdens that penalize the full development of Agricultural Archaeology in Iberia. Firstly, there is a territorial bias. Although there are some territories that have been and continue to be intensely investigated, the geography of the research groups significantly conditions the accomplishment of these studies.

Secondly, the works carried out from a diachronic perspective, breaking the classic compartmentalization of academic periodization, are still not very abundant. And although this is a trend that has started to be corrected in recent years, this segmentation of the archaeological record is anachronistic, even more now that we are progressively moving towards a long-term archaeology based on topics and problems.

Thirdly, while some themes and records have been particularly enhanced and undermined by numerous research groups, others have been neglected. And among all of them, the study of the manure activities carried out by producers is one that has received the least attention. And this has important consequences, because this theme would allow connecting the domestic universe with the productive one, as well as economic and social trends, showing the agency of subaltern groups.

The main objective of this collective volume is to explore the landscapes and the agricultural practices of Northwestern Iberia in long-terms from a very specific perspective: the 'off-site' records. To this end, a number of contributions have been gathered to illustrate the themes, methodologies and conceptual frameworks that have been promoted so far, also proposing new lines of work.

In this introduction the topic is presented, the reasons why these records have not been integrated in the work agenda of agricultural archaeology are briefly exposed, the contents of the chapters that make up the volume are introduced and some of the main derivatives of this collection of works are identified.

### **Non-sites or 'off-sites' records**

Both Anglo-Saxon archaeological tradition and Mediterranean archaeology have built a solid tradition of intensive and extensive surveys at least since the 1950s. The mechanization of agricultural production that has developed since then has had a double consequence: on the one hand, it has brought to light an enormous number of archaeological evidence which had been buried for centuries; but on the other hand, repeated cultivation with deep ploughs has been eroding, if not exhausting, this evidence.

The detection of domestic and non-monumental sites has undoubtedly been one of the main results of intensive fieldwork in these decades. In addition, the 'revolution of intensive regional surveying' (Bintliff 2018), has shown the existence of some kind of evidence considered as 'non-sites' or 'off-sites'. These terms refer to the discovery of pottery carpets or haloes in the surroundings of the 'sites' or at a



certain distance from them forming low density concentrations. The usefulness of these notions lies in the fact that they allow to define the superficial archaeological record as a heterogeneous, continuous and dispersed reality, and normalize a methodology (Mayoral Herrera, Sevillano Perea 2013). In addition, this material finding has urged us to question the nucleated approach that has traditionally characterized the notion of archaeological 'site' based on the discovery of the extraordinary. One of the advanced interpretative proposals to explain this type of distribution of materials on the surface is what has been called 'manure hypothesis'. Formulated in the 1980s and the subject of discussion since then, it suggests that these materials would be the result of using domestic waste to fertilize the fields near inhabited places in order to increase, maintain and promote intensive and continuous agricultural practices (Forbes 2013).

Why is it relevant to quantify, collect and process large volumes of ceramic materials apparently decontextualized and disturbed by recent agricultural tasks? Why deal with 'removed materials' instead of focusing on 'closed contexts' capable of providing 'safe' associations on which to build solid typologies and interpretations?

There are multiple reasons. In conceptual terms, the 'off-site' record is a derivative of the replacement of the archaeological paradigm of the 'site' by that of the continuous and holistic landscape. In fact, in recent years this concept has further expanded to include not only uncultivated spaces, and 'peripheral' areas such as mountains, but also the so-called empty spaces (Campana 2018).

In operational terms, the consideration of the materials found in non-sites has important implications when it comes to understanding the formative processes of archaeological evidence, including erosion, transformation and even disappearance (Schiffer 1987). But it also involves exploring the cultural dimension of the concept of garbage and waste, the forms of rural space management, the social dimension of material culture and, ultimately, transcending the typological or economic approach in favour of a cultural biography of objects.

In historical terms, these materials provide important information about agro-pastoral landscapes and the social, political and economic practices articulated around these activities. In this way, it is possible to make the multiple and relational agencies, both of subaltern groups and elites visible (Quirós Castillo, Tejerizo García 2020). Authors such as Richard Jones have argued, in the volume entitled 'Manure Matters', that it is possible to define different fertilizing patterns in social terms. Elites had consistent herds that made field manure invisible in 'off-site' records. As a result, the recurrent use of household waste would characterize social groups endowed with a small number of cattle (JONES 2012).

In terms of economy history, several authors have proposed to identify agricultural cycles of intensification, extensification or contraction based on the analysis of the density, chronology and characteristics of the ceramic materials found in these haloes. Among many other studies, it could be mentioned N. Poirier's monograph dedicated to Berry's territory, in which profound transformations of rural landscapes could be documented: weak occupation in the Antiquity; decline in the Late Antiquity; an agrarian rise of the Early Middle Ages; Stabilisation and change of agrarian practices in the 11th-15th centuries; the recovery during the Modern Age (Poirier 2010).

In methodological terms, this record acquires a new meaning if analysed from a complementary and inclusive multiproxy perspective, considering other evidence, oral, written, toponymic and ethnographic information when understanding aspects that are not obvious in rural societies.

In short, it is the theoretical framework, the problem agenda and the use of refined methodologies of documentation and analysis that transforms the 'decontextualized' materials into new types of

contexts and landscapes, often opaque to the pattern of Western rationality. If non-sites are therefore as important and informative as sites, why hasn't there been an 'off-site' archaeology in North-western Iberia?

### Some background. Surveying 'off-sites'

The archaeology of non-sites, defined in the Mediterranean from large projects carried out in the Aegean, Levant or in Italy, has penetrated some sectors and Iberian research groups (from Catalonia and Aragon to Lusitania, from Alicante to Andalusia) giving rise to projects of great interest (Attema *et al.* 2020). However, it has had less development in Northwestern Iberia.

In this territory there is still certain skepticism about the heuristic potential of surface prospecting, so they are granted a lower methodological status than that of excavations (Mayoral Herrera, Sevillano Perea 2013) or an instrumental and subaltern use is made with respect to intensive interventions, mainly excavations. But paradoxically, this does not mean that fieldwalking is not part of the tooling and daily experience of archaeological practice in the Northwest of the peninsula, although strictly speaking there are only a handful of groups or professionals who define themselves and develop their main activity from the intensive and systematic prospection of continuous surfaces and/or analyse 'off-sites' haloes.

For example, in the Basque Country, no survey project of this nature has been carried out (with a few exceptions) in crop fields. In the articles published between 1982 and 2015 in *Arkeoikuska* journal (Table 1.1), 13.5% of all the interventions carried out in the three Basque provinces resorted to, with different intensity, surveys to investigate the archaeological record (563 out of 4181). However, and according to the titles of the different reports, only 2% of the interventions (81) used this approach as their main or exclusive axis. However, it is considered more pertinent to resort to prospecting when it comes to investigating 'unconventional' records, such as shafts furnaces, agricultural fields, common land, viability, forest resources and 'other heritage' that are being studied in recent years. In addition, it is striking that their incidence is precisely more notable where the potential visibility to carry out intensive and continuous prospecting is lower, as is the case of Gipuzkoa.

	Álava	Bizkaia	Gipuzkoa	TOTAL
Article Title	15	13	54	81
Article Text	100	121	341	563
TOTAL	1306	1141	1699	4181

Table 1.1. Number of prospects carried out in the Basque Country between 1982-2015

Schematically, there are three positions or attitudes about the heuristic possibilities of surface prospecting in general, and the potential of non-sites study in particular in Northwestern Iberia. In a first group I think that we could include skeptics who, even with due caution, question the usefulness of these methodologies. A second group would be those who make instrumental and subaltern use of prospecting techniques in the framework of excavation projects and intensive studies. I think this would be the majority. Activists or even enthusiasts would make up the third group, and I think they are a minority, although their numbers are in moderate growth. But in order to contextualize this taxonomy better, survey is ambiguous in itself because it applies to a wide variety of ways of exploring the land. In a discipline as undisciplined as Archaeology, solid proposals have been made in the form of handbooks, guides of good practices, protocols, regulations, etc. on how to carry out an excavation, but there are very few texts focused on the normalization of prospecting, agricultural archaeology and, in general, landscape archaeology (Criado Boado 1993; Criado Boado 1999; García Sanjuán 2005; Orejas Saco del

Valle 2006; Orejas Saco Del Valle, Ruiz Del Árbol Moro 2013). In addition, it does not seem coincidental to me that it was mainly prehistorians and classic archaeologists who promoted these initiatives.

A derivative of all this is that fieldwalking considering 'off-site' records have been and continue to be very rare. Consequently, the 'manure hypothesis', the study of the formative processes of these records, the visibility of buried deposits or the analysis of the forms of site alteration have hardly been treated in Northwestern Iberia. But in recent years there have been important advances in understanding the forms of waste management in inhabited places, which would allow the interpretation of these records to be approached from new theoretical and methodological perspectives.

What is more, some working groups influenced by the Anglo-Saxon tradition and Mediterranean archaeology have considered it both useful and a priority to incorporate the study of non-sites in archaeological prospecting projects. And although not all of them are represented in this volume, there are some of the main ones.

### The contents of this volume

This volume brings together some of the groups and experiences that have devoted more efforts to prospecting on an artifact scale over the years in order to reflect on the type of information provided by this procedure in Northwestern Iberia. The six works that make up this volume address, except in one specific case, territories of different extension and characteristics that have been delimited according to clearly defined historical-archaeological problems (Figure 1.1).

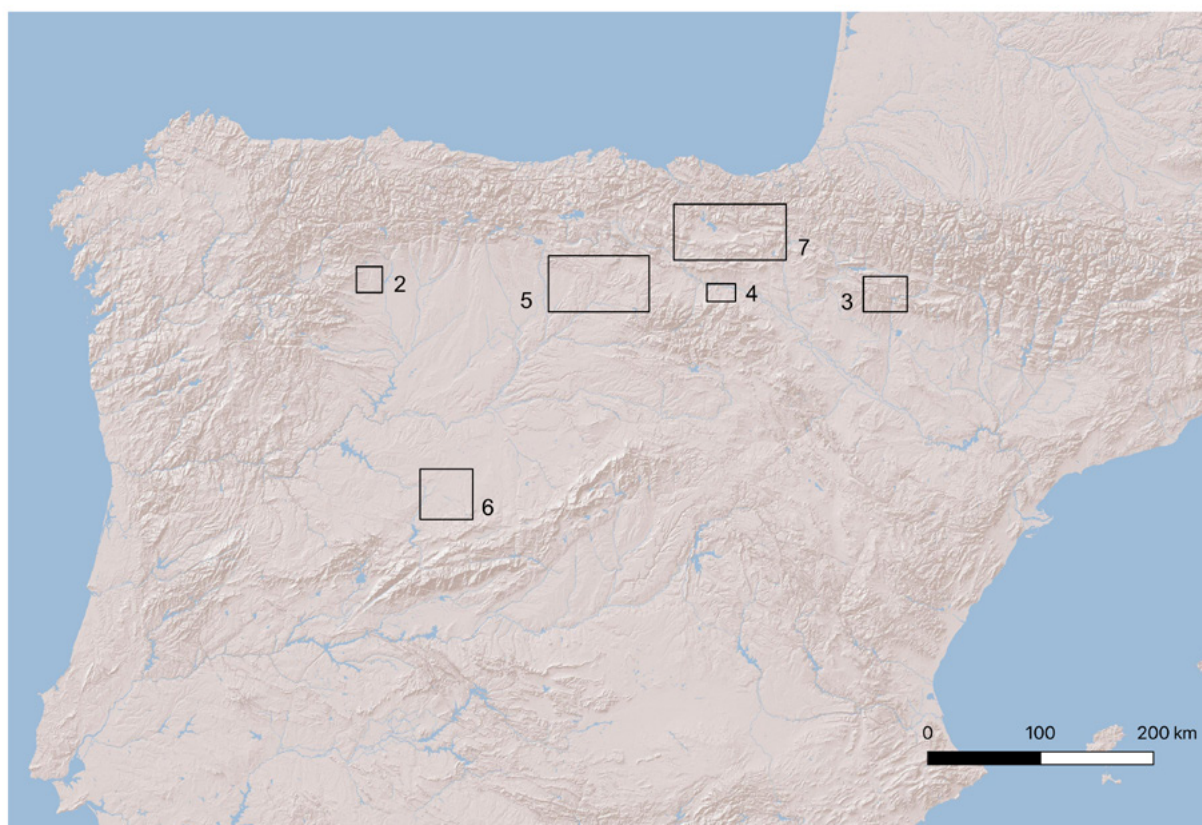


Figure 1.1. Map of the cases study considered in this book

The work by P. Diarte, E. Ariño Gil and M. Pérez is the only one that analyses a single case study of particular interest: the foundation of the Brimeda (León) village in the Early Middle Ages. Combining the information provided by written sources and 'off-site' record a cultural biography of the village is proposed. The documentation of the 9th century refers to an organized and directed colonization process that involved the design of an agrarian space associated with the village. It is true that many of the early medieval documents sometimes resort to what historians have called 'legal fictions', created in order to legitimize the aspirations of the institutions that then preserve them (LARREA CONDE 2007; DAVIES 2020). Therefore, one of the objectives of this project was to determine if the village really was the result of an organized colonization, or if it affected an already inhabited place instead. The ceramic materials recovered in the agrarian spaces allowed to conclude that it was indeed a new early medieval foundation, and that domestic waste was used from this period as a strategy to intensively cultivate the land.

Of the remaining works three have focused mainly on the analysis of Roman landscapes, another one on the analysis of the transition from Antiquity to the Middle Ages and the last one covers a wide time span.

Within the framework of the study project of the Roman city of Cabeza Ladrero, (Aragón) some intensive prospecting has been carried out in the area of urban influence to understand the occupation and use of the territory. On this occasion, 'off-site' ceramic haloes have been explored further to analyse both the intensity of the occupations and the uses of the land. Two occupational periods have been mainly differentiated. Flint lithic artifacts has allowed to identify a Neolithic occupation that has been interpreted in terms of pastoral use related to a subsistence agriculture. However, most of the materials refer to the Roman period. One of the main results of this study has been to identify the existence of a remarkable diversity of rural settlements, mainly small and medium-sized farms, questioning the hegemonic paradigm of the *villae*. In addition, the study has shown that this diversity of occupations also generates a differentiated 'off-site' records, revealing the existence of different dedications and productive logics. Although the city was also in use during the Middle Ages the medieval period is hardly represented in the 'off-sites'.

The study dedicated to the Valpierre plain explores, in terms of long duration, the occupations and agrarian landscapes of a territory of 177 km<sup>2</sup> through the 'carpets' of 'off-site' materials. Perhaps the most interesting contribution of this paper is what is missing rather than what is attested. 'Off-site' materials have restored, testimonies related to three historical periods: the Paleolithic, the Chalcolithic and the contemporaneity (19th and 20th centuries). Although traces of Roman centuriation are preserved and there are written testimonies of intense occupation during the Middle Ages, these periods are not represented in the 'off-site' record. These silences lead us to consider the relevance of other forms of manure procedure, and in particular livestock integration. Besides, the notable presence of ceramic waste associated with the mechanization of agricultural production is particularly interesting.

Jesús García has been one of the pioneers in the northwest of the peninsula when it comes to investigating 'off-sites' record within the framework of his doctoral thesis carried out in the *Ager Segisamonensis* (García-Sánchez, Cisneros 2013). In this volume he makes a critical review of the results obtained in previous studies considering the availability of new aerial images obtained from sources such as UAVs and satellites. As a result, he proposes to move from economic approaches to more integrative agendas that consider the social dimension of landscape in polyhedral terms. In addition, the analysis of several sites located in proximity to the cities of *Segisamo* and *Deobrigula*, leads him to argue that it is possible to add new layers of knowledge with which to revisit and investigate the landscapes in temporal terms. He also presents very detailed analyses of some specific sites.

The chapter dedicated to the transformation of agrarian landscapes and the network of settlements between the Roman and medieval periods in the Eresma and Voltoya valleys in Segovia is particularly illuminating because many 'off-sites' materials have been studied. Carlos Tejerizo's paper connects the transformations of settlement patterns with agrarian practices, proposing a three period division. During the Late Roman period extensive cultivation practices are used and it is common to find pottery carpets at relevant distances from inhabited places. In the Post Roman period, *villae* and subsidiary settlement are replaced by hillforts and a network of villages and farmsteads which promotes intensive agriculture. Household waste is now placed only near settlements. On the other hand, from the 8th century there is a restructuring of settlement patterns, now articulated in nucleated villages and towns. A consequence of this process has been the implementation of an open-field system, being the result of the collective action of local communities. Pottery sherd distribution shows the use of manure practices even at considerable distances from populated places.

Finally, the work on the Alava plain considers the results obtained in an intensive and systematic fieldwork carried out in an area of high agricultural productivity twenty years ago. And although at that time it was not possible to record single artifacts, this fieldwalk provides very significant data because throughout these decades the erosion of the 'off-sites' record has been continuous. Considering a long-term perspective, eight chronological periods are defined to investigate agricultural practices of the Alava plain and the peripheral mountain ridges. The integration of a large number of proxies allows to critically evaluate the type of inferences that can be made from materials located 'off-site', as well as to delineate the transformations of agrarian landscapes in the last two thousand years. While some chronological periods are barely represented in this record (Roman period, early medieval, late medieval), the early and high medieval centuries stand out, as well as the second part of the modern period.

As pointed out recently, the diversity of methodologies and conceptual frameworks means that it is very difficult to compare the results obtained by prospections of this nature (Attema *et al.* 2020). And yet, some general trends can indeed be observed.

In geographical terms, these projects have been carried out in the Douro basin and the Ebro valley (Figure 1.1), so not many studies are known about 'off-site' materials on the Cantabrian rim. This does not mean that the use of household waste was not a common practice in maintaining the fertility of crop fields and, in particular, in intensive use gardens and orchards, as ethnographic evidence and historical sources show (García Fernández 1980; Peña Chocarro *et al.* 2003; Barandiarán, Manterola 2017; Davies 2019). But current farming practices make it difficult to identify and document this record.

Considering the number of potteries recovered for spatial unit, a major conclusion obtained comparing the different projects is the massive heterogeneity. As long as these variables are not related in a simple and linear pattern it cannot be assumed that the consumption of ceramics is uniform in all territories and in all historical periods (Witcher 2006). On the other hand, the very notion of waste and garbage is a cultural, contingent and contextual concept that cannot be defined from a contemporary perspective (González Ruibal, Vila 2018). In addition, when considering the volume of ceramics found in excavations it is evident that the number of fragments, the fragmentation index, the live span of some productions, the maintenance and repairing tasks markedly vary in chronological and territorial terms. In short, even assuming the 'manure hypothesis' as the main cause that would explain the presence of pottery carpets in crop fields, the interpretation of this record must be carried out with caution. And as some papers contained in this volume show, it is precisely the integration of other informative records that allows to suggest some types of inferences.

In qualitative terms, it is useful to consider in which chronological periods domestic waste seems to be more relevant in the fertilization processes of crop fields. A comparison between the six projects (Table 1.2) reveals the existence of significant differences. It can be suggested that these variations can be linked to different forms of social organization and articulation of agro-pastoral practices. Prehistoric occupations are visible, mainly, by the presence of flint and lithic materials. But it is particularly relevant the scarce representation of materials from Roman times in the plains of Valpierre or Álava, where an important number of sites of this period are known. The period between the Late Roman Empire and Late Antiquity is also underrepresented, except for the project carried out in Segovia. On the other hand, in some specific sectors of Northwestern Iberia the Middle Ages are widely represented, while in others they are totally invisible. It is also interesting to note the low number of Late Medieval findings in all projects. Furthermore, there are also important differences in the post-medieval period between the different projects.

Project	Km <sup>2</sup>	PR	RM	LRP	LA	EME	HME	LME	ME	CE
Brimeda	1,35									
C. Ladrero	73									
Valpierre	177									
Segisamo	500									
Segovia	18,1									
Álava	49									

Table 1.2. Representation of the different chronological periods in the non-sites presented in this volume (PR= Prehistory, RM= Roman; LRP= Late Roman Period; LA= Late Antiquity; EME= Early Medieval Period; HME= High Medieval Period; LME= Late Medieval Period; ME= Modern Age; CA= Contemporary Period)

Several causes can be proposed to explain this unequal distribution: the integration of livestock resources, the use of green fertilizers, agro-pastoral practices, the social organization of space and cultural behaviours, etc.

Another line of research to be explored is the social meaning of these fertilization practices. If we assume the hypothesis that the use of household waste is the result of the agency of subaltern groups, the trends observed in table 1.2 can constitute an indication to assess socio-political dynamics beyond the economics approaches. Besides, a more explicit theoretical reflection around concepts such as intensification, growth, contraction, crisis, or resilience would be of particular importance to interpretate the differences (Erickson 2006; Marcus, Stanish 2006; Thurston, Fisher 2007; Marston 2011).

Another variable that only some works have taken into consideration is the distance between inhabited places and the crop fields in which the recovered ceramic materials have been collected. In the Alava plain and in the valleys of Eresma and Voltoya, ceramics from historical periods have been collected at a remarkable distance from inhabited places, while at other times they are concentrated in proximity to the sites. This contrasts with some ethnographic inferences that have been assumed mechanically (Barandiarán, Manterola 2017). Indeed, traditional agriculture is very diverse in the different sectors of the northwest and has still been incorporated in a limited way by studies dedicated to agricultural archaeology. It is particularly striking that while prehistorians, usually British, have resorted very productively to ethnoarchaeology in places like Asturias (Charles *et al.* 2002; Halstead 2014; Moreno-Larrazabal *et al.* 2015; Bogaard *et al.* 2016), similar projects have rarely been developed in other sectors of Northwestern Iberia.

Finally, a better understanding of manure and agricultural practices requires a more integrated approach to a relevant number of sources. For instance, the written sources can provide relevant insights regarding the existence of specific spaces to gather and produce dung, such as the *femerales* in the Pyrenees (Utrilla

Utrilla 2019). Furthermore, it has been suggested that some holes and pits found in archaeological sites could be used to create manure, to improve agrarian lands (Malalana Ureña *et al.* 2013).

### **The Northwestern Iberia record**

It is also worth wondering, in the light of the experiences gathered in this volume, to what extent non-sites in Northwestern Iberia present some specific singularities that differentiate them from Mediterranean landscapes. It is not easy to answer this question, among other reasons, because the projects carried out in the Mediterranean area operate in very different geographical, historical, social, and cultural contexts. In the same way, neither the results offered by the case studies collected in this volume are uniform nor do they allow the generation of a specific 'model'. But with all these cautions, it may be helpful to suggest some traits.

It has already been pointed out that the volume of ceramics consumed in certain historical periods, as well as amortization and replacement terms or the values attributed to material culture are very different among the examples included in this volume, but also with respect to other projects carried out in the Mediterranean. Particularly during Antiquity and the Late Roman period the supply through sea and river routes might explain the frequency with which Roman sherds are found on the shores of the Mediterranean. Instead, consumption patterns appear to be different in some of the regions explored in this volume. However, there are notable differences between the project of Segovia and that of the Alava plain.

Another feature that characterizes the material record of the Mediterranean is the relevance of architectures made of stone, soil and ceramic roofs over time. On the other hand, the excavations and prospections carried out in the interior peninsula, the Alava plain or Astorga surroundings have shown the importance of architectures made with perishable building materials instead. As a result, the visibility of these constructions is compromised. And although non-site prospecting has rarely managed to process construction materials in some degree of detail, this is one of the challenges that should be addressed soon.

### **Conclusions**

Maintaining and improving land fertility has been one of the main concerns of pre-industrial agricultural societies, so agricultural practices have been modelled on balancing the different dedications, agencies and conflicts that characterise the different forms of mixed farming (Harris, Fuller 2014).

The papers of this book present several examples of integration of non-sites with other archaeological records, which allows to critically evaluate the nature of the inferences that can be made, the validity of the 'manure hypothesis', as well as the social dimension of traditional agrarian practices. Excavation provides relevant information about how waste is generated, stored, processed, and used in domestic environments, but 'off-site' records contribute to understand the results and silences obtained in excavations. In the same way, non-sites allow to interrogate from a fresh perspective the forest and mountainous spaces, whose importance is critical to understand the diversity of manure strategies. In other words, while the prospection records have become technical and sophisticated (Attema *et al.* 2020), a multiproxy strategy of intensive study of microregions allows to revalue the information provided by non-sites from new perspectives.

Non-site records cannot be explained solely from the 'manure hypothesis', but they contribute decisively to exploring landscapes and agro-silvo-pastoral practices from new perspectives. In addition, the absence of pottery carpets is often much more interesting than their presence when questioning relevant aspects of the functioning of rural societies.

Harmish Forbes (Forbes 2013) has argued that neither waste generation nor fertilization processes are a simple and ‘natural’ by-product of everyday life since they do not passively and simply reflect the nature of sites and social agencies. In other words, this author has suggested that ‘off-sites’ materials should be considered artifacts in themselves, the result of a process of filtering and intentional selection of the material culture in use in each community based on the values and meanings attributed in contextual terms. Consequently, the systematic collection of these records allows to explore the hidden meanings that have determined that some objects become part of a structured cycle of waste processing, while in other cases the useful life of the objects is extended or instead, they are totally excluded from these processing practices.

In conclusion, the ‘off-site’ record contributes to building a more holistic agrarian archaeology, breaking down the rigid divisions between cultivated, forest and mountainous spaces and domestic sites, between countryside and city, between agriculture and livestock.

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# The colonization of agricultural space in the territory of medieval Astorga: the agricultural space of Brimeda (Villaobispo de Otero, León, Spain) as attested by off-site ceramic material

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## Abstract

Brimeda is a village in the municipality of Villaobispo de Otero, located about 3.5 km north of Astorga (León). A document from the year 878 describes Brimeda as a repopulation town, with a founding act in the year 854. The document precisely details the tasks of constitution of the new population, which included not only the construction of an urban nucleus, but also the design of an agricultural parcel for the rural population. A systematic survey, which aims the recovery of off-site material in the cultivation spaces of the town, confirms the data provided by the document, indicating that the village arises as a result of an organized colonization process, apparently with no history of previous human occupation. Likewise, the study of the ceramic material dispersion pattern dated in the medieval period suggests that its incorporation into the fields has occurred through the practice of fertilizing farmland with domestic garbage.

## Keywords

Duero Valley, Archaeological prospection, Repopulation town, Lawsuit, Cultivation spaces

## The geographical and historical context

Brimeda is a hamlet in the municipality of Villaobispo de Otero, located about 3.5 km north of Astorga (province of León). It is situated at an altitude of 872 m above sea level, in the final section of the valley of the River Argañoso, which flows from the east and empties into the River Tuerto - a tributary of the Órbigo, tributary of the Esla -, approximately one and a half kilometres to the west of the town. The small valley in which Brimeda lies is bounded on its northern side by a series of east-west facing elevations, which reach their maximum height at El Montote hill (1,025 m above sea level). To the south, the southern limit of the lower Argañoso valley is marked by the heights of El Sierro, whose maximum height is 971 m above sea level. Brimeda and its corresponding agricultural area mark the southern limit of the municipal district of Villaobispo de Otero (Figure 2.1).

Its location, in a transition area between the Castilian plateau and the mountains, framed in the Northern Sub-Plateau, means that its geomorphology is defined by reliefs in Paleozoic materials from the Astur-Western area of León and the Central Iberian area, as well as by Tertiary and Mesozoic materials from the Duero and Bierzo basins. Lithologically, coarse-grained siliceous formations of quartzite, slate and sandstone predominate, while riverbanks are characterised by conglomerate formations. In general,

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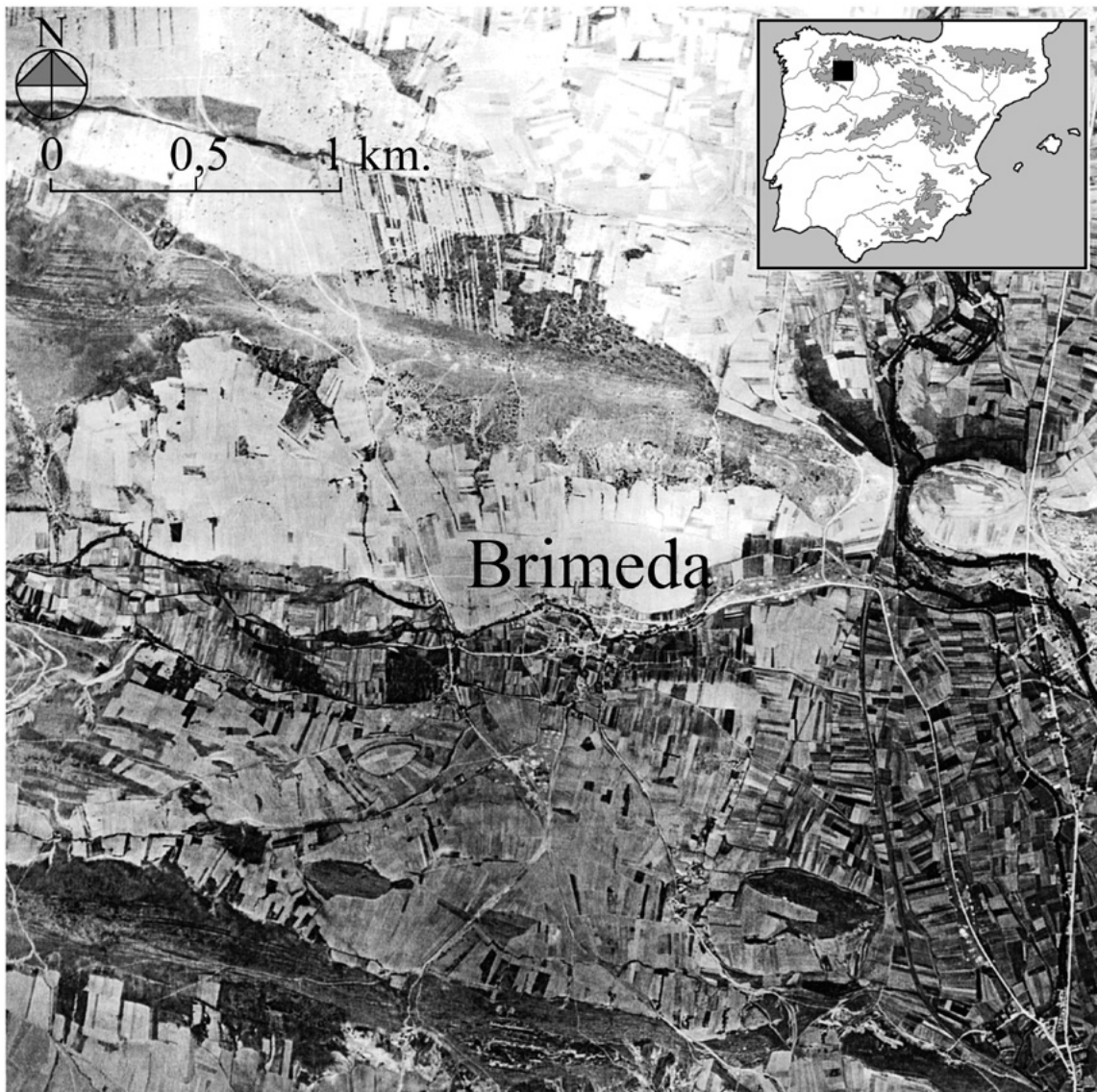


Figure 2.1. Aerial photograph (1956) in which the regular plot around Brimeda can be seen (Spanish Army Geographic Centre, photo. 14931-R. 160 - July 27, 1956).

lithic soils prevail in the area with rocky contact at a depth of less than 50 cm, giving rise, with some frequency, to the presence of lithosols, i.e. soils no more than 10 cm thick, which lie directly on the bedrock or leave it exposed. The region has iron mines (Mata-Perelló and Sanz-Balaguer 2013) and there is gold in the alluvial deposits, a resource that was intensely exploited in Roman times (Sánchez Palencia *et al.* 2000).

Brimeda and its agricultural area are relevant for historical and archaeological research because of a document dating from 878. The document records a lawsuit that pitted the Bishop of Astorga against the claims of the sons of a certain Cathelino (Floriano Cumbreño 1951, 127-130, doc. 120). The document records that Cathelino had once occupied the town of Brimeda for his own benefit and, according to the lawsuit's ruling, without any rights. The village had been under the authority of the Bishop of Astorga

since its origin in 854, when it had been founded by Count Gatón, by Indiscló, Bishop of Astorga, and by King Ordoño I himself (Cabero Domínguez 1995, 121-2).

The process that gave rise to Brimeda is part of a wider historical context, associated with the expansion of the kingdom of Asturias to the south, in the period between the mid-9th and early 10th centuries (Martín Viso 2017, 114-120). The process of repopulation extending from the northern Hispanic kingdoms to the south is a classic theme in medieval Spanish historiography and has been a source of controversy since 1966 when Sánchez-Albornoz published an influential work in which he characterised the Duero Valley as a demographic desert, the border between the Asturian kingdom and al-Andalus (Sánchez-Albornoz 1966). Today, the thesis of the 'Duero Desert' has few defenders among medievalists, who have mostly taken a stand against it (*vid.* García de Cortázar 1991, Reglero de la Fuente 1994, Barrios García 2000 and Mínguez Fernández 2001). Escudero Manzano (2016) has recently presented a state of the art which generally discredits Sánchez-Albornoz's thesis. Archaeological data is often introduced into this debate to reinforce the argument against the thesis of the depopulation of the Duero. However, the evidence for the survival of the Hispanic peasant settlements of the Visigothic period beyond the early years of the 8th century is highly questionable and has in turn been the subject of intense debate by archaeologists (Ariño Gil 2013, Diarte-Blasco 2018, 59-80). Furthermore, the truth is that archaeological documentation reveals a higher rate of urban collapse between the 5th and 8th centuries in the Duero Valley than in other areas of Hispania (Núñez Hernández and Curchin 2007).

At any rate, the main sources for studying the advance of the Asturian Kingdom, facilitated by the crisis that Umayyad power had been facing since the middle of the 9th century, are still the Chronicle of Alfonso III and the Albeldense Chronicle. Both indicate that it was Ordoño I who was in charge of the population of Astorga (854) and León (856). The Albeldense Chronicle describes both cities as '*ciuitates ab antiquis desertas*', although this description could reflect a decline in their population accompanied by a certain deterioration of their urban structures rather than genuine and absolute abandonment. Archaeological data referring to Astorga in the Suevi and Visigothic periods is quite scarce (Fernández Ochoa *et al.* 2005, 100-102), although it is by no means proof of the abandonment of the urban site, as there is evidence, albeit scant, of building activity in the Visigothic period. In León, the sequence of urban occupation underwent profound transformations in the late medieval period, but not, of course, abandonment (Gutiérrez González and Miguel Hernández 2009 and 2016).

In the specific case of Astorga the so-called population (*populatio*) took place with people from El Bierzo, under the direction of Count Gatón (Floriano Cumbreño 1951, 127-130, doc. 120). However, if it is already difficult enough to estimate the volume of this migration to Astorga, it is even harder to calculate the population in relation to the rural environment of the city, something about which there is hardly any information. We have evidence, as already mentioned, that the bishop Indiscló played a fundamental role in the repopulation of the city, which was carried out through a form of territorial appropriation called *aprisio*, very common in this area in the 9th and 10th centuries, in which people who placed value on uncultivated land became the owners of the land (Manzano Moreno 2010, 223-4). In this way, the bishop carried out *aprisio* in the town of Brimeda when Astorga was populated in 854. It was a royal *aprisio* as it was linked to Ordoño I through his delegate Gatón and the bishop. The origin of the conflict that the document of the year 878 settled was probably due to the fact that the bishop had not finished the cultivation of all the lands so that years later, a private individual, Cathelino, finding uncultivated lands in the town, ploughed them himself and then claimed them as his own *aprisio* (Reglero de la Fuente 1994, 140).

### Villa Vimineta (Brimeda): analysis of the founding document and study of the agricultural plots

The lawsuit between Cathelino's sons and the Bishop of Astorga was decided in favour of the latter. In order to reinforce the episcopal rights over Brimeda (referred to in the document as Villa Vimineta), the document refers to the context of origin of the village and details exactly the process and circumstances of its foundation. It is the description of the series of acts involved in the founding process that makes the document particularly interesting for the purpose of our research, as the text describes a whole system of land colonisation that goes beyond the general granting of rights over a territory. The part of the text that interests us is the following:

*'...quando populus de Bergido cum illorum comite Gaton exierunt pro Astorica populare, etiam consignatur eam illi iste comes, et fecit ibidem suas signas et aedificauit ibidem casas, cortes, arauit, seminauit in ipsa uilla, et habuit ibidem sua pecora, et quando prendidit eam Domnus Episcopus, Cathelinus in Bergido erat, tunc solummodo in suo iure stante prendidit ipse Cathelinus ex parte ibidem terras presumtue...'* (from Floriano Cumbreño 1951, 128, doc. 120).

The document's description of the (re)population of Brimeda is important for three main reasons. The first is that the colonising process seems to point to a foundation without a history of any previous occupation. Or at least, if such occupation had existed, it was not taken into consideration when describing the agricultural space associated with the village. Secondly, it should be noted that all the operations involved in the organisation system of the agricultural space appear to be hierarchical or ordered. The text alludes, firstly, to the constitution of boundary markers or demarcation markers (*signa*), which would affect, it may be assumed, the urban division and agricultural distribution. The next operation mentioned is the building of houses and *cortes* - probably land fenced in for livestock (Alvarez Maurín 1994, 306-8). The land was then ploughed, sown and, finally, with the farm area perfectly demarcated, the cattle were allowed to enter. Thirdly, the text uses terminology marked by a vocabulary of land surveying that seems to have been inherited from the classical tradition. Particularly noteworthy is the use of the word *signa* to refer to the demarcation markers, a term typical of the technical language of Roman surveyors (Castillo Pascual 1993, 59-60), but also the fact that express reference is made to the operations that allow the field to be put to farming use (*arauit, seminauit*), something that recalls the rule governing Roman assignments to give the settler useful land, i.e. already suitable for cultivation. In fact, the form used by Hyginus Gromaticus to refer to the land that can be assigned (*qua falx et arater ierit*: Th. 166=Clavel-Lévêque *et al.* 1996, 146-147) is very similar to that used in the founding document of Brimeda. The document's description of the colonisation process is very precise in its terminology and refers to a colonising process that involved the foundation of a village and the systematic parcelling of the agricultural land by building a regular cluster of plots. In short, albeit on a small scale, everything recalls the way a Roman colony was founded (Ariño Gil *et al.* 2004, 203-9).

Any of the available satellite images (Iberpix 4 - viewfinder by the National Geographic Institute of Spain -, Google Earth, Google Maps) allow us to appreciate around Brimeda a plot distribution system built along paths or tracks running east-west, parallel to the Argañoso River. However, the current agricultural landscape has been altered by recent land consolidation and the aerial photograph of the American Flight (Spanish Army Geographic Centre, photo 14931-R. 160-27 July 1956) is a much better document for defining the features of Brimeda's traditional agricultural plot distribution (Figure 2.1). This image shows an organisational diagram of the plots centred on two large tracks to the south of the river in an east-west direction. Their layout is only roughly parallel, as they are not strictly straight and their route seems to have been determined by the topography, especially by the course of the Argañoso. To the north of the river, a large axis with the same orientation is to be seen. Brimeda is the hub of the agricultural area that belongs to it, being at the centre of the rural cadastre and, at the same time, the point of convergence of paths with a south-north route, transversal to the axis of the valley.

A comparison of the satellite images with the 1956 photographs shows that a large part of what was a farming area in the middle of the 20th century is now used for forestry. The most characteristic feature of the agricultural system around Brimeda is that the fields are arranged as narrow strips, generally with a south-north direction, with their short side on one of the tracks around which the cadastre is articulated, in the manner of a comb spike or in the form of fish bones. Although the plot distribution was not carried out in fixed units, its morphology indicates that it was unquestionably a planned area. It is most likely that, in the act of assigning land to the inhabitants, the unit of the plot was the determining factor in assigning equal lots between equal people. The roads would be only the skeleton or outline from which the cultivated plots would grow and, unlike what was common practice in Roman allocations, they were laid out without forming a regular grid.

### Prospecting goals and methods

The study of the territory of Brimeda is part of a larger research project designed to analyse the processes of continuity or discontinuity of settlement in the Duero area between the Roman and medieval periods. We carried out this research during 2016 and 2017 in the territories of *Albocela* (Villalazán, Zamora) and *Asturica* (Astorga, León), precisely because they were two cities with different urban histories (the former was abandoned around the 5th century, while the latter became, from the 4th century onwards, the seat of the bishops and has lasted until today) and belonged to the same landscape, that of the mid-Duero valley, where the rate of urban collapse is notably higher than in other areas of the Iberian Peninsula (Núñez Hernández and Curchin 2007). The ultimate aim was to see whether the different paths followed by the two cities in their evolution had any effect on their respective territories. The research took the Suevi/Visigothic period as its nodal point, on the assumption that it was a key phase for understanding the process of change, especially with regard to the types of rural habitat and their levels of survival, discontinuity and mutation (Diarte-Blasco *et al.* 2020).

In the territory of Astorga, 30 sites were originally pre-selected for the study, of which 13 were finally chosen to fit the categories under analysis: 1) pre-Roman fortifications with late occupation, as well as other fortified hilltops; 2) Roman villas with possible evidence of occupation after the year 400; 3) other Roman settlements on the plain, in the case of *Asturica*, especially points of habitat associated with mining; 4) Suevi/Visigoth or early medieval settlements on the plain; 5) late necropolis, with possible points of associated habitat; 6) depopulated or early medieval villages that could have hosted a sequence of occupation from previous periods. The selected sites were subjected to a preliminary inspection in which, without collecting archaeological material, we checked the information contained in the Archaeological Inventory of Castile and León, the presence of ceramic remains on the surface in the area marked in the cartographic records of the Inventory, as well as the definition of the area of on-site intervention, with special attention to the conditions of surface visibility. The results of this preliminary analysis obliged us finally to discard nine sites<sup>4</sup>, since only four of them provided ceramic material on the surface: Castro Pedredo (Santa Colomba de Somoza), Huerña/Los Linares (Luyego), Iglesia Caída (Magaz de Cepeda), Regañón I (Villaobispo de Otero). Brimeda was included in the territorial study because of its relevance in an analysis that aimed to analyse phenomena of continuity or discontinuity in the rural population in the time-frame between Late Antiquity and the Middle Ages (Diarte-Blasco *et al.* 2020).

In the case of Brimeda and its surroundings, a plan of systematic prospecting was designed to recover off-site material, as this analysis space was considered key to trying to answer two questions of some

<sup>4</sup> It should be noted that, although it could not be sampled superficially due to poor visibility, the study finally included the Roman villa El Soldán (Santa Colomba de Somoza). To this end, we considered the ceramic material recovered in the excavations carried out by Carro at the beginning of the 20th century and held at the Leonese Institute of Culture.



importance in the current scientific debate. On the one hand, prospecting should answer the question of whether, during the medieval (re)population, apparently carried out from scratch, there was a previous population and structures, omitted in the document, perhaps for reasons of convenience or ideological propaganda. Secondly, the study of off-site archaeological material, in a cultural landscape with a regular plot layout and a precise foundation date, could allow us to analyse the processes of exploitation and management of the cultivated space. The decision to carry out a strategy of intensive off-site survey archaeology action was based on the fact that such materials provide clues about the processes of land occupation, and can be interpreted independently of the presence of settlements, even if these multi-period finds are in many cases clustered representing sedentary occupation and/or other activities, such as farming ones, and above all avoiding the arbitrary distinction between site and non-site archaeology (Cherry 2003). In this sense, the recovery of ceramic fragments dispersed throughout the Brimeda plot, a crop-growing area with a clearly established date of construction, could serve to test the thesis that ceramics reach agricultural plots through the practice of using household waste, including the remains of crockery used in the home, as fertiliser (Foley 1981; Wilkinson 1982 and 1989; Alcock *et al.* 1994; Fentress 2000; Vermeulen and Mlekuz 2012).

The Brimeda prospecting campaign was carried out in 2017, at the end of January, over three days. The survey was performed by three people and was designed with the usual system of online surveyors at intervals of around 5 m. The ceramic fragments were georeferenced individually with a GPS (Garmin GPSMAP 64s). The way-points thus obtained were then transferred to a map whose cartographic base was that of the National Geographic Institute (National Plan for Aerial Orthophotography: <http://pnoa.ign.es/productos>). The GIS resource used for the mapping was the open source system QGIS, 2.18 Las Palmas (<https://qgis.org/es/site/about/index.html>). This tool generates a point map in which each ceramic fragment corresponds to a database, so that it is possible to select several views and combine complex data. The total surface area of the intervention was about 240 ha distributed across different areas of the explored space.



Figure 2.2. Dispersion of traditional earthenware and industrial stoneware in the area surveyed around Brimeda. Cartographic base of the National Plan for Aerial Orthophotography (<http://pnoa.ign.es/>).

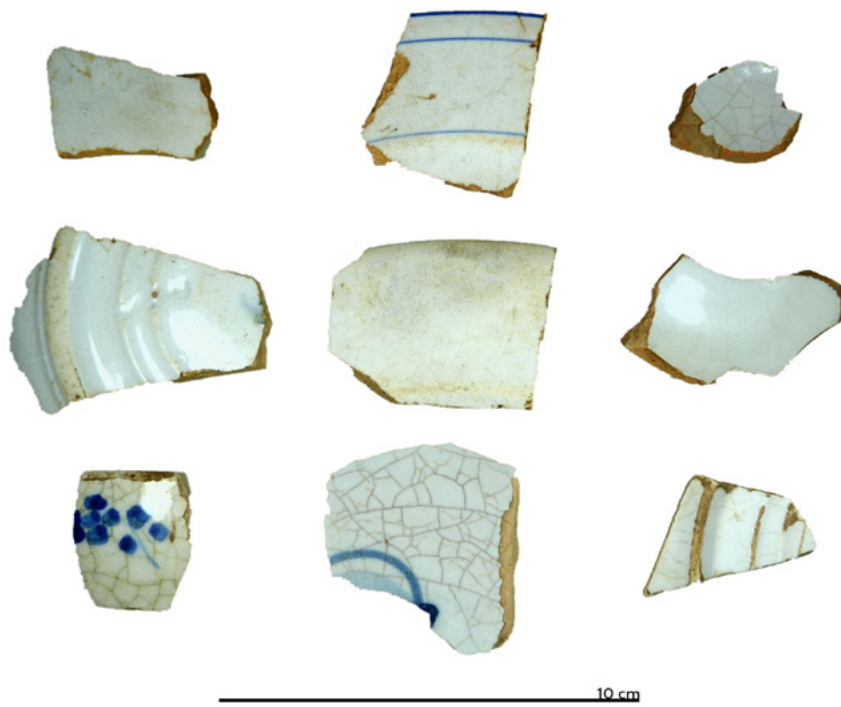


Figure 2.3. Fragments of industrial stoneware recovered in the territory of Brimeda.



Figure 2.4. Fragments of earthenware recovered in the territory of Brimeda.



Handmade pottery	Painted pottery	Common pottery	Common cooking ware	Common pottery with burnished lines	Earthenware	Industrial stoneware	Total
2	1	251	10	50	345	274	897
0,22	0,11	23,97	1,11	5,57	38,46	30,55	100

Table 2.1. Total numbers and percentages and of the ceramic productions recovered in the territory of Brimeda.



Figure 2.5. Fragments of common cooking ware recovered in the territory of Brimeda.



Figure 2.6. Fragments of common pottery decorated with burnished lines recovered in the Brimeda territory.

## Results

The prospecting recovered a total of 897 ceramic fragments (Table 2.1) in the territory of Brimeda. The most abundant productions were common earthenware (345 fragments) and industrial stoneware (274 fragments) (Figure 2.2). Industrial stoneware is defined as ceramic fragments that can be considered to have been made by contemporary potters using industrialised production techniques (Figure 2.3). The dating of these ceramics can be attributed not only to the contemporary period, but even to the present day. Common earthenware is classified as ceramics produced using traditional pottery techniques, which have their origin in the late Middle Ages but continue to be produced without much change to this day (Coll Conesa 2011; Martín-Salas 2011; Villanueva Zubizarreta 2011) (Figure 2.4). A total of 215 fragments corresponded to common ceramics, that is to say, ceramics without a coating or characteristic decorative features, which made them unusable for the purposes of chronology. The really significant off-site material consisted of ceramic productions with low numerical values but which provided relevant information for the questions that the planned research aimed to resolve. Two fragments were identified as handmade ceramics with an undetermined prehistoric chronology. One fragment of painted pottery was also recovered, 10 of common cooking ware and 50 of common pottery decorated with burnished lines. In addition, the prospecting detected two fragments of *tegula*.

The common cooking pottery recovered in the prospected space bore very similar features to the pieces that defined stratified contexts from the mid-5th century onwards (Ariño Gil and Dahí Elena 2012; Dahí Elena 2012; Vigil-Escalera 2013; Sastre Blanco et. al. 2018, 392-6) (Figure 2.5). However, given that this production survived throughout the late Middle Ages - and that its final moment has not been defined - it is not impossible to link it to dates associated with Brimeda's foundation in 854. The most significant information, both in terms of its numerical value and the chronology to which it refers, was provided by the common ceramics decorated with burnished lines (Figure 2.6). This term refers to a fine paste ceramic with a characteristic treatment of the outer surface, obtained by means of linear polish (vertical, oblique or forming a grid). In some pieces, more than the burnishing itself, what can be seen is spatula-work, although the drawing patterns are exactly the same and the effect achieved is very similar. This ceramic ware is medieval although its precise time-frame has yet to be established. In the pottery of La Morterona (Saldaña) they are associated with a coin of Sancho III (1157-1158) (Peñil 1987). In the pottery of Calle Duque de la Victoria in Valladolid they appear in a context dated to the 13th century (Villanueva Zubizarreta 2011, 98-100). However, earlier dates around the 9th and 11th centuries have also been proposed (Martínez Peñín 2007, 173-4). Furthermore, it remains to be determined what relationship these ceramics may have with common cooking ware decorated with burnished lines, a ware for which there is evidence from the mid-6th century (Dahí Elena 2012, 224-5), since the decorative technique is the same in both productions.

However that might be, the 50 fragments of ceramics decorated with burnished lines are significant in the contextual analysis of the 878 document, the plot morphology and the surface ceramic context. The distribution scheme of this ceramic ware matches the typical pattern of off-site material, i.e. the ceramic fragments appear scattered throughout the fields, in no case forming concentrations, which indicates that they are not connected to sites of dwelling. When the 10 fragments of common cooking ware are included in the dispersion map, they are also found to be distributed randomly, but mainly in the areas with the highest density of ceramics decorated with burnished lines (Figure 2.7).

## Discussion and conclusions

With regard to the question of whether Brimeda was founded in an area with no history of previous occupation, the investigation validates the information contained in the document of 878. Judging by



Figure 2.7. Dispersion of common cooking ware and common pottery decorated with burnished lines in the surveyed area around Brimeda. Cartographic base of the National Plan for Aerial Orthophotography (<http://pnoa.ign.es/>).

the data obtained during prospecting, neither in Brimeda nor in its immediate surroundings has any settlement from the Roman period or the Suevi/Visigoth sequence been detected. It is true, however, that a little less than two kilometres away is the site of El Regañón I (Villaobispo de Otero). This site had a very small area of material dispersion that militated against regarding the settlement as a Roman villa, although it could perhaps be interpreted as a small area of residence that originated in the late Roman period, perhaps a place used for some kind of agricultural or craft activity in the suburban area of Astorga. In fact, the surface context had a profile that confirmed a sequence of occupation from at least the 4th century - a date backed up by a significant number of fragments of late Hispanic *terra sigillata* - and a more than probable continuation throughout the 5th century. However, the small number of common cooking ware fragments recovered in the survey seems to rule out the existence of an occupation sequence in the advanced Visigothic period (Diarte-Blasco *et al.*, 2020), which, taking into account the founding date of Brimeda and the superficial ceramic context associated with the plot, highlights a temporary hiatus between the two habitat spaces, which rules out El Regañón I as a direct antecedent of Brimeda.

As for the question of whether the off-site ceramic material could be explained as the result of using household waste as fertilizer, the answer, in the case of Brimeda, seems to be yes. However, two points should be made. The first has to do with the imbalance that can be observed between the ceramic material of contemporary chronology (619 fragments including traditional and industrial stoneware) and that which would date from the medieval period (50 fragments of common pottery decorated with burnished lines, to which could be added the 10 fragments of common cooking ware). From this it can be seen that the transport of refuse from the town to the crop-growing area is much more extensive today than in the past. The second consideration goes deeper into this phenomenon to draw attention to the fact that the pottery is spread over an agricultural space that is relatively close to the residential area, whether the urban centre of Brimeda itself or the one around the church of San Antonio de Padua, to the west of the main centre, with the greatest concentrations being found close to the farmhouses.

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# El registro *offsite* como fuente para la reconstrucción del paisaje antiguo. Dos ejemplos del entorno de la ciudad de Cabeza Ladrero (Sos del Rey Católico/Sofuentes, Zaragoza)

Ángel A. Jordán<sup>1</sup>

## Abstract

The offsite concept has a long bibliographic history but, in contrast, it has not been widely used for landscape interpretation. So it's common the leitmotif that the characteristics of the offsite registry make its identification very costly for the benefits that we can obtain. That's why the objective of this work is to show the possibilities that its study offers to the knowledge of the occupation and use of the landscape. With this purpose we have selected two moments of occupation of the territory: the Neolithic (5000-3000 BC) and Rome in its high imperial phase (14 BC-284 AD). Although they are far from the time frame in which this monograph moves, they are two periods of intense occupation of the space and they allow, therefore, to apply the interpretative possibilities that allow the isolated findings for the knowledge of the rural world, being a methodology easily extrapolated to other historical periods.

## Keywords

Landscape, Territory, Archaeological survey, Grazing, Farm

## Introducción

El yacimiento de Cabeza Ladrero se emplaza al sur del término municipal de Sos del Rey Católico (Zaragoza), ocupando una colina de 563 metros de altura y su entorno en el centro de un pequeño valle situado cerca del pueblo de Sofuentes, al Noroeste de la provincia de Zaragoza (Figure 3.1). En él se lleva desarrollando desde el año 2016 el Proyecto Arqueológico de Cabeza Ladrero (Jordán 2018a) que, tras cuatro campañas de excavación arqueológica, ha permitido la caracterización de este enclave como una ciudad de dilatada cronología, cuyo inicio se lleva al Bronce Final y termina en un momento desconocido comprendido entre los siglos VI-IX d.C.<sup>2</sup>.

Junto al desarrollo de estas actividades arqueológicas desde el inicio se ha planteado la necesaria relación del núcleo urbano con su territorio circundante (así, por ejemplo, Clavel-Levêque y Levêque 1971; Leveau *et al.* 2009; Fiches *et al.* 2013), un aspecto especialmente patente en época romana donde las leyes municipales son explícitas al plantear su administración por la curia local (*lex Irn.* 76, 82 y 83), pero que se puede retrotraer sin problemas a épocas anteriores.

La búsqueda del conocimiento de este territorio ha llevado a realizar una primera delimitación de la posible área de influencia de la ciudad de Cabeza Ladrero en su fase romana, que ha facilitado la

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<sup>2</sup> Desde un punto de vista arqueológico se ha podido constatar la existencia de un nivel datado en el siglo VI d.C. (Barragán y Soto 2020), aunque las prospecciones arqueológicas realizadas sobre el territorio que ocupaba la ciudad han permitido la identificación de cerámica propia de los siglos VIII-IX d.C., en especial fragmentos cerámicos realizados a torno lento, con pastas toscas de tonos anaranjados o decoradas con bandas incisas paralelas similares a los localizados en yacimientos de las cercanías claramente datados en el siglo VIII d.C. (*i. e.* Vega *et al.* 2017, 177-178).



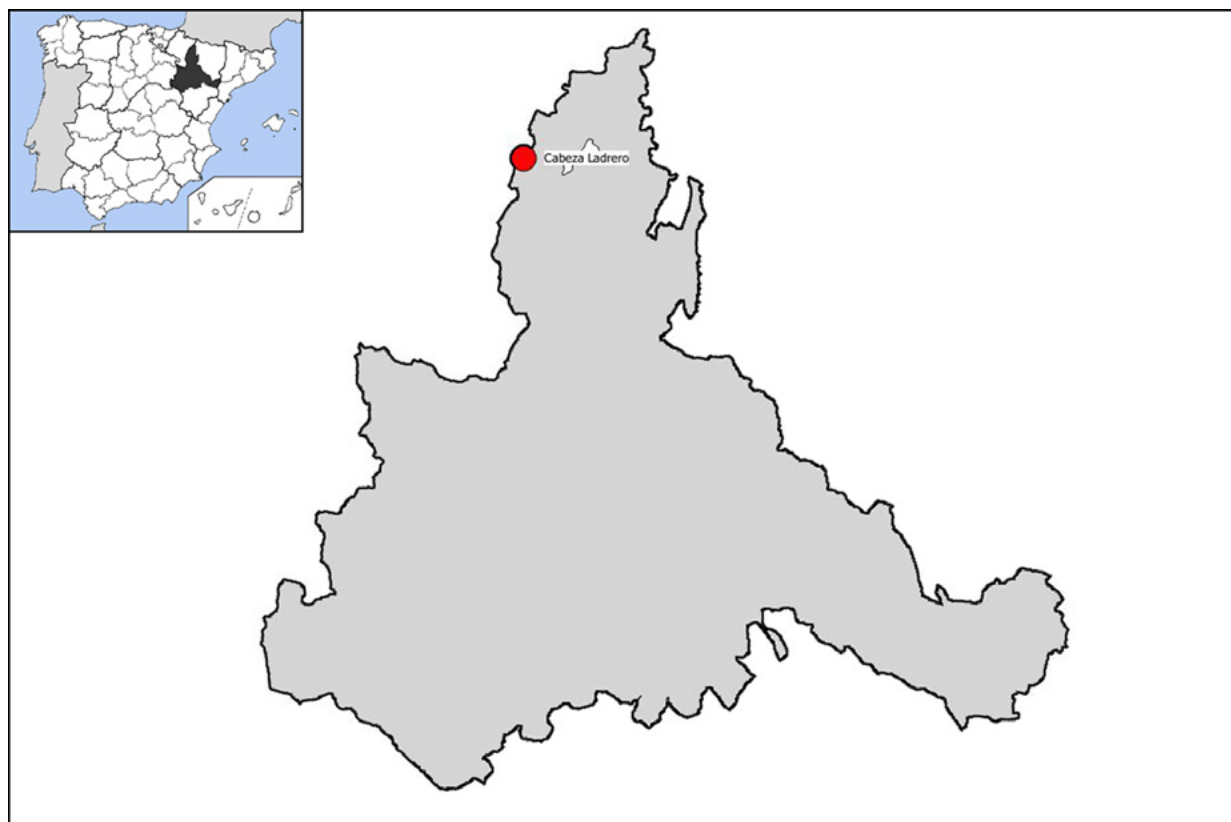


Figure 3.1. Localización de Cabeza Ladrero (Sofuentes/Sos del Rey Católico, Zgz.)

organización de, hasta el momento, seis campañas de prospección arqueológica intensiva. Estas actuaciones están permitiendo conocer la caracterización geomorfológica y biológica existente en la zona y desarrollar diversas tácticas de aproximación al uso del territorio combinando diferentes análisis GIS (*i. e.* Chapman 2006; Conolly y Lake 2009) con la toma de muestras bióticas (polénicas, antracológicas y de fauna) y geológicas (especialmente salitre) para su análisis en laboratorio, el estudio de fuentes documentales en archivos (especialmente los registros de protocolos notariales que se remontan hasta el siglo XIII), y la búsqueda intensiva del registro superficial.

En este contexto el objetivo de este trabajo es mostrar las posibilidades que ofrece el registro *offsite* para ampliar el conocimiento de la ocupación y uso del territorio.

Con esta finalidad las siguientes páginas se han estructurado en cinco apartados. Los dos primeros están dedicados al conocimiento físico del territorio de la ciudad de Cabeza Ladrero, tanto desde el punto de vista de sus límites (app. 1) como de la problemática existente para la realización de una arqueología del paisaje en él (app. 2). El tercero y cuarto, de carácter más teórico, están orientados al conocimiento de la metodología aplicada para realizar las prospecciones intensivas sobre el terreno (app. 3) y de los límites y posibilidades que ofrece el uso del registro *offsite* (app. 4). Para finalizar, en el último apartado (app. 5) se han seleccionado dos momentos de ocupación del espacio: el Neolítico (5000-3000 a.C.) y Roma en su fase altoimperial (14 a.C.-284 d.C.). Aunque alejados del marco temporal en el que se mueve esta monografía, son dos periodos de intensa ocupación del espacio en la zona y que permiten, por lo tanto, aplicar las posibilidades interpretativas que permiten los hallazgos aislados para el conocimiento del mundo rural siendo la metodología fácilmente extrapolable a otras épocas.



## Una hipótesis de delimitación del territorio de la ciudad de Cabeza Ladrero

La ciudad de Cabeza Ladrero ocupó una extensión en su momento de mayor expansión (ca. siglo II d.C.) de 19 Ha, estando emplazada en el centro de un fértil valle situado en el prepirineo aragonés. Desde allí y como aparece recogido en diferentes normativas municipales (*lex Irrn.* 76, 82 y 83), se administró un territorio cuya delimitación es complicada de realizar ya que no existen elementos claros, como hitos terminales, que ofrezcan apoyos sólidos. A falta de estos epígrafes se han tomado en cuenta diversos aspectos como son la localización de las ciudades romanas en su entorno que, como se verá, están dispuestas a una distancia inferior a una jornada de viaje desde Cabeza Ladrero (De Soto y Carreras 2009, 315), la orografía del terreno y el establecimiento de un radio de 10 kms como óptimo comunicativo del poblamiento que pudo existir (Figure 3.2).

Por el Oeste la cercana presencia de las ciudades romanas de *Cara* (Santacara, Na.) y Santacris (Eslava, Na.), ambas situadas a 20 y 15km en línea recta pero en la margen derecha del río Aragón, permite plantear con cierto grado de plausibilidad que el cauce de este río pudo actuar de eficaz límite espacial, pues no hay que olvidar que en muchas ocasiones se emplearon importantes accidentes naturales con este fin, como también se ha planteado para el *territorium* de la vecina ciudad de Los Bañales (Uncastillo, Zgz.) (Andreu y Jordán 2003-04, 427).

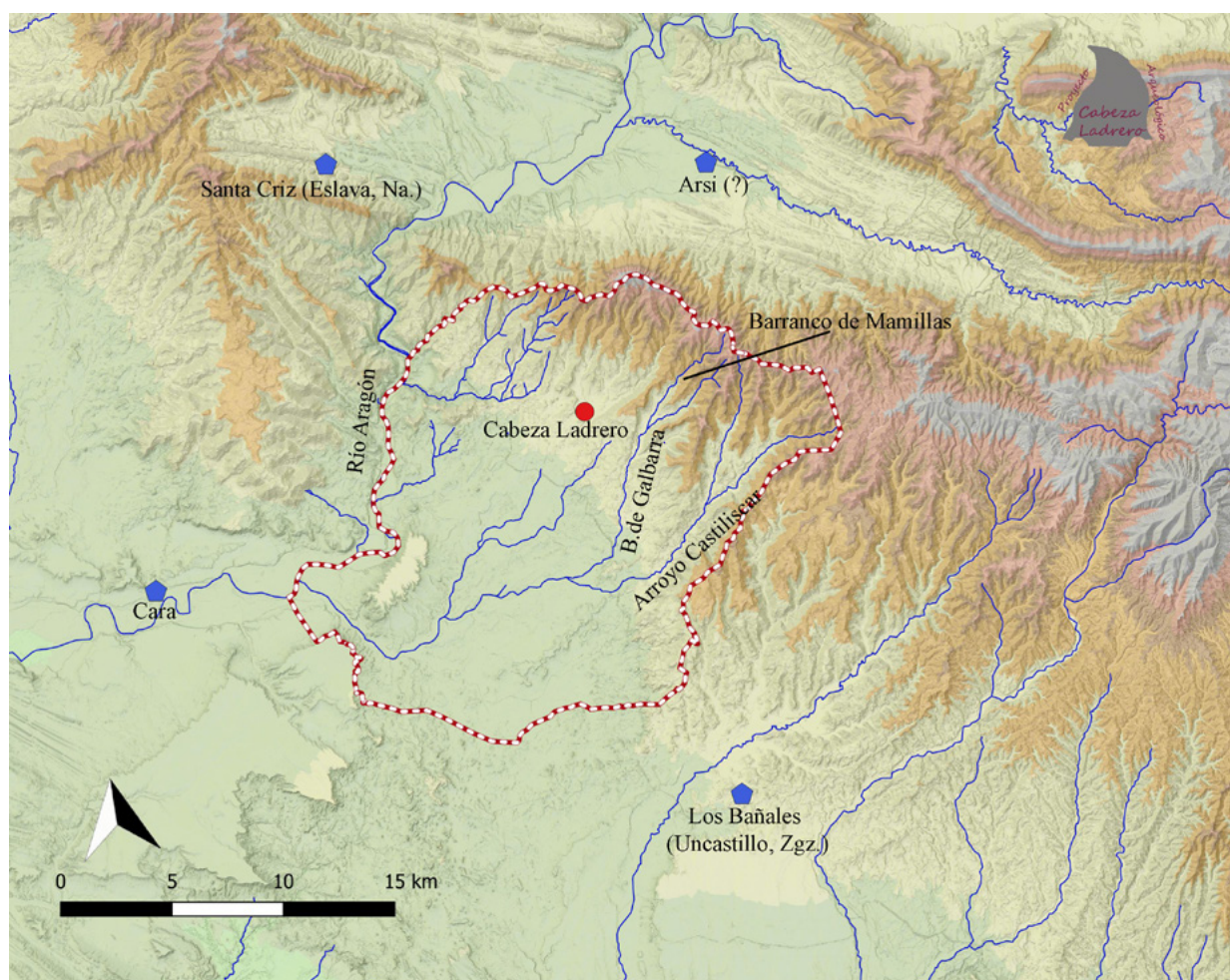


Figure 3.2. Propuesta de delimitación del *territorium* de la ciudad de Cabeza Ladrero (Sofuentes/Sos del Rey Católico, Zgz.) y su relación con las ciudades romanas más cercanas

Del mismo modo al Norte se emplaza la ciudad de Campo Real/Fillera (Sos del Rey Católico/Sangüesa), quizá la antigua *Arsi*, situada a 13km, si bien la presencia de la imponente sierra de Santo Domingo/Sos entre ambas, con alturas que superan los 1000 m, constituye una formidable barrera natural. Así se hace patente en la documentación medieval a través de las reiteradas quejas de los habitantes del actual Sofuentes a Benedicto XII en 1341, aludiendo a que entre el pueblo y la localidad de Sos del Rey Católico se alzaban unos montes altísimos cuyo paso quedaba cerrado en invierno (Goñi 1962, 113-114).

Al Sur existe una tercera ciudad romana, Los Bañales (Uncastillo, Zgz.), situada a 18 km que invita a considerar que el límite entre ambas se encontraría en algún punto intermedio. En relación con esto se ha destacado el importante conjunto de miliarios hallados en el término municipal de Castiliscar, planteándose que este espacio ejerció un papel importante dentro de la estructuración viaria de la zona, lo cual llevó a proponer que el límite del *territorium* de Los Bañales (Uncastillo) siguiera la línea del arroyo Castiliscar (Andreu y Jordán 2003-04, 427). Sin embargo parece más probable que sirviese con esta función un crestón montañoso que en la actualidad sirve de límite territorial entre los ayuntamientos de Sádaba y Castiliscar y que divide geográficamente dos grandes cuencas muy fértiles, siendo más cómoda la relación de la cuenca Norte con la desconocida *ciuitas* emplazada en Cabeza Ladrero (Sofuentes) que con el desconocido *municipium* de Los Bañales (Uncastillo). En cualquier caso esta propuesta debe acogerse con prudencia, a expensas de que futuros hallazgos de carácter epigráfico la confirmen o desmientan.

Por último al Este limitaría en una serie de potentes bancos de conglomerados, arcillas y areniscas que sirven de anticipo de las estribaciones prepirenaicas, conocidos como las Bardenas de Sádaba, que

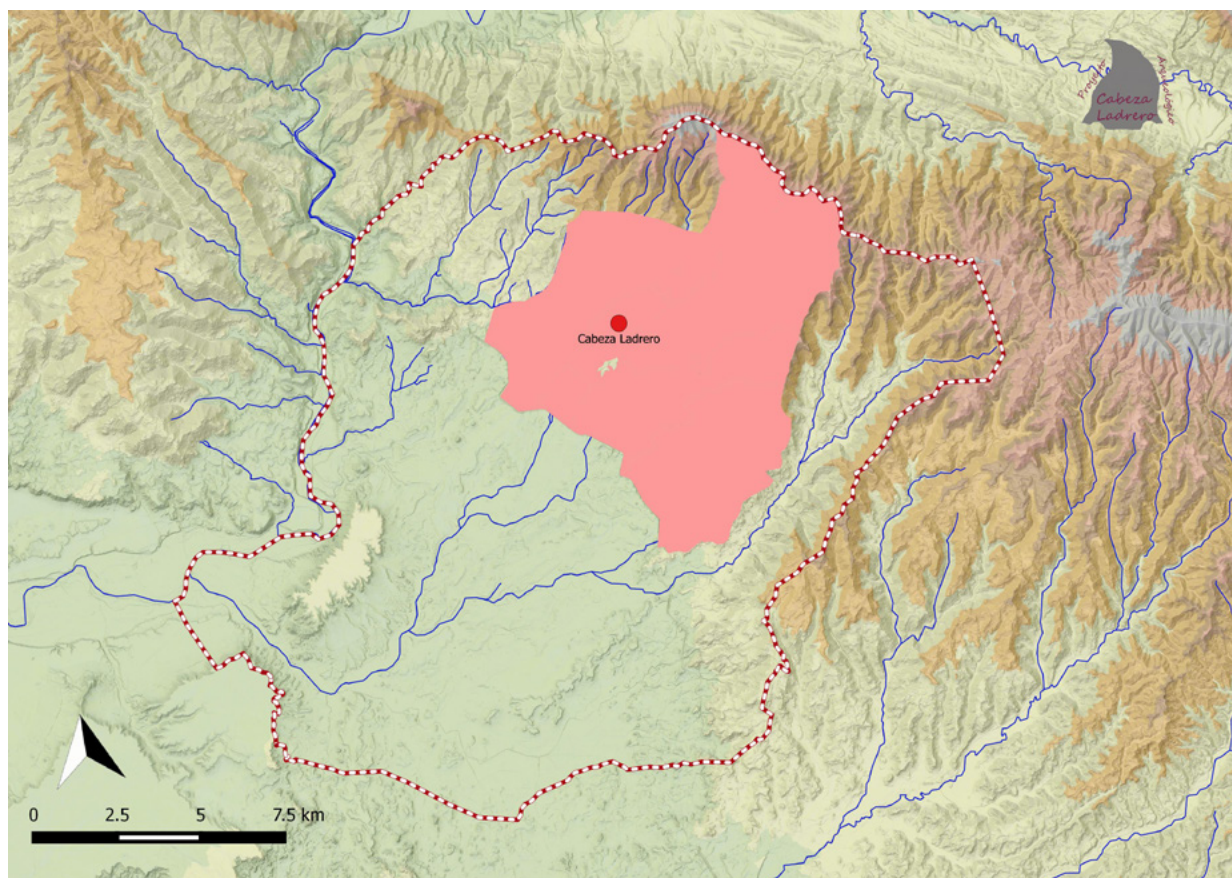


Figure 3.3. Espacio prospectado hasta 2021



presentan alturas que alcanzan los 800m y que ya eran empleados como límite en 1129 entre los pueblos de Castiliscar y Uncastillo (Munita 1994, 8, nota 22).

Esta selección de límites establece un área de 370 km<sup>2</sup> como zona de prospección, en la que no sólo se pretende evaluar el potencial arqueológico del territorio, sino también comprender las dinámicas de ocupación humana. Dentro de este espacio hasta el momento se han prospectado un total de 73 km<sup>2</sup> (i. e. Jordán 2018b; Jordán 2020; Jordán *et al.* 2020; Jordán y Pérez 2020) que coincide con el espacio más cercano a la ciudad (Figure 3.3).

### **Algunos problemas para hacer una arqueología del paisaje en el entorno de Cabeza Ladrero**

La realización de prospecciones sistemáticas ha puesto de relieve las diferentes problemáticas existentes para conocer el paisaje rural antiguo, normalmente como consecuencia de la actividad antrópica sobre el terreno, que han de ser tenidas en cuenta a la hora de valorar el paisaje actual y su proyección en busca del paleopaisaje.

La primera de ellas viene dada por la ausencia de yacimientos identificados en la zona en el arco cronológico comprendido entre los siglos IX-X d.C. y XI-XII d.C., cuando se tiene constancia de algunas



Figure 3.4. Restos de una procesadora de grava creada para la construcción del Canal de las Bardenas sobre el sitio del Bronce de Tamborín I (Sos del Rey Católico, Zgz.)

replantaciones<sup>3</sup>. Esta ausencia de datos permite plantear, con cautela, un posible abandono ocupacional de la zona que produjo la ruptura de la continuidad en el uso del campo entre la tardoantigüedad y la Alta Edad Media, desapareciendo los patrones de ocupación anteriores que en otros ámbitos han resultado tan fructíferos (*i. e.* Ariño Gil *et al.* 2004, 68-79) y siendo sustituidos por nuevos modelos que atendían a intereses distintos.

Por otro lado también conviene destacar el intenso proceso de remodelación del paisaje producido por las prácticas agrícolas, reconociéndose tres momentos de cambio:

- 1) Entre los siglos XVIII-XIX, momento que implicó el aterrazamiento de gran parte de las zonas montañosas situadas a media altura y la puesta en cultivo de nuevas extensiones de terreno.
- 2) A partir de 1950-1960 con la construcción del canal de las Bardenas, inaugurado en 1960, y la incorporación de maquinaria al campo. El levantamiento de la gran obra de irrigación que es el canal de las Bardenas implicó una extraordinaria modificación del territorio, tanto directamente a través de la ingente labor de nivelación de las tierras más próximas al canal como indirectamente destruyendo colinas y montañas de la zona, que se emplearon como canteras (Figure 3.4). Con posterioridad la progresiva incorporación de maquinaria al campo durante la segunda mitad del siglo XX ha favorecido la roturación de los últimos terrenos que de características no agrícolas como son espacios forestales empleados para el pastoreo o la obtención de carbón vegetal, normalmente situados en lo alto de las montañas, por medio de su desmonte con relleno episódico.



Figure 3.5. Destrucción del paleosuelo original en Tamborín III (Sos del Rey Católico, Zgz.). Nótese cómo el afloramiento de arenisca se ha ido partiendo en pequeñas lascas irregulares que aparecen por toda la zona, sólo apreciándose en su grosor original en la cima de la colina. El resto del espacio está ocupado por el nivel de margas, poco fértil y fácilmente erosionable, que ha aflorado al exterior tras la destrucción de la arenisca.

<sup>3</sup> Repoblación impulsada por las cartas de poblamiento que en 1129 Alfonso I de Aragón otorgó a los habitantes de Encisa, Puy Redondo, Almenar, Uncastillo, Castiliscar y Figarol con la finalidad de favorecer su asentamiento (Lema 1990, nº 208).



Figure 3.6. Ejemplo de torrentera en medio de un campo de cultivo



3) Las sucesivas reforestaciones tenidas lugar en las zonas altas de la sierra, de las que se han contabilizado hasta cuatro en los últimos 25 años, que han propiciado no sólo la sustitución de la flora autóctona por pinares en muchos lugares, sino también el aterrazamiento masivo de las montañas.

Este proceso paulatino de modificación del paisaje provocó una importante erosión y destrucción del paleosuelo que se ve incrementada por la propia geología del terreno, que consiste en un relieve tabular formado por alternancias de capas de areniscas y margas o arcillas.

Así por un lado la búsqueda de terreno fértil en colinas y sierras realizada hasta mediados del siglo XX conllevó en unos casos la destrucción de la capa de arenisca para acceder al nivel de marga, con la consiguiente destrucción del paleosuelo original (Figure 3.5), y en otros la eliminación de la cobertura vegetal (encinas, coscojas, etc.). Además la eliminación de la cobertura vegetal en zonas más llanas para su puesta en cultivo, donde existe una capa más gruesa de margas y tierras de deposición entre las capas de arenisca, ha provocado la fractura del terreno que, libre de todo elemento de retención, se ve hendido por estrechos barrancos que llegan a alcanzar los tres metros de profundidad (Figure 3.6). Junto a ello por otro lado el abandono de los campos y fajas de pequeñas dimensiones en los años 80-90 como consecuencia de la incorporación de la moderna maquinaria, ocasionó una secuencia en cadena de eliminación por erosión del paleosuelo roturado y, después, de fragmentación del nivel de arenisca.

Un último elemento a resaltar es la modificación de los cursos de agua. La construcción del canal de las Bardenas no solo implicó la modificación geográfica del paisaje, sino que también ha supuesto la reorganización de todos los recursos hídricos al sur del territorio, desapareciendo los tramos inferiores de los principales barrancos que se generan en la sierra de Sos, cuyo trazado original sólo puede reconstruirse a través de la cartografía antigua e imágenes LiDAR. Pero además de esta obra también se han producido canalizaciones y otras construcciones hidráulicas de diferente entidad especialmente documentadas desde los siglos XII-XIII destacando la impresionante estanca que realizó Juan de Lande en 1579-80 en Castiliscar<sup>4</sup>. Ésta consiste en una presa de más de 300 m de longitud y una acequia de abastecimiento que capta el agua a varios kilómetros de distancia al Norte y que permitió el cultivo intensivo de la zona conocida en la actualidad como ‘La Huerta’ (Mateos 2005, 136; Blázquez y Sancho 2009, 35). Sin duda esta zona con anterioridad no debía ser demasiado productiva desde un punto de vista agrícola, como muestran las sucesivas cartas de poblamiento, donaciones y concesiones de uso de acequias realizadas con la finalidad de hacer atractivo y fértil el territorio para su ocupación humana.

### Metodología empleada en la prospección arqueológica

Es obvio que la información que se obtiene del registro arqueológico de superficie es muy limitada. Normalmente no hay estructuras, tampoco hay un registro estratigráfico y nadie asegura que la tierra realmente sea la que estaba originalmente allí. Sin embargo la prospección de superficie es el único método que permite empezar a recoger información con la que poder realizar un acercamiento a los patrones de asentamiento y uso del territorio en una zona concreta. Esto implica que es necesario ser conscientes de sus limitaciones pues condicionan las preguntas que se pueden realizar al registro.

En el caso del *Proyecto Arqueológico de Cabeza Ladrero* se ha asumido de partida que a través de este método sólo va a ser posible extraer una impresión de los grandes trazos de un sitio (ubicación, cronología y, quizá, funcionalidad), pero que no es factible ahondar en otras cuestiones como pueden ser fases de ocupación o, salvo excepciones, habitantes (*i. e.* Jordán 2018b). Más adelante una vez expuesto el panorama ocupacional del área de influencia de la ciudad en la medida en que es posible (*vid.* al respecto Terrenato 2004, 44), quizá se pueda ahondar en otros aspectos interpretativos.

Por otro lado un segundo condicionante previo a la hora de plantear las prospecciones arqueológicas del terreno procede de la idea de imprevisibilidad del ser humano, que abre una ventana a una multiplicidad casi infinita de causas para elegir un lugar de asentamiento, lo cual necesariamente obliga a alejar teorías apriorísticas y modelos predictivos. Por ello se plantea el *artefacto* como el objetivo principal de las prospecciones en lugar del *sitio*, de tal forma que va a ser a través de él como se llega primero al sitio y después al individuo, que es el objetivo último de la investigación. Esta situación conlleva importantes connotaciones para el desarrollo de la prospección, pues los sitios sólo pueden ser identificados después de que los datos hayan sido recopilados (Gallant 1986, 409).

Con estos condicionantes previos, para llevar a cabo la prospección arqueológica se planteó la parcela como unidad principal de estudio, definida cartográficamente en los mapas catastrales y, sobre el terreno, por los límites de los ribazos y lindes de los campos. Sin duda se trata de una subdivisión irregular pero que en otros casos se ha mostrado plenamente operativa (*i. e.* Ariño Gil y Rodríguez 1997, 231-232 o Burillo *et al.* 2005, 171), como igualmente pudimos comprobar al permitirnos controlar de forma efectiva sobre el terreno la evolución de la prospección. En ellas se estableció un intervalo de entre 5 y 15 metros entre prospectores, en función del tamaño de la parcela y de la presencia/ausencia de material, lo cual garantizó una cobertura intensiva del terreno.

<sup>4</sup> Aunque se conoce otra intervención realizada en época romana como es el conocido como dique del Salado que servía para almacenar agua del arroyo Castiliscar (Martín-Bueno 1975).

En general se han ido recorriendo todas las parcelas excepto aquellas que estaban valladas o cuya visibilidad se consideró nula al estimarse que se podía ver menos del 40% del suelo y que quedaron debidamente registradas. En relación con ello conviene apuntar que se ha planteado una escala para clasificar el suelo en función de su visibilidad estimada sobre el terreno en tres categorías: Bueno (superficie visible superior al 70%), medio (superficie visible entre 40-70%) y malo (superficie visible inferior al 40%). Como se puede apreciar frente a otros modelos establecidos basados directamente en la cobertura vegetal del terreno (*vid.* otras escalas en Bintliff y Snodgrass 1985, 131; Gallant 1986, 409-410; Terrenato y Ammerman 1996, 96-97), esta estimación se basa estrictamente en la visibilidad de éste. Así, por ejemplo, se han apreciado casos de parcelas sin cobertura vegetal recientemente trabajadas donde el polvo generado por la actividad agrícola impedía ver la superficie o, en el caso contrario, parcelas con el cereal en crecimiento donde el surco era amplio y la planta lo suficientemente estrecha como para poder observar con relativa facilidad el suelo.

Sin duda la falta de visibilidad del terreno prospectado ha supuesto un problema para los diferentes equipos a lo largo de la historia desarrollándose, de forma más o menos elaborada, diferentes metodologías y propuestas de interpretación de la ocupación de ese espacio en blanco (*i. e.* Bintliff y Snodgrass 1985 para el proyecto de Beocia; Terrenato 1992 y Terrenato y Ammerman 1996 para el Valle de Cecina; o más recientemente Cavulli y Grimaldi 2007 para la provincia de Trentino o Casarotto 2017 para el territorio de Venusia). En nuestra opinión las diferentes metodologías empleadas para calcular la influencia de la cobertura sobre la visibilidad de los sitios y, especialmente, el conocimiento de ese entorno vacío suponen una paradoja al plantear modelos matemáticos sobre una realidad que, creemos, ni mucho menos se rige por modelos preestablecidos y que, además, no tiene en cuenta el factor subjetivo que el ser humano adopta en su relación con el territorio (*i. e.* Parcerro *et al.* 1998; Anschuetz *et al.* 2001, 160-161). Por esa razón y siguiendo otros ejemplos como en Montarrenti (Siena) o la Carta Arqueológica de Italia (Bartoloni *et al.* 1984; Marchi 2016, 5), se ha vuelto a las parcelas sin visibilidad en diferentes épocas a lo largo de los años, buscando obtener unas condiciones del terreno distintas que facilitarían la identificación de artefactos.

Con la finalidad de recopilar información de forma efectiva y ágil, a la par que se respetaba la integridad del yacimiento, en vez de recoger material se ha optado por georeferenciar los artefactos utilizando para ello los propios dispositivos GPS con que cuentan los actuales teléfonos móviles. Estos proporcionan un margen de error de entre 3 y 4 metros, algo aceptable para la geolocalización de material en superficie teniendo en cuenta las condiciones de movilidad de los artefactos (*i. e.* un ejemplo de ello en Jordán 2020). Además este margen no difiere demasiado de los aparatos GPS convencionales cuyo margen de error suele oscilar entre los 2-3 metros. En cualquier caso diferentes pruebas realizadas sobre puntos concretos han mostrado que el error derivado en la localización de éstos no suele exceder el metro (*vid.* otros ejemplos de uso del GPS en Cerrillo y Mayoral 2009; García Sánchez 2013, 15-17; Aparicio 2014, 414; Grau *et al.* 2015, 69-70).

Por otro lado a cada pieza encontrada se le ha realizado una ficha sobre el terreno por medio de la aplicación ODK Collect, una herramienta que permite la realización de formularios predefinidos simplificando la toma de datos sobre el terreno (Jordán 2018b, 270). Esta aplicación permite el trabajo simultáneo de varios prospectores y después, al recopilar todos los datos en un único fichero, facilita la creación de una única capa que engloba todos los puntos simplificando su gestión.

El formulario desarrollado tiene el propósito de obtener una descripción sencilla y rápida del artefacto, englobándolo dentro de grandes categorías clasificatorias como son tipología, cronología y funcionalidad. De esta forma, por ejemplo, frente a la realización de una identificación exhaustiva de una pieza de cerámica sobre el terreno hasta el punto de llegar a reconocer su forma, algo muy complicado

de realizar en el propio campo y cuya información real es escasa por tratarse de material depositado en un contexto secundario, se ha primado su caracterización más genérica.

Del mismo modo la datación del artefacto se ha dado siguiendo las características intrínsecas de la propia pieza, sin atender al contexto en el que aparecía (*vid.* Jordán *et al.* 2020 para el caso de artefactos neolíticos, Jordán y Pérez 2020 para época calcolítica y Jordán 2020 para época romana). Conviene reconocer que este sistema genera un alto porcentaje de artefactos sin fechar, sin duda incrementado en el caso de sitios con poca cantidad de materiales donde las posibilidades de que aparezcan artefactos claramente datables disminuyen drásticamente (*vid.* al respecto las reflexiones en Terrenato y Ammerman 1996, 93-95 y esp. tabla 2), pero a cambio permite, en nuestra opinión, la identificación de sitios en el terreno de forma más precisa por medio de la densidad de aparición de materiales (*vid.* entre otros Terrenato 2001, 364; Barton *et al.* 2002, 166, 183; Rossi 2012, 292; Grau *et al.* 2012, 133).

Por último las piezas que podían aportar más información han sido fotografiadas en el campo y estas imágenes revisadas con posterioridad, permitiendo en ocasiones la identificación de formas concretas con características muy específicas. Conviene resaltar que esta forma de trabajo ha permitido prescindir de recoger material, agilizando con ello el trabajo de laboratorio y, sobre todo, respetando la integridad del yacimiento algo especialmente importante en el caso de sitios de pequeño tamaño.

De esta forma, para concluir, con esta metodología se han prospectado 73 km<sup>2</sup> inventariándose 40.117 artefactos, lo cual ha permitido la identificación de 128 sitios de diversa cronología comprendidos entre el Neolítico y la Alta Edad Media.

### **Problemas y posibilidades para la aplicación del registro *off-site***

Si la prospección arqueológica puede considerarse la ‘hermana pequeña’ de la arqueología siendo en muchas ocasiones cuestionada, a su vez el registro *offsite*, es decir el formado por artefactos encontrados sobre el terreno de forma aislada y sin vinculación directa con un sitio, es el gran olvidado de la prospección arqueológica. Por un lado el desconocimiento de su existencia por parte de los propios arqueólogos y por otro lado el despliegue de recursos humanos y de tiempo que implica su búsqueda e identificación en el campo, hacen que normalmente sea pasado por alto, sólo registrándose en el caso de que el artefacto encontrado sea muy significativo. Quizá por ello el principal problema para estudiarlo descansa, paradójicamente, en su propia identificación. No existen criterios unívocos y con frecuencia llegan a incluirse bajo la manta de este concepto elementos que bien podrían recogerse bajo las nociones de ‘sitio pequeño’ (*minisite*, *i. e.* Isaac *et al.* 1990 o *small site*, *i. e.* Glassow 1985) y halo.

Lógicamente interpretar un hallazgo aislado bajo la órbita del concepto *minisite* constituye una *contradictio in terminis*, pues en el momento en el que el artefacto es asociado a una estructura determinada deja de estar aislado (al menos cognitivamente hablando). Este es el caso, por ejemplo, de la pieza 18406, un pequeño fragmento de cerámica vidriada, hallada aislada en el campo pero a la que es posible encontrar un contexto habitacional en una derruida cabaña de pastor situada en la misma parcela (Figure 3.7). Sin duda esta pequeña estructura, propia de la arquitectura popular rural de la zona, tuvo un uso temporal y constituye un ejemplo perfecto de *minisite*, tanto por tamaño como por función, que tendían a proporcionar poco material en el registro arqueológico.

Una segunda posibilidad relacionada con la opción de que el hallazgo aislado forme parte de un sitio, puede ser que precisamente se trate de restos de un antiguo sitio que ha sido destruido y que no ha sido posible detectar claramente. Esta situación quizá pueda aplicarse a un conjunto de materiales que aparecen aislados (n<sup>os</sup>. 38896, 38905, 38971 y 38992) en la zona más meridional del área prospectada (Figure 3.17, zona B). Como se puede apreciar su presencia no se puede explicar por el influjo de prácticas





Figure 3.7. Hallazgo aislado de un fragmento cerámico vidriado vinculado a una pequeña cabaña

agrícolas modernas o de la erosión y tampoco muestran una cantidad lo suficientemente significativa como para poder determinar la existencia de un sitio, aunque su concentración sobre el terreno no permite interpretarlo directamente como vestigio aislado.

Cambiando de óptica otro problema para la identificación de los artefactos aislados consiste en tratar de establecer una distancia mínima de vacío de material, pues existe el peligro de interpretar como tales elementos propios de los halos de dispersión que generan los sitios. Así, por ejemplo, para identificar un hallazgo aislado en ocasiones se ha planteado una distancia entre artefactos superior a los 50 m, o bien que estén separados por grandes vacíos significativos de piezas (Marcos 2019, 114). En relación con ello nuestra experiencia muestra que establecer distancias predeterminadas de vacío material para empezar a considerar un artefacto como *offsite* constituye un error. Por ejemplo, en el sitio prehistórico de *Plana Baja* la pieza de sílex más alejada del área de mayor concentración (30489) se sitúa a 70 m. Una circunstancia parecida se aprecia en el sitio calcolítico de *Chavo*, en donde la pieza 27642 se sitúa a 126 m del posible núcleo (Figure 3.8). En este sentido más que la distancia física ha de ser la presencia de grandes vacíos o la imposibilidad de explicar su presencia por medio de procesos postdeposicionales los que permitan caracterizar el registro *offsite*.



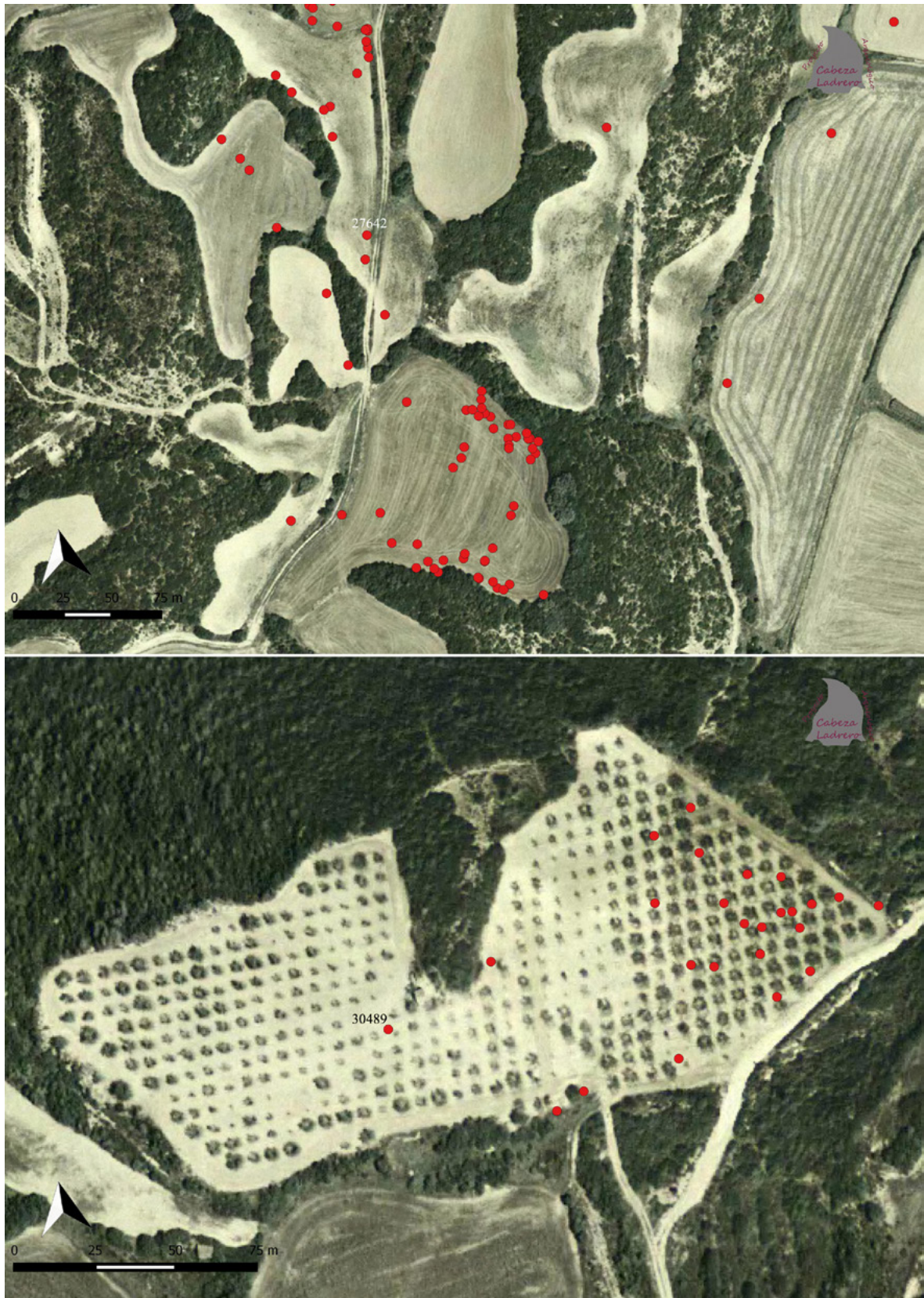


Figure 3.8. Distribución de material en los sitios de Chavo (Sos del Rey Católico, Zgz.) (arriba) y Plana Baja (Sos del Rey Católico, Zgz.) (debajo)



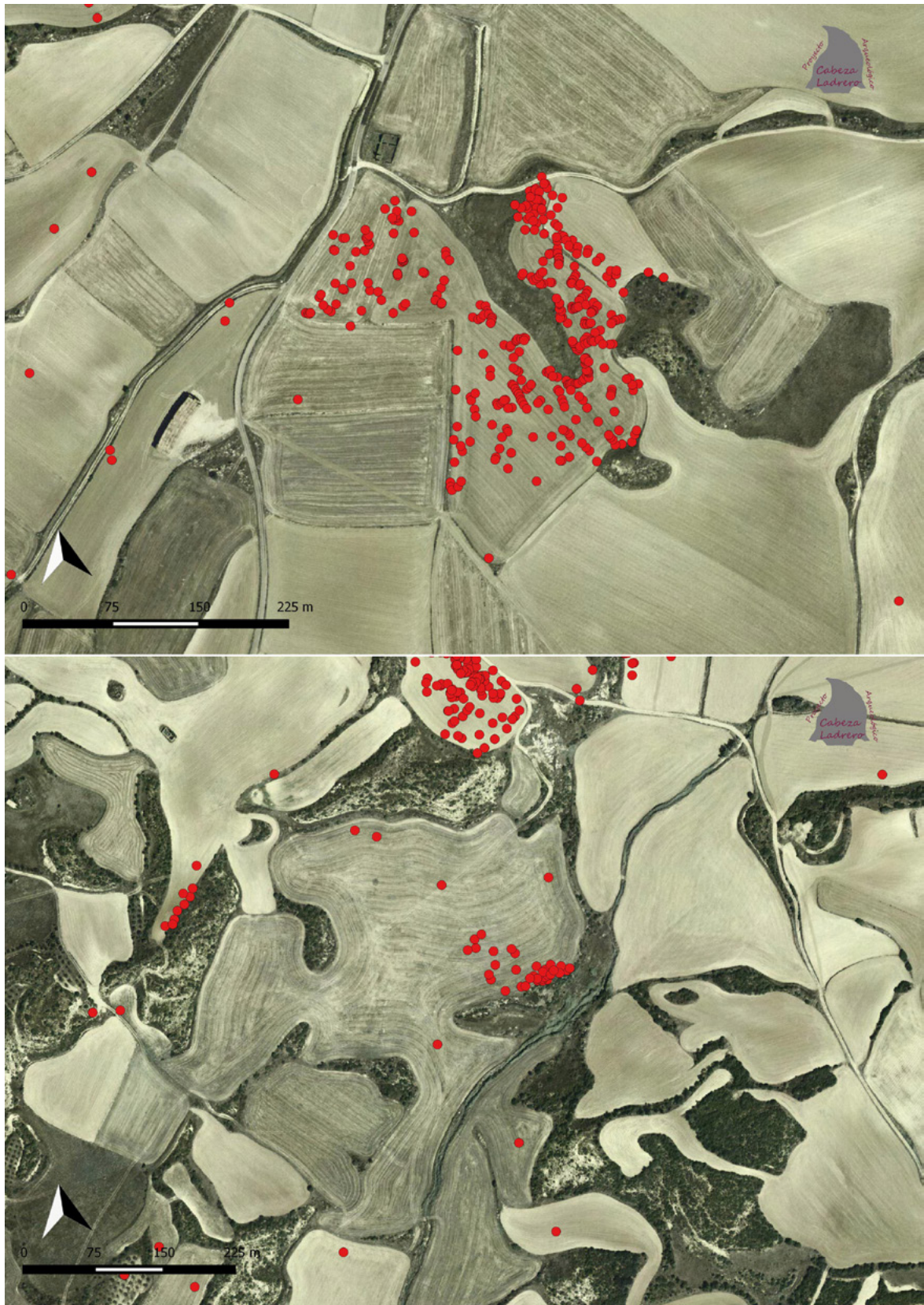


Figure 3.9. Halo y distribución de artefactos en los sitios de Corral de Ibarra (Sos del Rey Católico, Zgz.) (arriba) y Corral del Santo (Sos del Rey Católico, Zgz.) (debajo)

Ahora bien, conviene apuntar que la georeferenciación de artefactos durante las prospecciones realizadas ha permitido constatar que, frente a lo que se suele publicar en los estudios al uso, los halos de dispersión de material atestiguados en los sitios del entorno de Cabeza Ladrero no están compuestos por miles de piezas formando una alfombra en torno al yacimiento que se distribuye a lo largo de grandes extensiones de terreno (*i. e.* Wilkinson 1989). Por el contrario apenas se produce transferencia de material entre parcelas e incluso hay un claro límite en la propia parcela (*vid.* otros ejemplos en de Haas 2012, 72).

Así, por ejemplo, el sitio romano de *Corral de Ibarra*, posiblemente un gran centro productivo, está emplazado en medio de un conjunto de parcelas de diferentes propietarios y delimitado en uno de sus lados por una carretera. Esto ha afectado a su dispersión de materiales de tal forma que se aprecia un escaso halo circunscrito a una única parcela. Un segundo ejemplo puede verse en el *Corral del Santo*, sitio de cronología romana altoimperial, emplazado en una gran parcela que ocupa la ladera de una colina, cuyo material muestra muy poca dispersión tanto siguiendo la pendiente como por el resto de la zona (Figure 3.9).

Esta situación, que ha sido interpretada como la consecuencia de una ocupación corta en el tiempo (de Haas 2012, 69), si bien en nuestro territorio se produce en sitios de cronología diversa y amplia, permite apuntar tres impresiones que afectan al análisis de los sitios.

Primero, la poca extensión que parece caracterizar al halo necesariamente implica un registro de superficie extremadamente revuelto por las sucesivas pasadas del tractor, como lo podrían confirmar el pequeño tamaño general de las piezas inventariadas y estudios realizados *ad hoc* en las villas romanas de *Larraz* (Jordán 2018a) y *Villavetre* (Jordán 2020).

Segundo, como consecuencia directa de lo anterior, al ser un registro muy revuelto resulta muy complicado poder analizar distribuciones de artefactos *intrasite* en detalle. Por ejemplo en la villa de *Villavetre*, un complejo de tres estructuras datado entre los siglos I a.C. - IX d.C., la distribución de los diferentes tipos de materiales apenas permiten realizar aproximaciones a una posible funcionalidad de espacios, obteniéndose sólo diferenciaciones genéricas. De esta forma el hallazgo de teselas permite plantear que *Villavetre I* posiblemente fue la *pars urbana* de la villa, mientras que la mayor presencia de *doliae* y cerámica de almacenaje deja intuir que *Villavetre II* quizá se identifique con la *pars rustica*. Sin embargo la distribución del material en el conjunto de cada sitio no permite realizar mayores análisis *intrasite* (Figure 3.10).

Y tercero, asumiendo que los materiales procedentes del halo son originarios del sitio, es posible emplearlos como un complemento para el conocimiento de las características básicas de este sitio, especialmente su cronología. Este puede ser el caso del sitio de *Cabeza Ladrero II*, emplazado en lo alto de la colina homónima, donde sólo se han encontrado catorce pequeños restos de talla, que se completan con una punta de flecha calcolítica conservada en el Museo de Zaragoza (inv. nº 19.118.7) hallada en la ladera de la propia colina.

Un último problema que tiene el empleo del registro *offsite* reside en el hecho de que las cantidades de materiales con los que se trabajan son pequeñas (*i. e.* de Haas 2012, 63, esp. 70-72) y raramente se pueden datar, especialmente en el ámbito de la prehistoria. Este problema ha llevado a algunos investigadores a considerar el registro *offsite* como un ente atemporal (*i. e.* Zvelebil, *et al.* 1992; Jones y Beck 1992, 168). Sin embargo, en nuestra opinión, si se considera la vinculación de la presencia humana con el espacio como un conjunto unitario íntimamente relacionado, en ocasiones es posible estimar una cronología cercana para el registro *offsite* a través del entorno cronológico que proporcionan los sitios conocidos.





Figure 3.10. Distribución de los principales tipos cerámicos encontrados en Villavete (Sos del Rey Católico, Zgza.): Dolia (arriba) y cerámica de mesa (abajo, círculo = CCO y rombo = TSH).



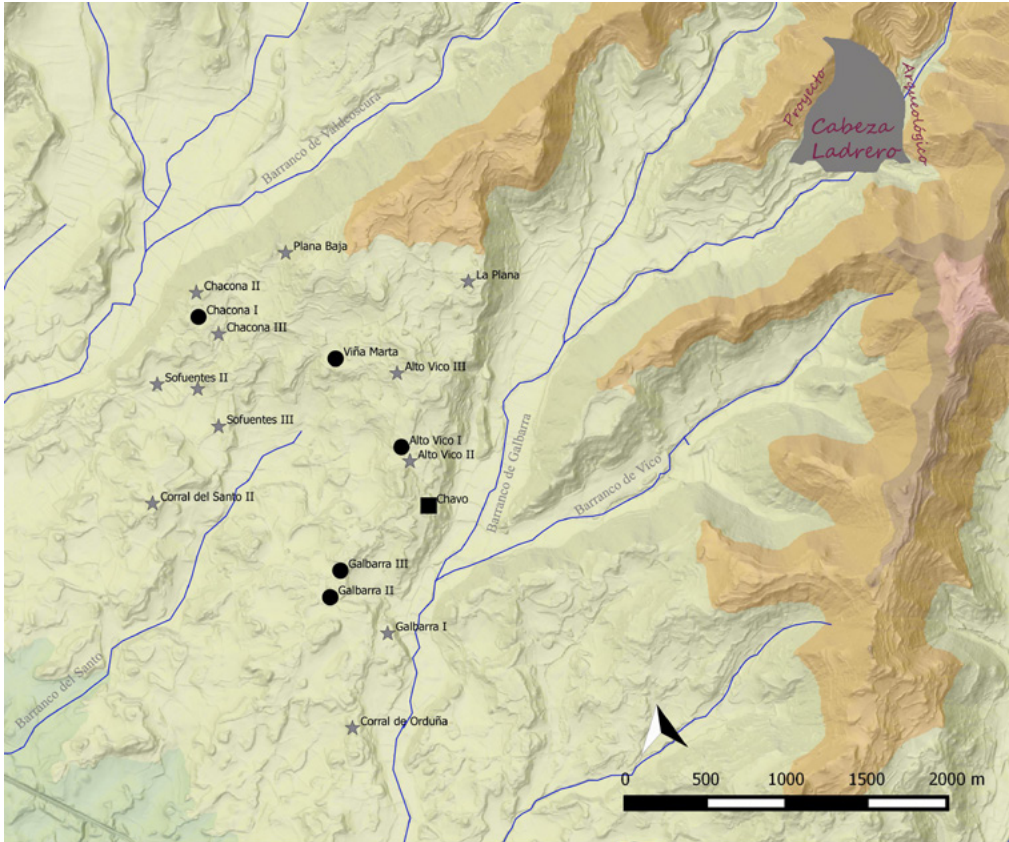


Figure 3.11. Distribución ocupacional de los sitios identificados con cronología prehistórica en la cuenca del barranco del Santo (círculo: Neolítico; cuadrado: Calcolítico; estrella: sin datación).

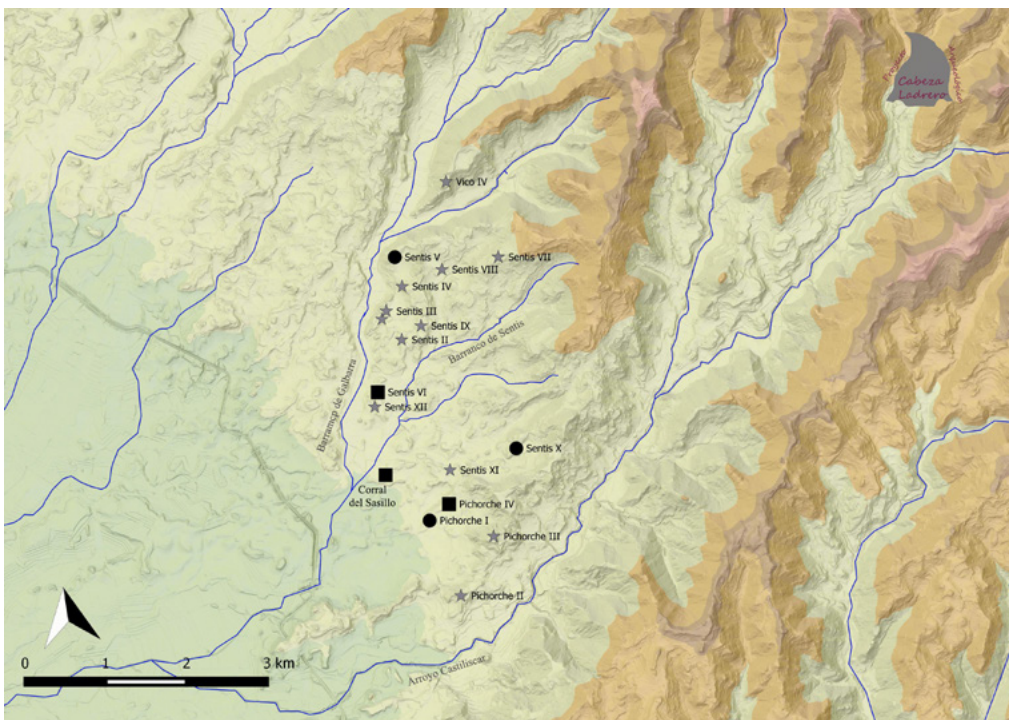


Figure 3.12. Distribución ocupacional de los sitios identificados con cronología prehistórica en la meseta de Sents (círculo: Neolítico; cuadrado: Calcolítico; estrella: sin datación).

Este puede ser el caso, por ejemplo, de los restos de sílex encontrados *offsite* en la meseta en la que se desarrolla la cuenca del barranco del Santo. La ocupación prehistórica para esta época en la zona muestra que su momento principal tuvo lugar en época neolítica, puesto que un importante número de los sitios que se han podido datar tienen esta cronología (Figure 3.11). Esta situación permite plantear con cierto grado de plausibilidad que el registro *offsite* pudo producirse en este periodo aunque, por supuesto, nunca se podrá descartar del todo aportes más tardíos. Así en este caso concreto en este espacio sólo se conoce, por el momento, el sitio de *Chavo*, un enclave temporal datado en el calcolítico, por lo que es posible inferir su escasa influencia en la creación del paisaje *offsite*.

Ahora bien si esta hipótesis de identificación es válida en paisajes de contextos culturales claros, la situación se complica cuando no existe una *facies* prehistórica temporal dominante. Este es el caso, por ejemplo, del material encontrado en el entorno de *Sentis*, una pequeña meseta con orientación N-S situada entre el arroyo Castiliscar al Este y *Galbarra* al Oeste (Figure 3.12). En este espacio se ha identificado un conjunto de siete sitios de cronología prehistórica genérica, aunque posiblemente anterior al Bronce, que aparecen flanqueados al Norte por un asentamiento neolítico con proyección en el calcolítico (*Sentis V*) y al sur por otros de datación neolítica (*Sentis X* y *Pichorche I*) y calcolítica (*Sentis VI*, *Corral del Sasillo* y *Pichorche IV*). En este caso la indefinición cronológica de los sitios conocidos no permiten plantear una aproximación diacrónica fiable al registro *offsite* aunque quizá no impidan proponer un uso del paisaje genérico para estas dos épocas.

Desde un punto de vista interpretativo, al prescindir del sitio como unidad mínima de investigación y recogida de datos y sustituirlo por el artefacto, se asume que el sitio representa sólo una pequeña fracción del potencial registro arqueológico (Foley 1981, 165-166) pues la interpretación de la presencia humana en el territorio descansa en la visión de éste como depositario en su totalidad de las claves para su inteligibilidad. De esta forma la relevancia del artefacto individual implica un reconocimiento de las posibilidades interpretativas que pueden tener los materiales *per se*, aun cuando se consideren aislados (*i. e.* Giannichedda 2014 para el caso del registro cerámico). Así una vez superada la monolítica consideración del registro *off-site* como vestigio de abonado (Alcock, Cherry y Davis 1994) se abre un interesante abanico de interpretaciones sobre el uso del paisaje que descansan sobre un mismo axioma: la presencia (más o menos reiterada) y/o actuación del ser humano genera la aparición del registro *offsite* prestándole su condición intrínseca de variabilidad. Es por ello que la interpretación del registro debe ser realizada en base a las diferencias de localización más que a su composición material, aunque siempre buscando una multicausalidad de este fenómeno (de Haas 2012, 77), destacándose así el carácter multifuncional que tiene el espacio rural (Fernández Mier 2010, 44).

En general han sido dos las líneas de investigación hacia las que ha derivado el estudio del registro *offsite* tras las críticas que ha recibido la hipótesis del abonado que, por otra parte, no se puede olvidar. Por un lado se ha empleado para la identificación de *persistent places*, es decir, espacios utilizados repetitivamente durante la ocupación a largo plazo de un área (*i. e.* Schlanger 1992, 94 y esp. 105). Partiendo de este concepto se han planteado distintas aproximaciones tales como su interpretación como áreas de uso no intensivas vinculadas con el pastoreo y trashumancia (Fentress 2000, 47; de Haas 2012, 62) o la posibilidad, siguiendo la línea que marcó Hayes (1991), del uso de la comparativa interregional como una forma de encontrar diferencias en el uso de la tierra (*i. e.* de Haas 2011).

Por otro lado, para finalizar, ha sido especialmente fructífera la vinculación del registro *offsite* con el trazado de la red de comunicaciones. De esta forma si se piensa que un *artefacto* puede generarse a través de la frecuencia de tránsito de la gente, es lícito pensar que la red de comunicaciones tendría que dejar algún tipo de residuo que complementa el panorama que trazan la sucesión de los distintos tipos de sitios, de tal forma que el trazado de las vías coincidiría con una mayor concentración de hallazgos aislados (*i. e.* Van Lanen *et al.* 2015, 153; Van Lanen y Pierik 2017, 9).



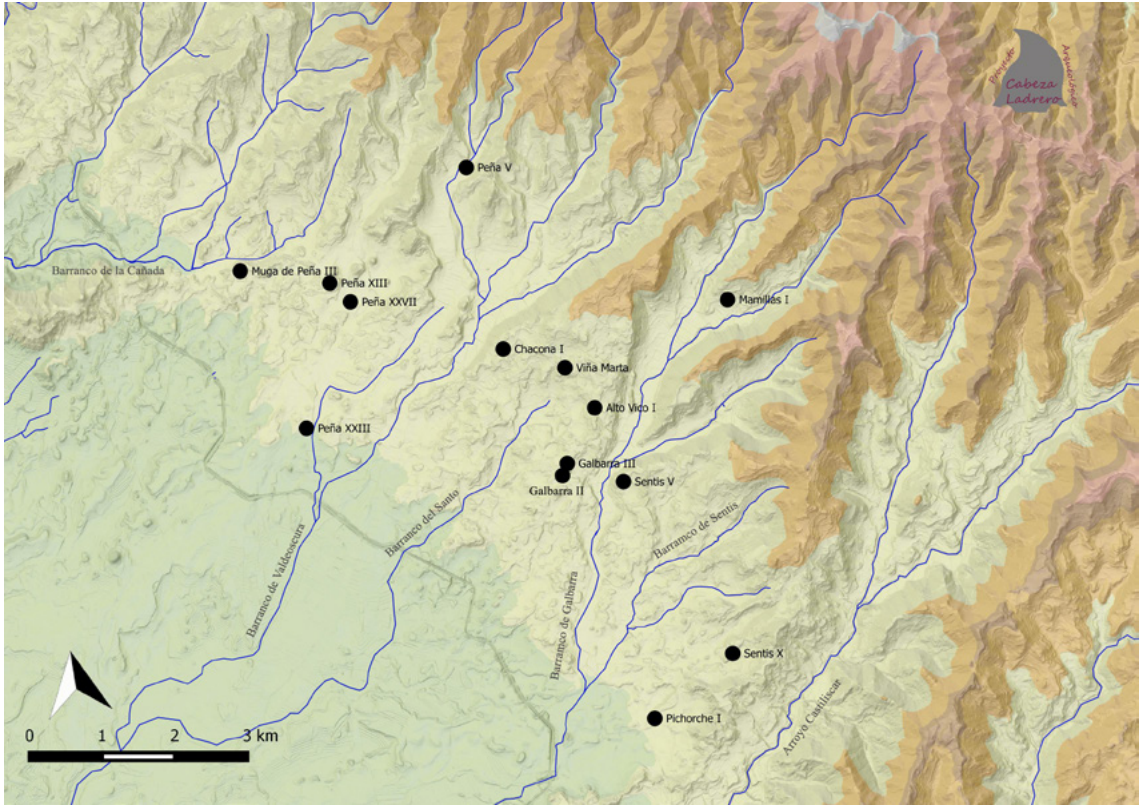


Figure 3.13. Ocupación neolítica conocida en la zona prospectada

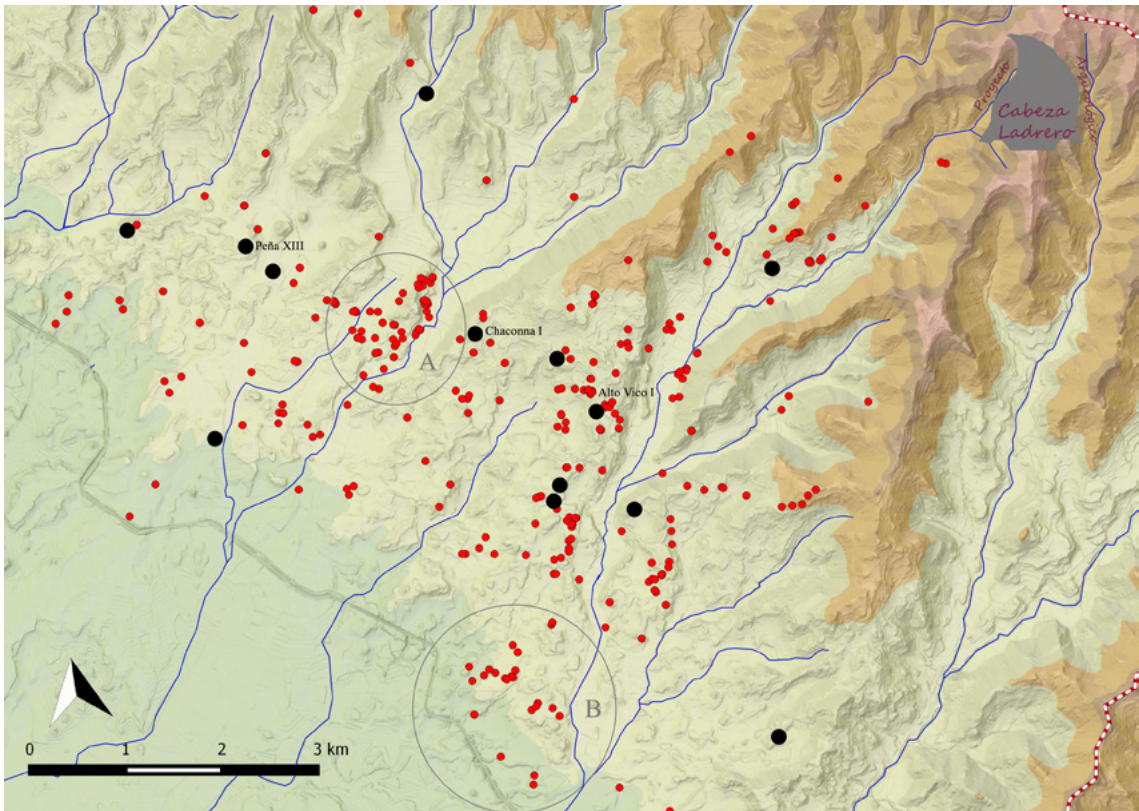


Figure 3.14. Dispersión de registro offsite prehistórico



## Dos aproximaciones al uso del territorio en el entorno de Cabeza Ladrero a través del registro *off-site*: la ocupación neolítica y romana altoimperial

Con la finalidad de realizar una aplicación práctica de las posibilidades interpretativas que permite el registro *offsite* para el conocimiento de las estrategias de ocupación del entorno de la ciudad de Cabeza Ladrero se han seleccionado dos periodos cronológicos: el Neolítico (ca. 6000-3000 a.C.) y la época romana altoimperial (14 a.C.-284 d.C.) atendiendo a la homogeneidad del material identificado.

La ocupación del territorio en época neolítica en el área prospectada ha permitido la identificación, hasta el momento, de quince sitios que muestran una interesante atomización de la población en, al menos, dos pequeños grupos humanos polarizados en torno a los sitios de *Peña XIII* y *Alto Vico I* siendo, además, posible que exista un tercero a oriente del que no se ha encontrado, por ahora, el sitio principal (Figure 3.13). De ellos se centrará la atención en el segundo grupo, cuyo sitio principal es el de *Alto Vico I*, puesto que muestra una ocupación del territorio casi en exclusiva de época neolítica, apenas conociéndose presencia humana posterior en la zona (Figures 3.11 y 3.13).

Dentro de este grupo es posible encontrar una multiplicidad tipológica de sitios, identificándose emplazamientos de los tipos A (*Galbarra II y III*), B (*Viña Marta*), C (*Chacona I*) y D (*Alto Vico I*) (cf. Jordán *et al.* 2020), destacando dos yacimientos, *Chacona I* y, especialmente, *Alto Vico I* que posiblemente fueron los principales centros de ocupación.

El análisis del registro *offsite* proporcionado por el sílex encontrado hasta el momento en el territorio (Figure 3.14) muestra dos interesantes elementos. Por un lado llama la atención la amplia presencia de restos *offsite* de sílex concentrados en torno a *Alto Vico I* en un radio de 500m, en contraste con los procedentes de otros sitios, especialmente *Chacona I*, cuya cantidad es sensiblemente menor (Figure 3.15). Sin duda esta distribución, más allá de la influencia de procesos posdeposicionales, permite plantear, a modo de hipótesis, el aprovechamiento del territorio inmediato a este yacimiento (*i. e.* Bintliff y Snodgrass 1988). En relación con ello, cabe destacar que sólo en *Alto Vico I* se han identificado útiles vinculados con la agricultura (Jordán *et al.* 2020, 34).

Por otro lado es posible apreciar una probable tendencia hacia la utilización de dos espacios habida cuenta de la ausencia de yacimientos en ellos: el primero está localizado en la parte central del barranco de Valdeoscuro, donde se conoce un sitio temporal de cronología calcolítica (*Cabeza Ladrero II*) (Figure 3.14, zona A), y el segundo al SO del barranco de Galbarra (Figure 3.14, zona B).

Con respecto al primero cabe resaltar que el sitio de *Chacona I* muestra un excelente control visual de este territorio y que esta zona posee unos excelentes recursos hídricos que lo convierten en un espacio muy fértil. Por otro lado la presencia de sílex *offsite* al SO del barranco de Galbarra, en la zona de El Sasillo, viene precedida por una amplia franja de artefactos que marcan una suerte de corredor en la cresta occidental del barranco que une los yacimientos temporales de *Galbarra II* y *Galbarra III* con el sur (van Lanen, Pierik, 2017, 9), quizá indicando un uso intensivo de este espacio. Esta acumulación contrasta con el vacío apreciado más al oeste aspecto que, con cautela, tal vez pueda confirmar la zona de El Sasillo como un espacio de aprovechamiento.

Atendiendo a datos históricos y al hecho de que apenas hay un reflejo material de prácticas agrícolas en los sitios conocidos, exceptuando en *Alto Vico I*, este movimiento hacia el sur tal vez pueda vincularse con el transporte del ganado. Así este traslado quizá debió de ser necesario dada la falta de sal para la cabaña existente en los terrenos situados más al Norte y que, por el contrario, podría encontrarse en las tierras meridionales. Sin embargo por desgracia el estadio actual de la investigación impide conocer si este movimiento llegaría sólo hasta esta zona o si, por el contrario, se realizaría una trashumancia de

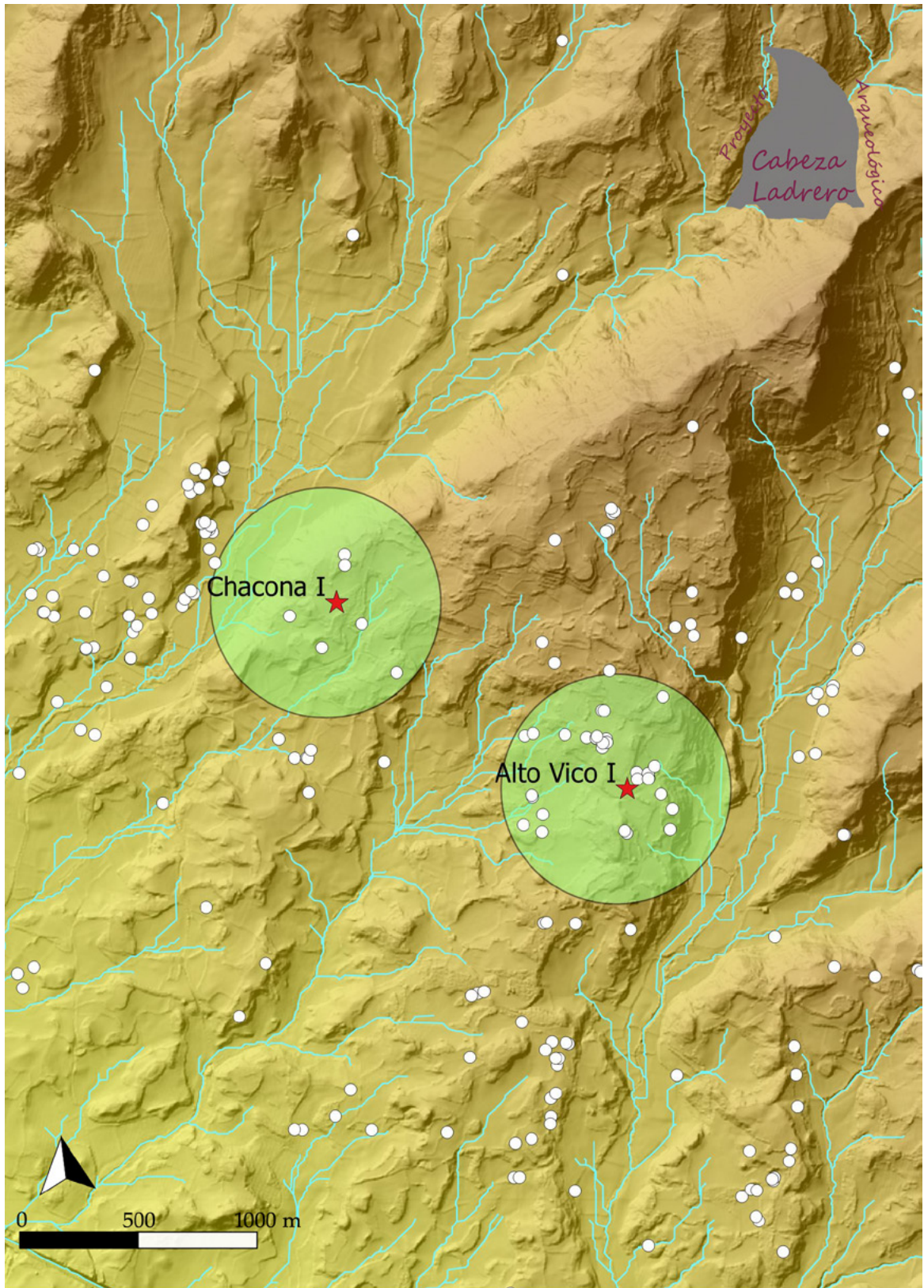


Figure 3.15. Dispersión de registro offsite prehistórico en el entorno de Alto Vico I y Chacona I (Sos del Rey Católico, Zgz.)



mayor distancia. En este sentido la ausencia de yacimientos de esta misma cronología, tanto en la zona como al sur de ella, quizá está indicando una movilidad no demasiado grande, acorde con lo que parece ser un pequeño grupo humano.

Centrando la atención en la ocupación romana altoimperial, se conoce por el momento en el área de influencia de Cabeza Ladrero un total de 95 sitios de distinto tipo y funcionalidad, si bien por ahora sólo 48 pueden ser usados de forma comparativa al ser recogidos los datos empleando la misma metodología (una problemática que ya ha sido puesta de relieve desde diferentes perspectivas en, por ejemplo, Fentress 2000; Given 2003 o Terrenato 2004, 42) (Figures 3.16 y 3.17).

En general las prospecciones arqueológicas realizadas permiten plantear el análisis de la ocupación del *territorium* de la ciudad de Cabeza Ladrero desde dos premisas de partida.

La primera atañe a su formación y ocupación previa. Es muy probable que el *territorium* que administró la ciudad de Cabeza Ladrero surja de la incorporación en una única unidad administrativa de las áreas de aprovechamiento de, al menos, siete pequeños yacimientos del Hierro II: Cabeza Ladrero, *Mulgar IV* (Cáseda, Na.), *Congosto* (Carcastillo, Na.), *Poyo Redondo* (Cáseda, Na.), *La Encisa* (Carcastillo, Na.), *Vico II* (Sos del Rey Católico, Zgz.) y *Collao de Malvar* (Castiliscar, Zgz.). Por el momento se desconoce tanto la interrelación que existió entre ellos como con el entorno aunque, por lo que se ha podido apreciar, tanto Cabeza Ladrero como *Vico II* y *Mulgar IV* no parecen haber desarrollado una ocupación intensiva del espacio.

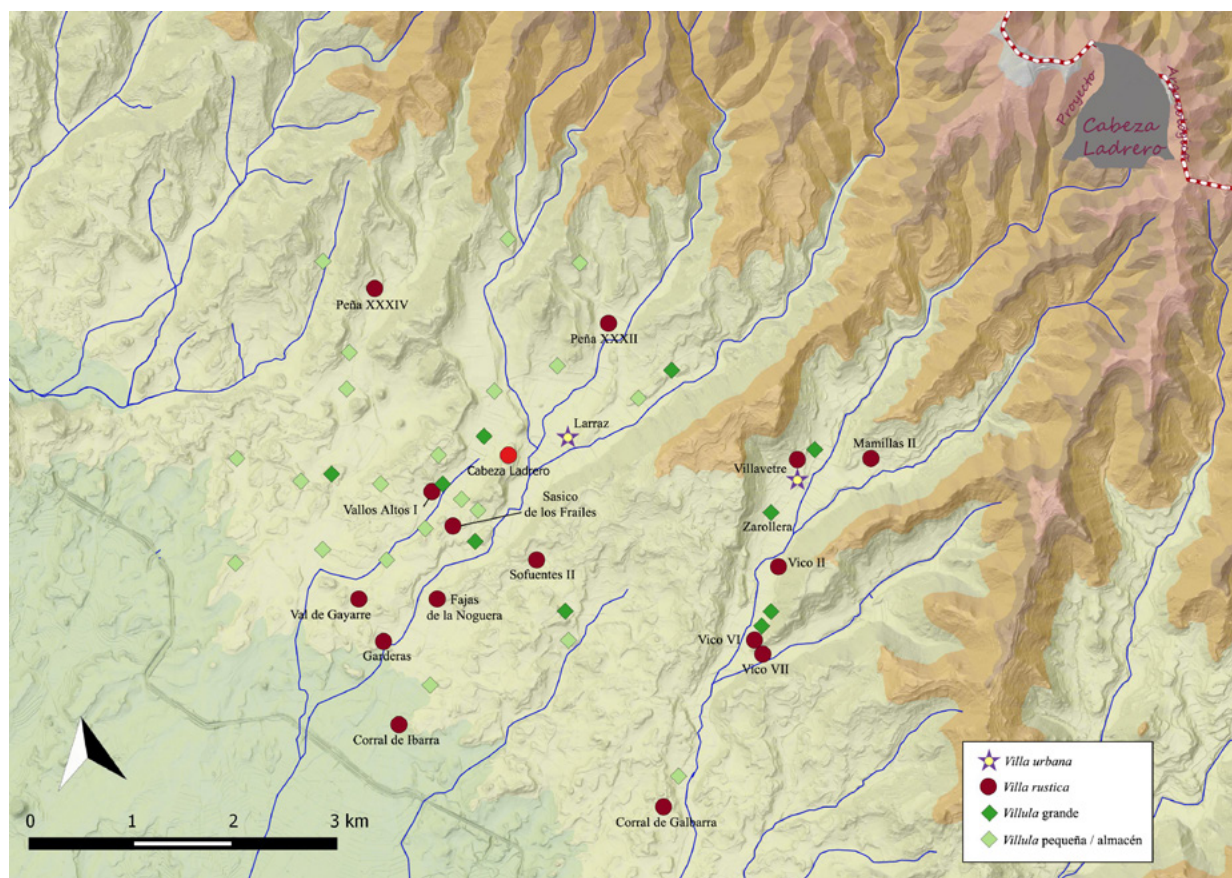


Figure 3.16. Ocupación romana altoimperial en la zona prospectada

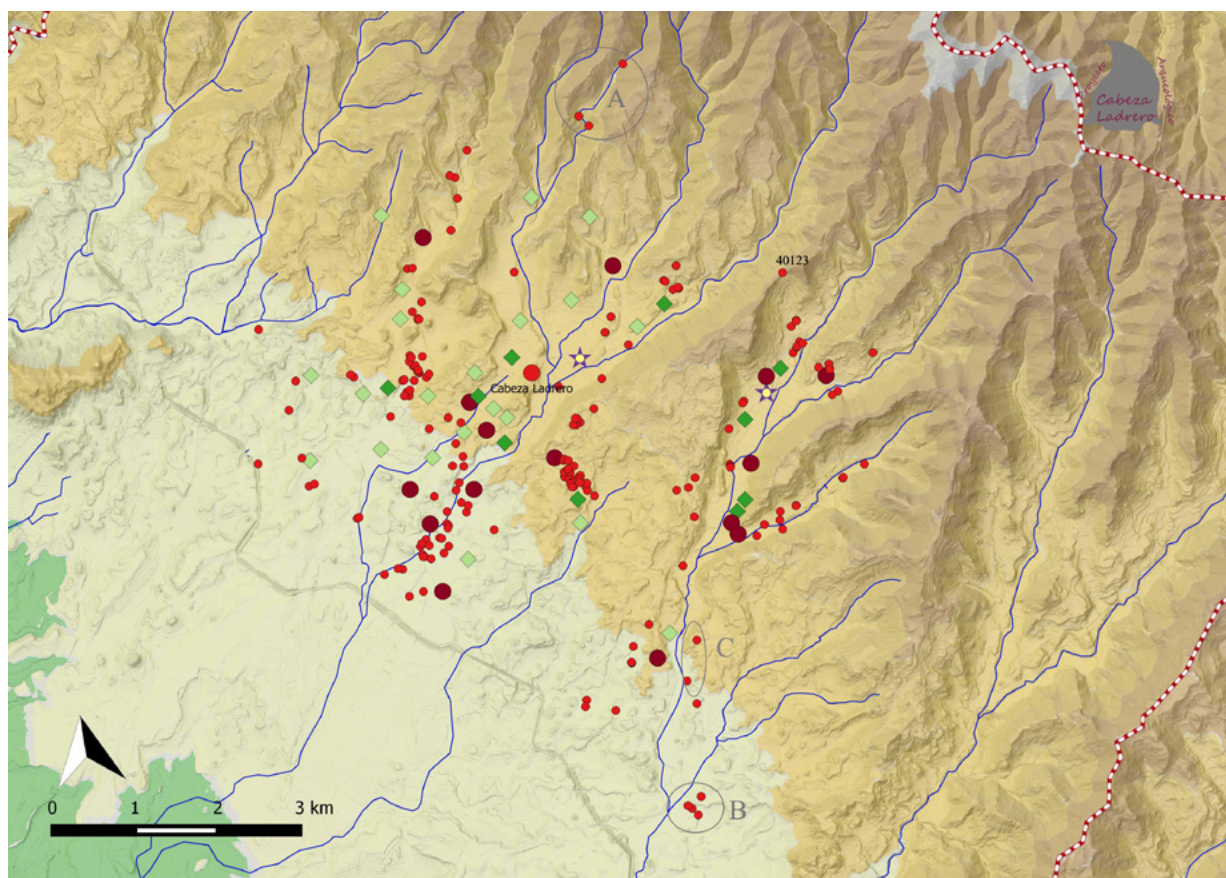


Figure 3.17. Distribución del registro offsite de cronología romana

Con esta ocupación previa de base, a modo de hipótesis, y con prudencia, no se puede descartar que la configuración del *territorium* de Cabeza Ladrero (y en general de las ciudades de las Cinco Villas) se produjera en época de Augusto, momento en el que se tiene constancia de una importante intervención del emperador en la zona destinando a *vexillationes* de las legiones IV Macedónica, VI Victrix y X Gémina para la construcción de una calzada que unía el valle del Ebro con el sur de Francia (Moreno *et al.* 2009) y de varias actuaciones en la cercana ciudad de Los Bañales (Andreu *et al.* 2014-15). En este sentido y habida cuenta de la ausencia de una promoción jurídica previa, es probable que el *territorium* se organizara en la forma de *per extremitatem mensura comprehensus*, el sistema de organización del suelo más frecuente en las ciudades estipendiarias (Ariño Gil *et al.* 2004, 178) y que implica la ausencia de una parcelación o *divisio* interna, al menos en origen.

La segunda premisa para la interpretación de la ocupación del territorio lo constituye la propia caracterización de los sitios conocidos. Los seleccionados se emplazan en un espacio encuadrado dentro de las tres primeras millas de distancia con respecto a la ciudad, por lo que puede considerarse que se encuentran dentro de su entorno más inmediato. Estos sitios pueden identificarse, con cautela, como pequeñas granjas, corrales o anexos de otro tipo, posiblemente *villulae* (Fernández Ochoa *et al.* 2014, 119), de los que se conocen 21; centros productivos de tamaño mediano, de los que se conocen diez y que posiblemente se traten de granjas unifamiliares (*villulae*), aunque mayores que las anteriores; grandes centros productivos (quince) que, con cautela, podrían corresponder a la denominación de *villae rusticae* entendidas como centros de explotación posiblemente con un *fundus* asociado, pero sin



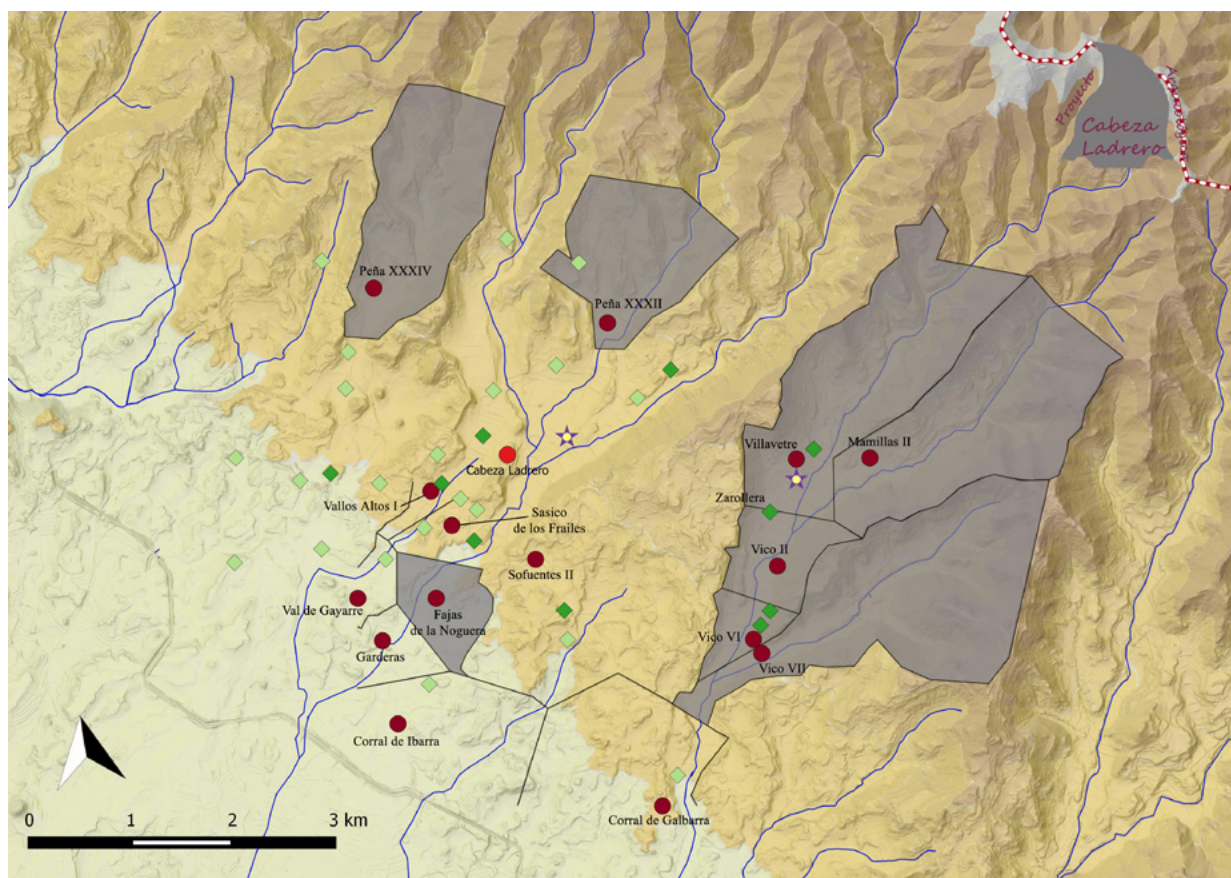


Figure 3.18. Hipótesis de distribución de fundi vinculados a villae rusticae

una parte residencial tan definida; y, por último, dos *villae urbanae*, es decir, casas de campo residenciales y lujosas (Fernández Ochoa *et al.* 2014, 119) (Figure 3.16).

Sin ánimo de entrar en profundidad, pues con ello se excedería con creces los límites de este trabajo, sin duda puede destacarse el peso que tienen los pequeños sitios en la ocupación del territorio. Esto no debe extrañar, puesto que su relevancia dentro del panorama ocupacional de los *territoria* lleva destacándose desde inicios del siglo XXI, aun cuando en la Península no suelen recibir atención, si bien su función todavía no está clara (*i. e.* Cherry 2003, 147). En cualquier caso parece existir una clara concentración de este tipo de establecimientos hacia el Oeste de la ciudad, mientras que en la parte oriental y hacia el Sur tienden a disponerse lo que se ha interpretado como grandes centros productivos (*villae rusticae?*), con algún pequeño establecimiento intercalado del que no descartamos su vinculación con los anteriores, como podría ocurrir en el caso de la villa de *Villavetre*. Esta se conforma a través de un conjunto de cuatro sitios: *Villavetre I*, que correspondería a la *pars urbana* de la villa; *Villavetre II*, posiblemente la *pars rustica* de ésta; *Villavetre III*, un pequeño sitio muy cercano al anterior, por lo que necesariamente tuvo que estar vinculado con ellos, aunque se desconoce en qué forma; y *Zarollera*, posiblemente correspondiente al área de necrópolis de la *villa urbana* como indicaría el hallazgo en esa zona de un fragmento de inscripción funeraria (Jordán 2020, 254-255).

En relación con ello la aplicación de polígonos Thiessen, convenientemente modificados teniendo en cuenta la evolución histórica de la geomorfología de la zona (Conolly y Lake 2009, 278-279), al espacio ocupado por estos grandes centros productivos quizá podría indicar la relación de algunos de estos

pequeños enclaves, como *Campo Magro* o *Corral de Galbarra II* con los grandes centros de *Corral de Ibarra* y *Corral de Galbarra* (Figure 3.18).

Por otro lado, centrandó la atención en las *villae rusticae*, la cercanía de estos grandes enclaves entre ellos posiblemente sea un indicador del pequeño tamaño de sus *fundi*. En este sentido si se relaciona su localización con la división que establecen los polígonos Thiessen a modo de hipótesis puede realizarse una aproximación a sus dimensiones (tabla 3.1).

Nombre	Cronología	Superficie aprox. (Ha.)	Superficie (iugera)
Vico VII	Ss. I-VI d.C.	380	95
Vico II	Ss. I-VI d.C.	77	19,2
Mamillas II	Ss. I-X d.C.	350	87,5
Villavetre	Ss. I a.C.-X d.C.	330	82,5
Vico VI	Ss. I-III d.C.	42	10,5
Fajas de la Noguera	Ss. I-III d.C.	71	17,8
Peña XXXII	Ss. I-III d.C.	200	50
Peña XXXIV	Ss. I-III d.C.	150	37,5

Tabla 3.1. Posibles *fundi* identificados en el territorio de Cabeza Ladrero

En general se ha estimado el tamaño de los *fundi* en la península itálica entre los 80 y 500 iugera (Miró 1988, 111), como ejemplificaría la finca de 200 iugera que poseía el senador Quinto Axio en Reate (Var.,

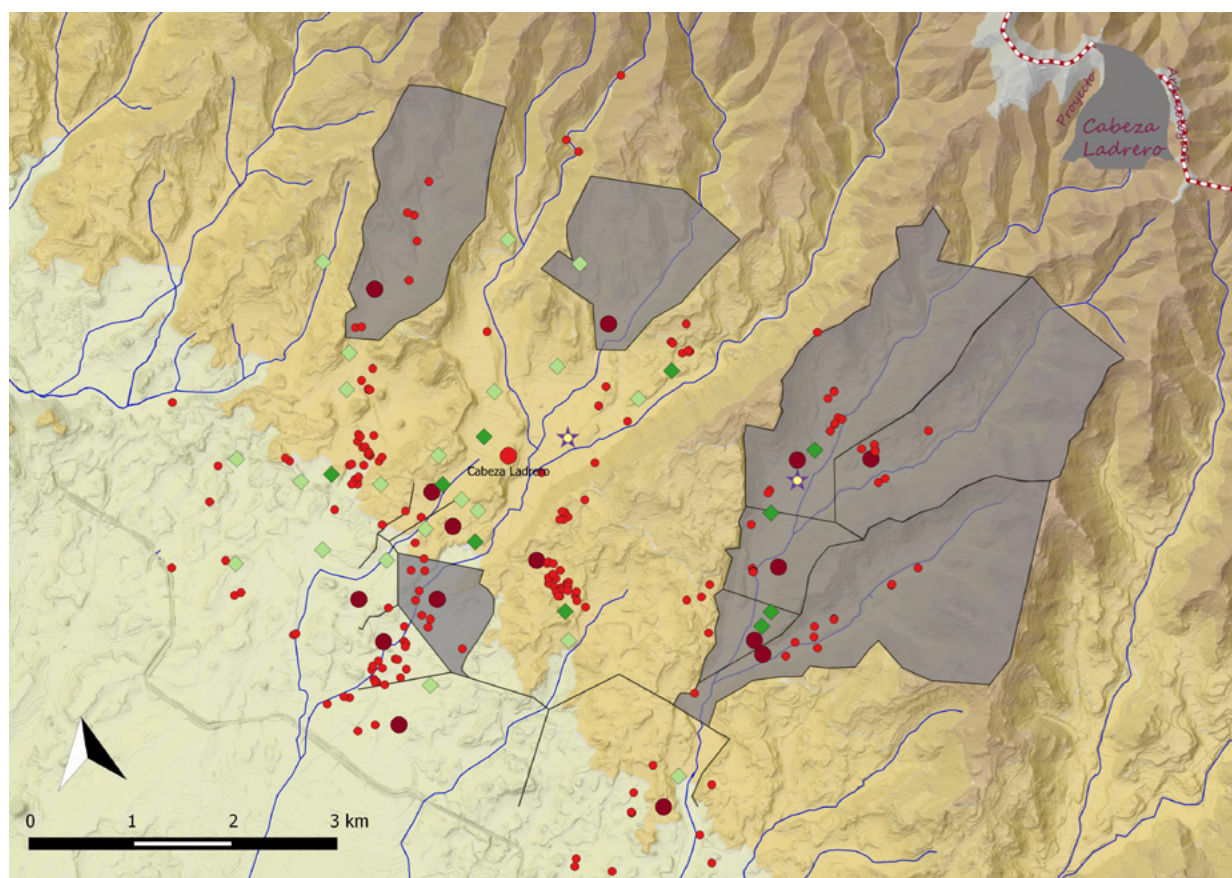


Figure 3.19. Registro offsite de época romana y su relación con los *fundi*



DRR III.15). Por su parte en un entorno más cercano se ha planteado para un espacio con alta ocupación como es la zona de Baetulo (Badalona), la existencia de fundi medianos de entre 100-109 iugera (Prevosti 1981, 281-282). En contraste los resultados obtenidos para algunos establecimientos del entorno de Cabeza Ladrero (tabla 1) plantea, en general, la presencia de fundi pequeños que en ningún caso llegan a alcanzar el tamaño de grandes latifundios como el que quizá ocuparía el fundus de la villa romana de Noheda (Teruel), estimado en 2500 iugera (Valero 2017, 74) o el de los 1000 iugera que Ausonio indica que posee, ya en un momento avanzado como es el siglo IV d.C., en Aquitania.

En este contexto el registro offsite conocido para época romana permite realizar una aproximación a estos fundi, como puede apreciarse por la distribución de material presente en los barrancos de Vico y la Fonteta que claramente están marcando las zonas de desarrollo de los fundi correspondientes a Vico VII y Villavetre (Figure 3.19). Del mismo modo cabe preguntarse si la presencia/ausencia de material offsite puede reflejar diferentes formas de uso del espacio. Así, por ejemplo, en el entorno del Corral de Ibarra apenas se ha encontrado material offsite, lo cual contrasta con la amplia presencia relacionable con el cercano lugar de Garderas. Por desgracia se desconocen las actividades que tuvieron lugar en estos espacios pues es muy poco el material relacionable con ello. Así por el momento cabe destacar el hallazgo de un torculario vinculado al sitio de Peña XXXII y, aunque todavía se está prospectando esa zona, de un segundo contrapeso en el sitio de Iruelas I (Cáseda, Na.), situado más al oeste, teniendo ambos yacimientos en común la ausencia de material offsite en las cercanías. De esta forma, a falta de análisis polínicos que confirmen esta hipótesis, ambos contrapesos permiten apuntar al cultivo de vid u olivo en estas dos zonas y quizá relacionarlo con la ausencia de artefactos aislados.

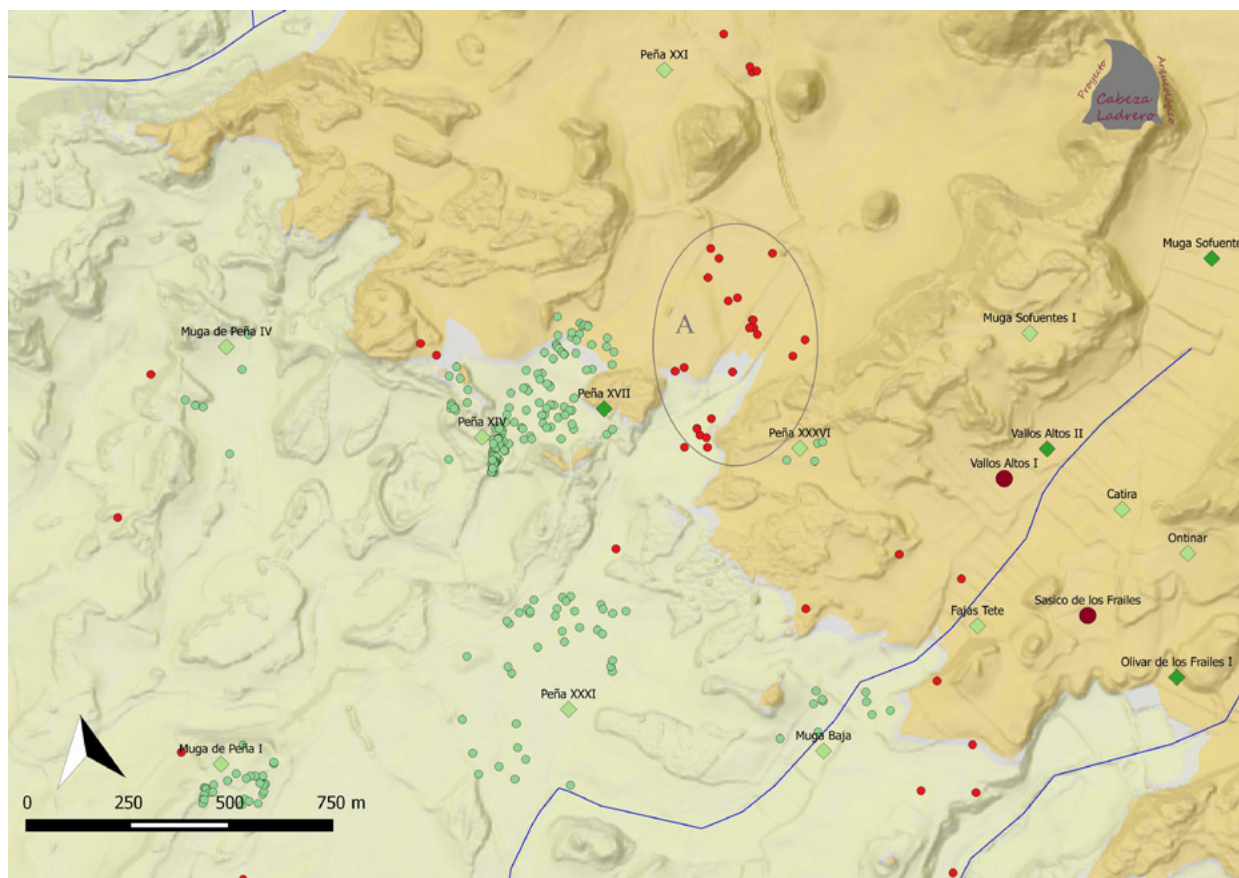


Figure 3.20. Halo (verde) y registro offsite (rojo) de villulae de época romana

En contraste con la amplia aparición de registro *offsite* en torno a estos grandes centros productivos, éste no es tan frecuente en las inmediaciones de los pequeños asentamientos (*villulae*) con excepción del identificado en la val de Pintanés (Figure 3.20, zona A), que parece marcar un aprovechamiento intensivo de este espacio. Esta situación es especialmente clara en los sitios de Peña XXXI, Corral del Santo, Val de la Mora o Peña XIV y quizá pueda estar reforzando la impresión de que existe un tipo de uso distinto, idea a la que conduce también su posible pequeño tamaño. En este sentido atendiendo a la práctica ausencia de material aislado y a la pequeña dispersión del halo de estos pequeños establecimientos es posible establecer, siguiendo la propuesta de P. P. Hayes (1990, 84), un modelo de aprovechamiento del espacio similar a la del grupo 1a, que quizá podría estar designando la presencia de pequeñas granjas individuales rodeadas por tierras de propiedad privada.

Por otro lado la presencia de materiales aislados en zonas montañosas (i. e. n<sup>os</sup>. 22923, 22925 ó 20359, en lo más alto de la val de Horno, Figure 3.17, zona A) invita a considerar otras posibilidades de uso y aprovechamiento del espacio, como pueden ser las ganaderas. Esto implicaría la existencia de un subentramado ocupacional formado por pequeñas cabañas de uso temporal, a ejemplo de lo establecido en el siglo XIX, de las que, por desgracia, no se han identificado restos dado su carácter pequeño y temporal. En esta línea llama la atención el hallazgo de fragmentos cerámicos romanos aislados (n<sup>os</sup>. 34185 ó 34378) vinculados con la posible ruta usada por el grupo pastoril neolítico de Alto Vico I, siguiendo la cresta occidental del barranco de Mamillas.

Junto a ello, para finalizar, quizá sea posible vincular algunos artefactos al paso de las vías de comunicación de época romana. En este sentido destaca el hallazgo de un pequeño fragmento de *terra sigillata* (n<sup>o</sup> 40123) en un paso existente entre las vales de Mamillas y Sofuentes situado en lo alto de la Sierra de Serún (Figure 3.17). Su presencia en un sitio tan alejado de cualquier ocupación conocida en época romana quizá podría responder a un posible paso de la calzada de las Cinco Villas (Aguarod y Lostal 1982, 174, vid. en contra Moreno 2009, 92-93), aspecto que podría verse confirmado por el hallazgo de un miliario, desconocido, aunque perteneciente a la colección que se llevó a Javier (Moreno *et al.* 2009, 223-224), en un campo cercano a la ermita situado en la umbría de la cresta según indicaciones de su descubridor. Del mismo modo, por último, sorprende el hallazgo de algunos materiales, como los n<sup>os</sup>. 38418 y 38362 en el entorno del antiguo camino que, en época moderna, unía la pedanía de Vico con el pueblo de Castiliscar no siendo descartable que este camino tuviese su origen en el empleado en época romana para poder entrar y salir de la val de Mamillas (Figure 3.17, zona C).

## Conclusión

El entorno/paisaje y el ser humano constituyen un fascinante ecosistema adaptativo de dos direcciones difícil de comprender, al que normalmente sólo se puede acceder a través de la prospección arqueológica. Sin embargo este método de aproximación tiene unas limitaciones inherentes que, combinado con los escasos recursos de que se suelen disponer para realizar una verificación a través de la excavación de los sitios identificados, provoca que normalmente se construyan armazones esquemáticos que intentan explicar una compleja realidad en base a toscos puntos de anclaje formados por una colección de sitios aislados sobre un fondo blanco. Con datos limitados se conciben universos limitados, planos y unidireccionales, que no reflejan la riqueza y complejidad que acompañó a la relación del ser humano con su entorno medioambiental.

Como se ha podido ver en estas páginas el registro *offsite* se muestra como una interesante herramienta, con sus limitaciones y posibilidades, para comprender mejor las estrategias de relación, ocupación y aprovechamiento del territorio, aportando profundidad a nuestro conocimiento del universo histórico. En este sentido siendo limitada la información que se obtiene del registro superficial, sorprende el



abandono de esta fuente de información en el diseño de las prospecciones arqueológicas, por más que su identificación implique una importante inversión en recursos humanos.

A modo de prueba se ha tratado de mostrar su potencial informativo aplicándolo a dos periodos distintos: el neolítico y la época romana altoimperial.

En el caso del periodo neolítico, momento en el que el ser humano se establece por primera vez en la zona y desarrolla las primeras estrategias ocupacionales y de aprovechamiento del territorio, el registro *offsite* permite apuntar la idea de un uso pastoril del espacio acompañado de una agricultura de subsistencia, quizá con movimientos poblacionales desde el sitio de *Alto Vico I* hacia zonas de pastos emplazadas al sur y oeste. Esta movilidad permite definir las primeras rutas de comunicación en la zona, de las que la que se dirige hacia las tierras meridionales parece encontrarse nuevamente en época romana. Sin duda este eje comunicativo N-S debe interpretarse como un componente relevante dentro de la organización espacial del territorio, aunque nuestro estado del conocimiento actual impide ponderar correctamente su alcance.

Por su parte el análisis del registro *offsite* para época romana altoimperial no sólo permite apuntar a la presencia de vías de comunicación, quizá tanto internas (*i. e.* la ruta de salida de la val de Mamillas) como generales (el paso de la calzada por la cresta de Serún), sino que también está marcando una interesante variedad de estrategias de ocupación del espacio. Esta ocupación se refleja toscamente por medio de la presencia de pequeñas granjas a occidente y *fundi*, no demasiado grandes, al sur y este que, necesariamente, atienden a intereses distintos. El registro *offsite* en ocasiones permite perfilar estas líneas maestras, pudiéndose establecer zonas de extensión de *fundi*, como los correspondientes a *Vico VII* o a *Villavetre*, e incluso apuntar a diferentes modelos de aprovechamiento aun cuando no sea posible definirlos con claridad por el momento.

Ahora bien, para finalizar, no se puede olvidar que el registro *offsite* no es una herramienta aislada. Es necesario vincularlo con otras metodologías y aproximaciones que aporten diferentes ópticas, permitiendo así obtener un conocimiento armónico y profundo del universo rural.

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# Intensive survey on the Valpierre plain (La Rioja, Spain): dynamics of an agrarian landscape from prehistoric times to the present

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## Abstract

The Valpierre plain is located on the right bank of the Oja -or Glera- river, in the Rioja Alta region. Valpierre is a cultural landscape in which traces of a Roman land division have been detected and also with an intense human occupation in the Middle Ages. A survey specifically aimed to detect off-site material has been carried out in the plain. The research has identified a first sequence dating from the Palaeolithic (Middle and Upper), with scattered finds of flint, associated with a workshop. The following documented sequence corresponds to the Chalcolithic period, although it is of little importance. Despite the significant Celtiberian and Roman occupation in the nearby city of Libia (Herramélluri), no pottery associated with these phases has been detected in Valpierre. Settlement traces during these sequences are also absent. Four points of concentration of pottery with the sequence dated between the end of the Roman period and the early Middle Ages have been recorded. Neither has off-site material from the medieval period been recovered, despite the fact that the written documentation evidence intense exploitation of the plain during this time. The bulk of ceramic material is made up of traditional earthenware, industrial stoneware, and porcelain from contemporary times. Apparently, the great contribution of ceramic waste to the fields of cultivation occurred from the middle of the 20th century and was associated with the mechanization of the field.

## Keywords

Libia, Earthenware, Industrial Stoneware, Porcelain, Paleolithic, Chalcolithic

## The Valpierre Plain: the physical environment

The name Valpierre refers to a plain located to the east of the river Oja (or Glera) with a practically flat surface, as its average slope is around 1.8 per cent. The highest points, around 700 m, are located on its southern border, while altitudes at its northern edge are around 540 m. Its western boundary is the River Oja, and the eastern boundary is marked by minor reliefs that extend between the towns of Casas Blancas and San Asensio, with its highest point on the Mesa Alta hill (649 m). The space defined by this framework composes an almost perfect square of twelve by twelve kilometres. The Valpierre plain is almost exclusively destined for agricultural use and can be considered an area scarcely affected by urbanisation, industry or large infrastructures (Figure 4.1).

The soils of the Valpierre plain are clayey and clay-limestone in composition and have been formed on a substrate of quartzite gravel (Figure 4.2). These gravels frequently appear on the surface, so much so that in many areas the soil is made up exclusively of large pebbles. It is likely that this stony character

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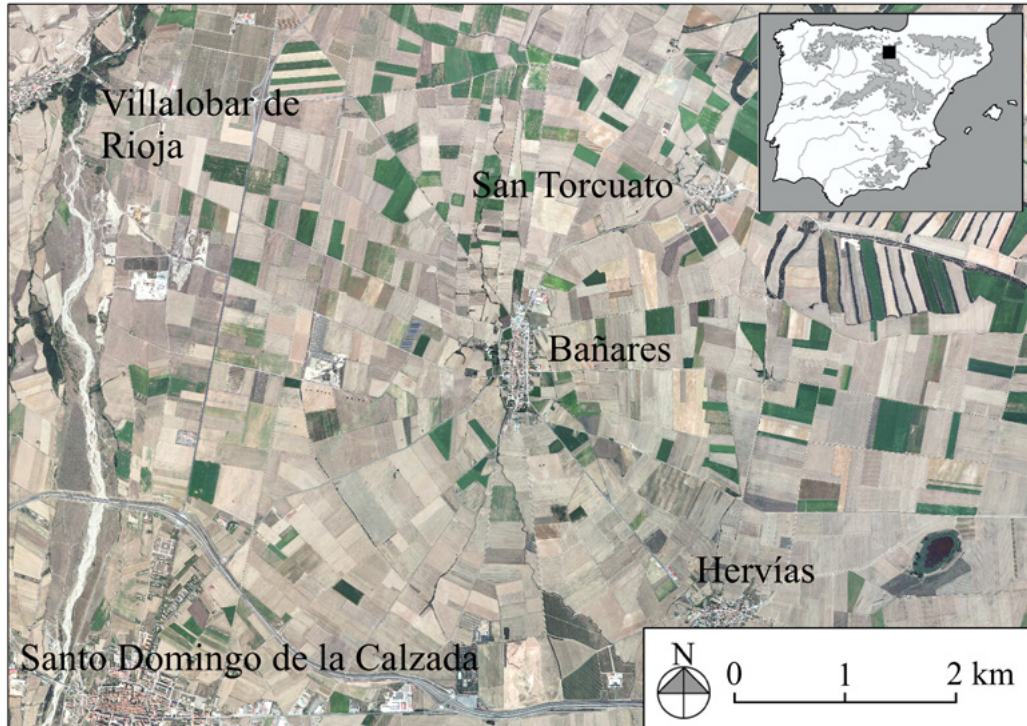


Figure 4.1. The Valpierre plain. Image from the National Plan for Aerial Orthophotography (PNOA).

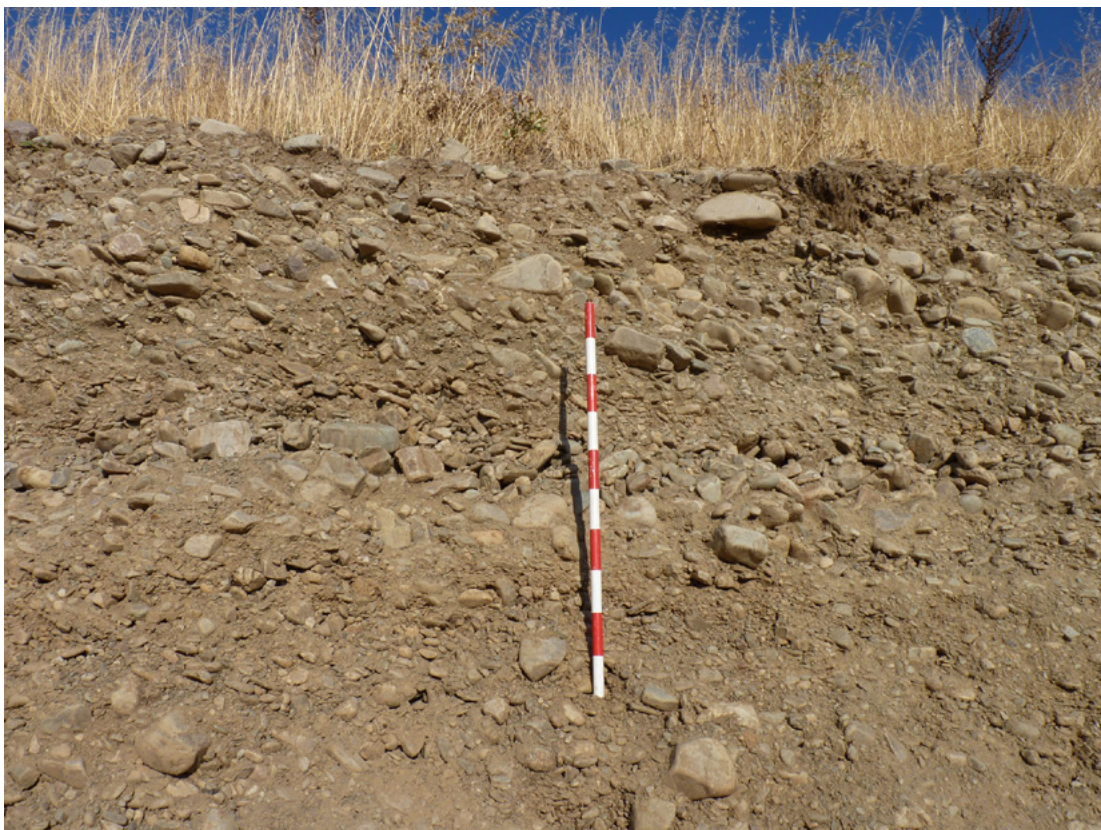


Figure 4.2. Valpierre Plain. Soil profile. Right bank of the River Oja at Villalobar de Rioja.



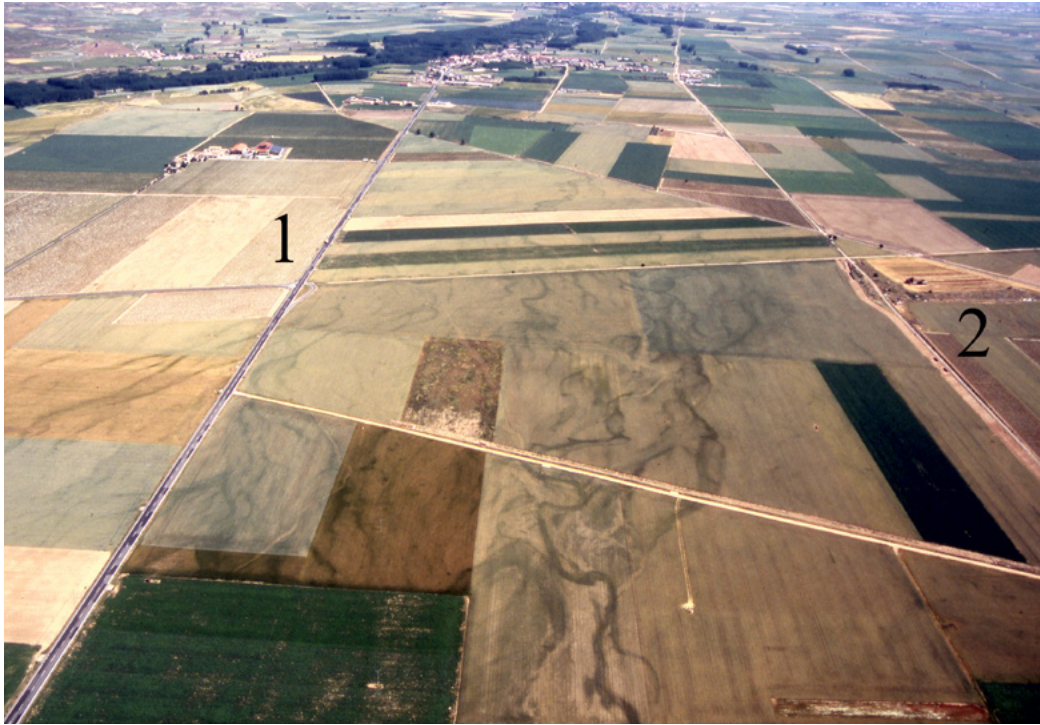


Figure 4.3. Traces of surface run-off in the western part of the centuriation (from the south). The road from Santo Domingo to Haro (1) and the 2006 road from Casalarreina to Ezcaray (2) are identified. In the background Castañares de Rioja. Aerial photograph of 1 June 2006

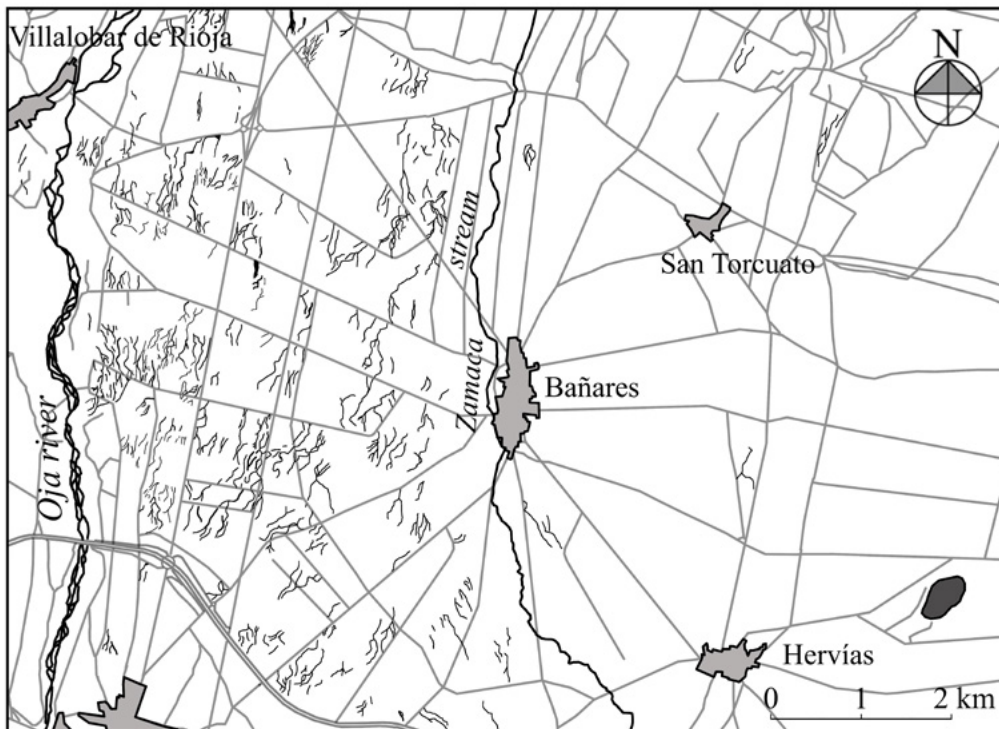


Figure 4.4. Runoff lines with an S-N route in the western part of the Valpierre plain Image produced from satellite data (Google Earth, 23 May 2011) and projected on the 1:50,000 scale maps of the Spanish Army Geographic Centre (Series M-781), years 1964, sheets 169 (Casalarreina), 170 (Haro), 202 (Santo Domingo de la Calzada) and 203 (Nájera).

of its soils is what explains the toponym Valpierre, the name which the region has borne since medieval times (Govantes 1846, 203-5). The gravel soils are very permeable, to the point that the River Oja loses all its flow before reaching the town of Santo Domingo de la Calzada and only recovers it to the north of Castañares de Rioja. The contributions of the river filter down to the subsoil and feed a large and important underground aquifer known as Aluvial del Glera which is found at depths that are established between 5-6 m and a few centimetres and which vary according to the area and the time of year. The shallow depth of the aquifer generates water emergence at different points on the plain, usually seasonal and variable. The Balsa de Valpierre, located in the municipality of Hervías, the most important wetland in the area, is partly fed by this groundwater. The Glera aquifer has traditionally been exploited for agricultural purposes, favouring irrigated crops fed by wells. Despite its stony features, the Valpierre plain is an area of intense agricultural use as even without irrigation the soils conserve humidity and are good for cultivation.

The gentle slope of the Valpierre plain is the reason why the streams that run through it have a wandering course and little current. The most important watercourses are the Redajo stream and, above all, the Zamaca stream (Valdespina or Baldespina in medieval documentation: López de Silanes and Sainz Ripa 1985, 169-177, doc. 104), which has an almost completely south-north course and divides the plain into two virtually symmetrical halves. The poorly structured drainage and the slight slope cause a fairly active surface run-off which has left very visible traces in the different aerial covers of the area, particularly observed in an archaeological prospecting flight which we carried out in 2006 (Figure 4.3), but also in satellite images, especially a Google Earth image dated May 23, 2011. The runoff lines form fans of several hundred meters in length, but they are distributed unevenly, being abundant to the west of the Zamaca stream but practically absent in the eastern half of the plain (Figure 4.4).

### **The Valpierre plain: the human landscape**

The first urban agglomerations in the area date from the Early Iron Age and correspond to the period of formation of Celtiberian culture. The Valpierre Plain was probably part of the territory of Libia, a Celtiberian city located on the Cerro del Piquillo or Colina de las Sernas (Herramélluri), some 4.5 km west of the Oja riverbed, the western edge of the plain. The archaeological study that we have carried out in Libia, and of which the territorial study that we present here forms part, shows an urban occupation with materials from the Early Iron Age to the end of the Roman period (around the 5th or early 6th century). The remains from the Celtiberian period are very scarce and are located almost exclusively on the upper part of the hill on which the urban complex is built. The city underwent a complete remodelling during the time of Augustus or Tiberius, when it was given a regular plan and a wall. The early Roman imperial urban layout –and all the topographical operations that it entailed – would have been an undertaking in which the Roman legions could have participated, since, in the southern suburb of the city, both the aerial photographs from 2006 and the various satellite coverings available reveal a complex set of linear structures in the form of crop marks among which the characteristic layout of the Roman camps can be recognised. Other lines in this complex are more difficult to interpret but could be read as practical exercises in topography as they include incomplete camp layouts and long alignments that sometimes break at an angle. To the south of the city, outside the walls, the aerial images allow us to identify the route of De Italia in Hispanias road. Associated with it is a building with a regular floor plan which is interpreted as a *mansio* or stopping station serving the road, just before the road crosses the Reláchigo stream, which runs to the west of the city of Libia (Ariño Gil *et al.* 2019).

The scientific literature does not record archaeological remains from any period on the Valpierre plain, which is particularly striking, since it is a large agricultural area with an ideal water supply. In fact, the most important archaeological document in the region is the remains of the Via De Italia in Hispanias road, which appears at various points between the municipalities of San Torcuato and Leiva, sometimes

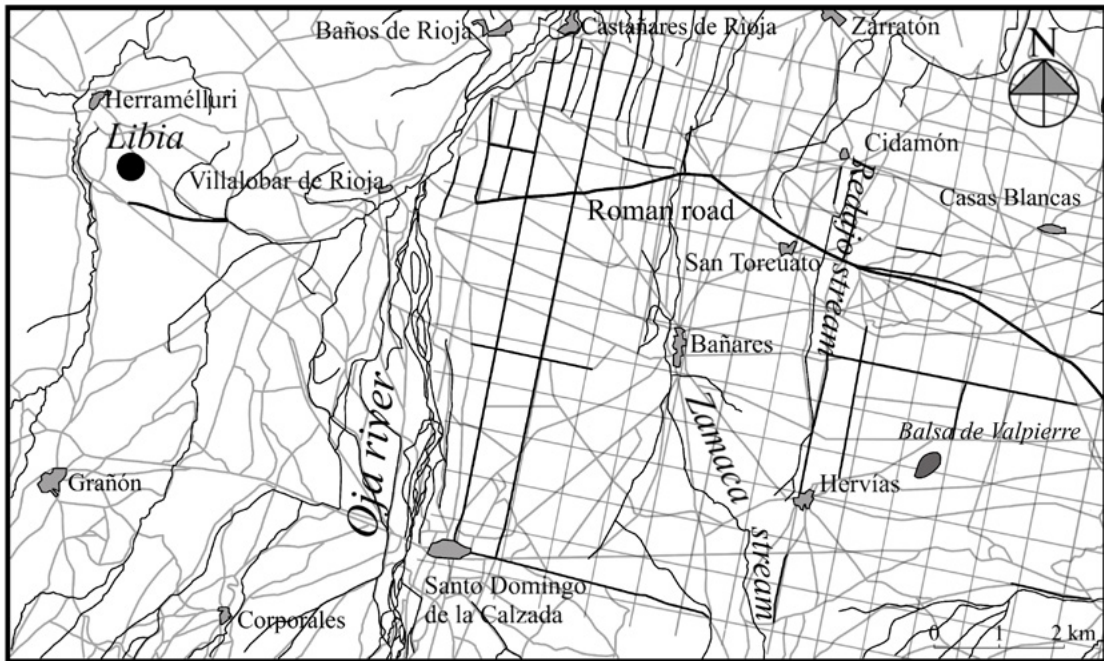


Figure 4.5. The centuriation on Libia on the Valpierre Plain. Archaeomorphological study projected on the 1:50,000 scale maps of the Spanish Army Geographic Centre (Series M 781), year 1964, sheets 169. Casalarreina, 170. Haro, 202. Santo Domingo de la Calzada and 203 (Nájera).

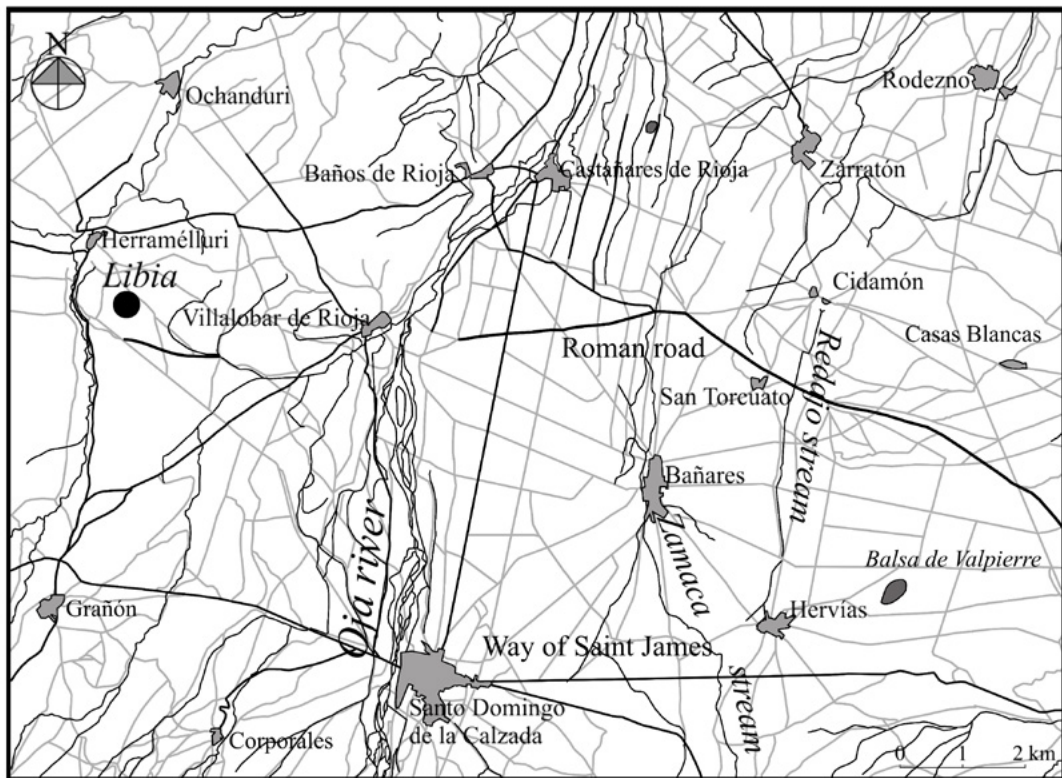


Figure 4.6. Map of the network of medieval roads reconstructed from documentary sources (in black), on the cartographic basis of the 1:50,000 maps of the Spanish Army Geographic Centre (Series M-781), year 1964, sheets 169 (Casalarreina), 170 (Haro), 202 (Santo Domingo de la Calzada) and 203 (Nájera) (in grey).



in the form of crop marks revealed by aerial photographs and other times as a road in use, heir to the Via and preserved by successive maintenance works throughout the historical sequence. The state of conservation of the road is quite good on its journey through Valpierre, between Hormilla and the Oja river crossing. Although the road has been altered by land consolidation carried out in recent years, the embankment or agger on which the road was built is still visible in some sections, especially in the area to the west of the Zamaca stream (Ariño Gil y Magallón 1991-1992, 445-6).

Farming on the Valpierre plain probably dates back to the Celtiberian period, as it is geographically part of the territory of Libia, the capital of the Beron. During the Roman period, the region seems to have been the result of programmed colonisation, as there are sufficient indications to identify a Roman centuriation in Valpierre, based on the classical module of 20 actus on each side (equivalent to approximately 705-710 m). The archaeological-morphological study, combined with medieval documentation which includes toponyms associated with landscape structures, detects a regular grid of roads with an orientation of around 11° E, especially well preserved in the peripheral areas of the plain. In the area to the west of the Zamaca, several kardines are preserved, although the decumani are almost completely missing. To the east of the Zamaca the orthogonal structure is less well conserved, although the decumani are more present here (Ariño Gil *et al.* 2019, 128-135) (Figure 4.5).

The Valpierre plain was heavily occupied by humans in the medieval period. Written documentation of the region is abundant from the second half of the 11th century onwards, although the process of medieval repopulation in Valpierre probably predates this date (García de Cortázar 1994). The current towns, all of which are small, have their origins in the medieval period. The documentary collections of the monastery of San Millán de la Cogolla (Ledesma 1989), the cathedral archives and the Hospital de Santo Domingo de la Calzada (López de Silanes and Sainz Ripa 1985, 1989, 1991 and 1992) and the documentation of the monastery of Valvanera (García Turza 1985) abound in information on the management of land in this region in the medieval period. References to rivers and streams, roads, paths, cultivated land and pastures are frequent in the documentation. The detailed analysis of the texts allows an approximate reconstruction of the rural landscape of this region in the Middle Ages (Figure 4.6). One of the most important conclusions drawn from the analysis of medieval toponymy is that the process of (re)colonisation of the agrarian space which had begun around the 11th century (or perhaps at somewhat earlier dates) would have culminated around the 14th century, as there are several documents dating from the late medieval period which refer to boundary markers which delimit the council areas (López de Silanes and Sainz Ripa 1985, 88-94, doc. 36 [year 1373], 112-122, doc. 41 [year 1398]). In this period, all the land in Valpierre was already under cultivation, with the exception of the communal meadows (*dehesas*). There were pastures in Bañares (López de Silanes and Sainz Ripa 1985, 169-177, doc. 104, 193-7, doc. 117), in Santo Domingo de la Calzada (the Semsoto pasture and the Malburguete pasture: López de Silanes and Sainz Ripa 1985, 21-2, doc. 2, 169-177, doc. 104) and in Casalarreina (the Aisarte pasture: López de Silanes and Sainz Ripa 1985, 144-9, doc. 90).

The main road axes in medieval documentation are the Roman road, which in the texts is always named with the toponym *calzada* (with the variants *calzata*, *calcatam*, *calzada*) (García Turza 1985, 184-6, doc. 202; Ledesma 1989, 62-3, doc. 76) and the Saint James Way, known by different names (*strata de francos*, *caminun peregrinorum*, *caminum beati Iacobi*, *camino franzes*) (Ledesma 1989, 26-7, doc. 23, 311-2, doc. 422, 344-5, doc. 451; López de Silanes and Sainz Ripa 1985, 21-2, doc. 2, 169-177, doc. 104). The Saint James Way runs parallel to the Roman road, to the south of it. The importance of this pilgrims' way as a transregional axis is indisputable, but the abundant documentary references (and in different sections) to the Roman road indicate that it remained functional and played an important role as an east-west communications axis throughout the medieval period (Figure 4.6).



Aerial photographs from the years 1956-57 (American Flight, Spanish Army Geographic Centre), record the Valpierre plain as a traditional agricultural landscape, with small plots (Figure 4.7). In the images we can see a parcel of land in which the regular lines of the Roman centuriation (on the periphery) survive, together with the radial networks which were formed around the medieval villages, with the one around Bañares being particularly significant, both for its extension and symmetry and for being located in the centre of the plain and the Roman cadastre. Nothing remains of the ancient pastures, now completely broken up for cultivation. There is also a relatively significant forest area (Rebollar del Monte) in the north-eastern part of the plain, a forest with no references in medieval documentation. Only a few years after the American Flight, this last natural space would also be put into cultivation. Land consolidation, carried out recently, has changed the traditional agrarian landscape that still survived in the middle of the 20th century and, although the layout of the roads that made it up has been substantially maintained, satellite images reveal that the radial land network around Bañares has been reinforced after the replotting.

### **Objectives and methodology of surveying**

The Valpierre plain is a little altered agrarian landscape, with a long historical sequence and abundant quality information, specifically that provided by the archaeological-morphological study of terrain, the medieval documentation, the aerial photography and the satellite images. The main objective of the research carried out was the recovery of off-site pottery, considering that the findings could be evidence of the agricultural practice of fertilizing the fields with domestic waste (Foley 1981; Wilkinson 1982 and 1989; Alcock *et al.* 1994; Vermeulen and Mlekuz 2012; García Sánchez 2013; García Sánchez and Cisneros 2013). Although the whole of the agricultural area is accessible, the large size of the study area explains the fact that the survey focused on some preferential areas of action, aiming a total coverage survey in the selected zones. The areas of intervention were determined by giving priority to the western sector of the plain, seeking to include in the area explored the agricultural plots structured around the two best-preserved kardines of the Roman centuriation (the road from Santo Domingo de la Calzada to Haro and the road from Casalarreina to Ezcaray). By acting in this area, which concentrates the greatest number of traces of surface run-off, the aim was also to be able to explain the relationship between the conservation of the boundaries of the land registry and the action of surface water. The hypothesis we formulated was based on the fact that it was likely that the natural slope line would have caused the disappearance of the decumani (as these were an obstacle to the circulation of surface water) and favoured the conservation of the kardines instead (as these are laid out parallel to the slope). The project was designed to provide an analysis of the distribution patterns of the off-site pottery that could help to explain the dynamic relationship between the maintenance of the anthropic structures and the action of the surface waters. Specifically, it was considered of interest to recover off-site pottery in the run-off areas, which are very noticeable in the aerial and satellite images.

Some of the plots belonging to the radial network around Bañares were also included in the preferential intervention area. We believe that the lands associated with this medieval town could have incorporated ceramic materials corresponding to the process of colonization and construction of the plot, since one of the reasons that have been put forward to justify the presence of off-site ceramic material in the plots is the practice of using household waste.

The surveying campaign on the Valpierre plain was carried out in 2016, with a two-week intervention during the month of September and a shorter campaign of only three days in December (seventeen days in total). The survey was carried out by four people and was designed with the usual system of in-line surveyors with intervals of around five meters (Figure 4.8). Each shard was georeferenced individually with a GPS (Garmin GPSMAP 64s) and then placed on a map using the cartographic base of the National Geographic Institute (National Plan for Aerial Orthophotography: <http://pnoa.ign.es/productos>). The

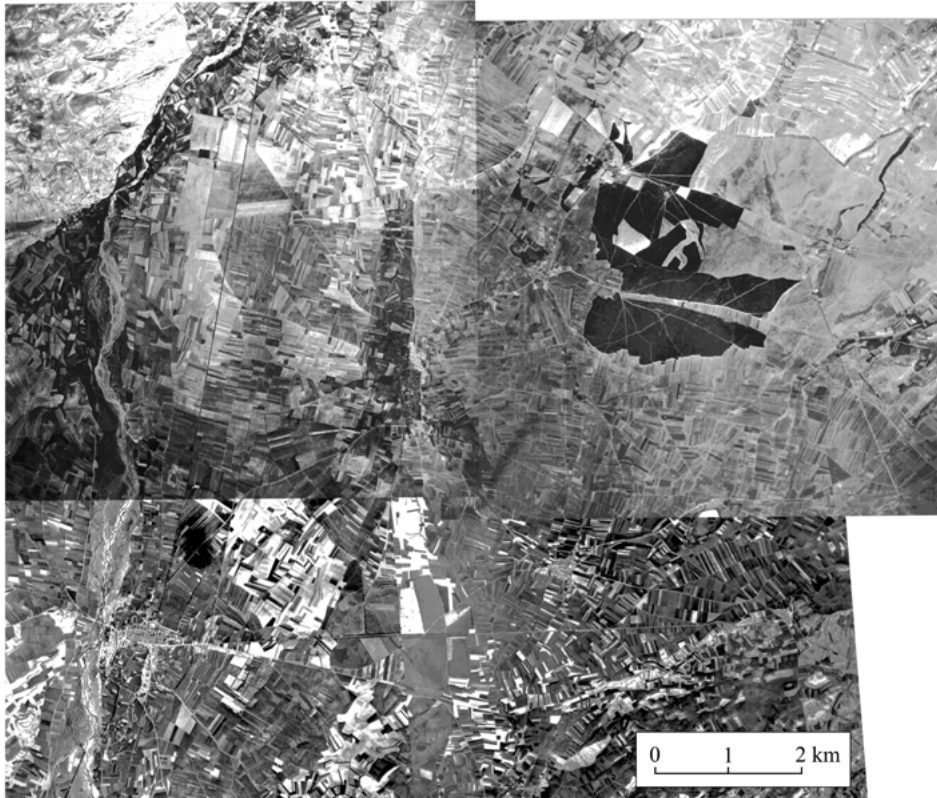


Figure 4.7. Valpierre Plain in the image from the American Flight of 1956-57. Frames 24202, 24200 (roll 239, 13-09-1956) and 45443, 45445 (roll 446, 5-06-1957). Source. Spanish Army Geographic Centre.



Figure 4.8. Surveying technique carried out on the Valpierre plain. Individual recording of fragments with GPS. Photo of 7 September 2016.

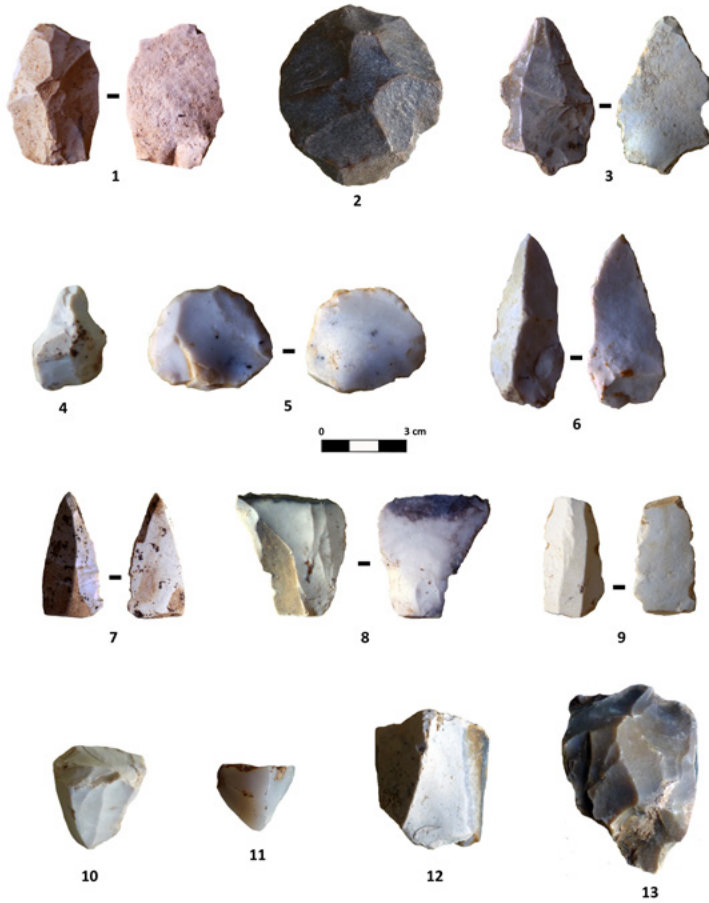


Figure 4.9. Lithic tools recovered at Valpierre 1. Levallois flake, 2. Discoid nucleus, 3. Mousterian tip, 4. Thick nose endscraper, 5. Circular endscraper, 6. Straight tip, 7. Dihedral burin, 8. Simple sidescraper 9. Back blade, 10-11. Pyramidal nucleus, 12. Prismatic nucleus, 13. Globular nucleus.

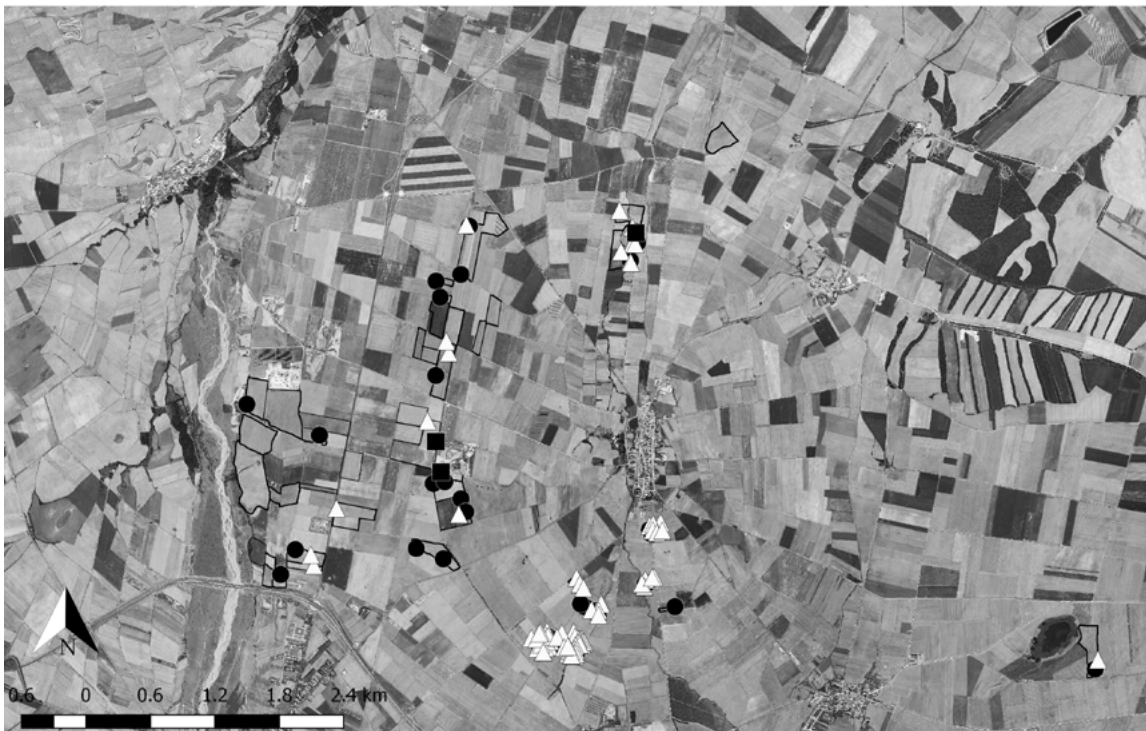


Figure 4.10. Valpierre Plain. Distribution of flint findings. Middle Palaeolithic (squares), Upper Palaeolithic (circles), indeterminate chronology (triangles). Image from the National Plan for Aerial Orthophotography (PNOA).



GIS resource used for the mapping was the open source system QGIS, 2.18 Las Palmas (<https://qgis.org/es/site/about/index.html>). This tool generates a point map in which each shard has a correspondence with a database, so that it is possible to select several visualizations and combine complex data. The total area covered by the project was 177 hectares, distributed among different areas of the space being explored.

The total number of objects recovered during the prospecting campaign carried out on the Valpierre plain was 2,131, of which the pottery comes to 1,881 (although, if the 113 individual pieces contributed by contemporary porcelain are added the total number of domestic pottery pieces rises to 1,994 fragments). The lithic material amounts to 130 pieces in total (129 of lithic carving and a fragment of polished stone axe). The remaining seven objects are diverse pieces but of little significance. Specifically, three glass fragments, two iron pieces (a nail and a hook), a hand mill and a coin from the reign of Alfonso XII (1874-1885).

## Results

### *The Palaeolithic period*

The material recovered belonging to the Palaeolithic totals 129 lithic remains made of flint (89.9 per cent), quartzite (7.8 per cent) and opal (2.3 per cent). Of these, only 48 pieces have been retouched (Table 4.1). The documented supports were nodules (12.4 per cent), cores (21.4 per cent), flakes (48.0 per cent), blades (14.4 per cent) and bladelets (3.8 per cent). The typological classification of lithic pieces was carried out according to the criteria established by Merino (1994).

In the collection of lithic tools found on the Valpierre plain, we have documented three pieces corresponding to the typological complex of the Middle Palaeolithic. These are a Levallois flake made of flint, a discoidal core of quartzite with centripetal extractions and a Mousterian point with

Type	Flint	Quartzite	Opal
Pieces esquilles	2		1
Dihedral burin	2		
Straigh dihedral burin	2		
Burin-Point	1		
Burin on truncation	2		
Debris	19	1	1
Blades	1		
Blade on truncation	1		
Blackened blades	2		
Retouched blade	1		
Bladelet	1		
Retouched bladelet	1		
Flakes	13	2	
Retouched flakes	13	1	
Nodules	14	2	
Circular core	1		

Type	Flint	Quartzite	Opal
Multiplataform cores	3		
Discoidal cores		1	
Informal cores	13	1	
Prismatic cores	3		
Pyramidal cores	4	2	
Mousterian point	1		
Point	1		
Side-scrapers	3		
Transversal side-scrapers	2		
Atypical carinated endscraper	1		
Circular endscraper	1		1
Thick-nose endscraper	1		
Simple endscrapers	7		
<b>Total</b>	<b>116</b>	<b>10</b>	<b>3</b>

Table 4.1. Typological classification and raw materials used for the Palaeolithic tools (Middle and Upper) recovered in the Valpierre survey.



retouching on both edges made of flint (Figure 4.9, nº 1-3). The set of pieces which can be ascribed to the Upper Palaeolithic is much larger (NR=45) and consists of endscrapers, burins, sidescrapers and cores (Fig. 4.9, nº 4-13). The endscrapers are the most numerous group of tools. Among them, simple ones dominate, with one thick-nose endscraper and one circular endscraper having also been found. Burins are the second most abundant type of pieces. Among them, the presence of dihedral burin and burin on retouched truncate stands out. Sidescrapers are rare, only simple and transversal ones being documented. Within the set there is also a point and a backed blade. On the other hand, the blade and bladelet cores are very abundant, especially those of the pyramidal and prismatic type. In many of the specimens we find exploitation of the cores until its total exhaustion (Figure 4.9, nº 10-13). Finally, it is important to highlight the absence of piercing tools among the recovered material.

Despite the fact that these are scattered findings and that there are a small number of retouched pieces, the presence of standardised manufacturing tools belonging to the Middle and Upper Palaeolithic makes us think that flint was exploited on the Valpierre plain over a long period of time, and there may have been a small workshop where Palaeolithic groups would have gone to collect and manufacture the siliceous raw materials. In favour of this argument, it should be noted that the lithic material appears with a certain grouping, especially an area to the south of Bañares and another to the west of this same municipality, around the road from Casalarreina to Ezcaray (Figure 4.10). Given that these are surface materials, we cannot specify their chronology any further, but we can highlight a greater quantity of pieces from the Upper Palaeolithic, which would indicate a greater frequentation of the Rioja plain by human groups during the final moments of the Palaeolithic.

### *The Neolithic and Chalcolithic periods*

The handmade pottery group is made up of 27 fragments, all of them except one (located in the small early medieval settlement of Gambomborra) from the area of the only elevation that can be seen in the whole of the Valpierre plain, a hill whose height is around 633 metres above sea level. This small hill, situated on the right bank of the River Oja, perfectly dominates the whole plain which extends from Santo Domingo de la Calzada to the south, to Villalobar de Rioja or Castañares de Rioja to the north. The ceramic concentration value on the site is 12.24 fragments per hectare (Figure 4.11).

The fragments located in the survey have diverse characteristics, all of them are handmade, but with substantial differences in terms of firing, the most common being irregular firing. The colours of the external surface (according Munsell Color Chart) are varied: brown, reddish brown, light yellowish brown, gray and red; the same as those of the internal surface: dark gray, very dark gray, reddish brown, red and black. The thickness is c. 1 cm. The presence of inclusions of quartz, generally fine-grained, is another characteristic to be pointed out, as well as the different treatments of the surfaces: smoothing, spatulating and brushing, techniques all of which can be associated without difficulty with the productions of the advanced Chalcolithic period (Figure 4.12).

It is interesting to note that within the group some differences are found in terms of the conservation of the fragments, which can illustrate the possibility of a potential settlement. The fragments located on the slope of the hill show some fresh fractures, which contrast with the rolled edges of those located in the flat area at the foot of the hill. This fact suggests the existence of a small settlement, which has now been greatly degraded by intensive agricultural work.

Among the material that could be ascribed to this period is also a fragment of polished stone axe made of sillimanite. The fragment is from the part of the heel and was found in the eastern part of the prospected area. As it is from an off-site find it is not possible to determine which cultural sequence it belongs to, as it may correspond to both the Neolithic and the Chalcolithic periods. However, given

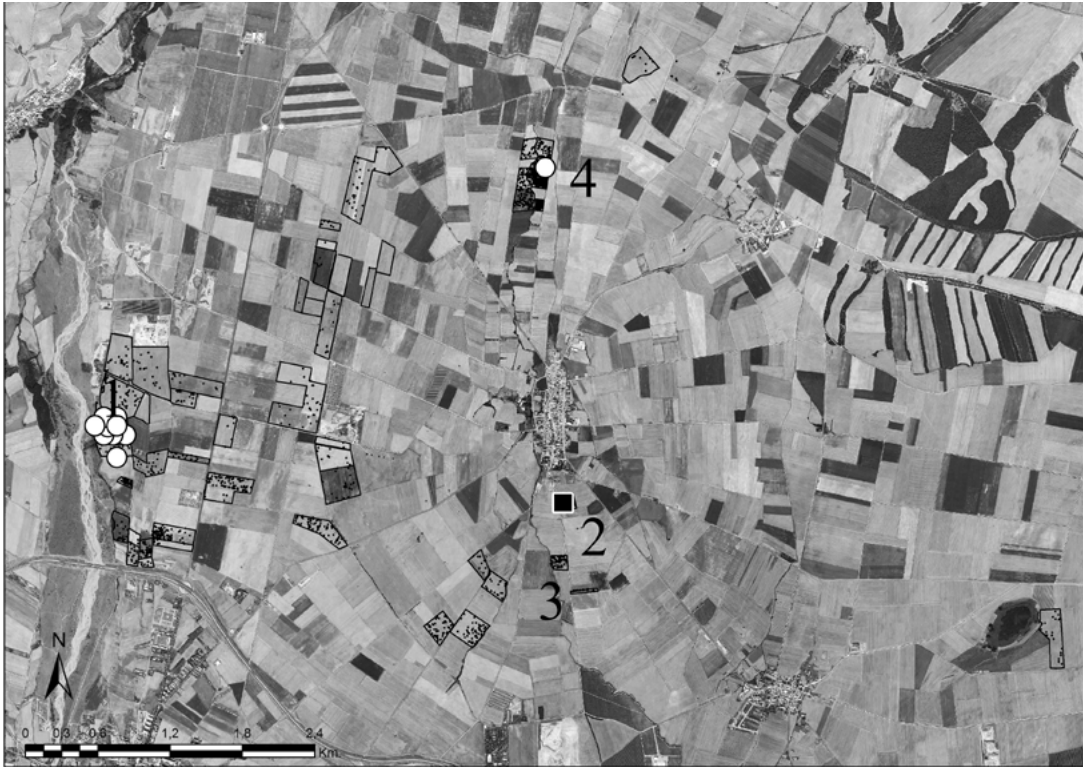


Figure 4.11. Valpierre Plain. Distribution of the hand-made ceramics (circles) in comparison with the set of ceramic findings and location of the axe fragment in polished stone (square). Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).



Figure 4.12. Hand-made ceramic fragments from the Chalcolithic period recovered at Valpierre.



Figure 4.13. Axe fragment in sillimanite recovered from the Valpierre plain.



Figure 4.14. Pottery fragments from the late Roman and early medieval periods. 1-7. Late Hispanic terra sigillata, plain type, 8-9. Late Hispanic terra sigillata, moulded type, 10. ARSW, 11. Pompeian red ware imitation (Hisp. 37t form of late Hispanic terra sigillata), 12. Pompeian red ware imitation, 13. Grey or black pottery with polished surfaces. All the fragments come from the Gambomborra site.

that there is evidence of a modest Chalcolithic occupation in Valpierre, while the materials from the Neolithic period are absent, we think that perhaps this axe fragment is associated with Chalcolithic populations (Figure 4.13).

### *Late Roman and early medieval periods*

There is no documentation of archaeological materials associated with the long period of time between the Chalcolithic and the end of the Roman period, the absence of pottery from the Celtiberian and Early Roman sequences being particularly striking. However, materials from the period that includes the late Roman and early medieval occupation are documented. This sequence is defined by the presence of late Hispanic terra sigillata, with the mould-manufactured variant of this production being particularly noteworthy, marking defined chronologies between the end of the 5th century and an imprecise date that could reach the 6th century (López Rodríguez 1985, 140 and 245-6; Paz Peralta 1991, 104, 117-9 and 228; 2008, 506-7; Dahí 2007 and 2012). The shards often appear very ground and it is possible that the number of individuals in this production is somewhat larger (some fragments have been defined as doubtful in our classification). The African terra sigillata – or ARSW – is also a chronological marker of this sequence and its production extends until the end of the 7th century (Hayes 1972) (Figure 4.14). However, the most characteristic ware of this period, as occurs in other areas of the interior of the Iberian Peninsula (Ariño Gil and Dahí 2012; Dahí 2012; Vigil-Escalera 2013; Sastre Blanco et. al. 2018, 392-6), is common cooking ware (Figure 4.15), although it must be taken into account that cooking ware extends beyond the 8th century (Retuerce 1998; Alba and Feijoo 2003; Solaun 2005; Alba and Gutiérrez Lloret 2008; Gutiérrez Cuenca and Hierro Gárate 2016; Amorós and Gutiérrez Lloret 2018). In the Valpierre survey, ten different fabrics have been identified, defined by means of a macroscopic naked eye analysis, with a binocular microscope (1x) and using the Munsell Color Chart to define the colours of pastes and surfaces (Table 4.2). Specific to this late Roman or early medieval period are some wares such as grey



Figure 4.15. Fragments of common cooking ware recovered at Valpierre. Numbers 1-3 and 5. fabric 1, numbers 4, 7 and 8. fabric 3, number 6. fabric 4, number 9. fabric 7, number 10. fabric 8, number 11. fabric 10, number 12. fabric 9



Fabric	Features	Number of shards
1	Colour of the external surface Munsell lighth red or red, in some pieces blackened by use. Colour of the internal surface Munsell lighth red or red. Paste reddish brown or red (in a few specimens gray). Thickness c. 0.5-1 cm. Non-plastic inclusions fine-grained, white and transparent (probably quartz or quartzite) and black.	38
2	Colour of the external surface Munsell pink. Colour of the internal surface Munsell pink. Pink paste (in some cases gray). Thickness c. 0.5-1 cm. Non-plastic inclusions from fine to coarse, white and transparent (probably quartz or quartzite). Scarce non-plastic red inclusions, from fine to coarse. In some pieces, very abundant non-plastic white inclusions.	15
3	Colour of the external surface Munsell reddish gray, dark gray or gray. Colour of the internal surface Munsell reddish gray, dark gray or gray. Thickness > 0.5 cm. Non-plastic inclusions fine-grained, white and transparent (probably quartz or quartzite) and black. Scarce non-plastic coarse inclusions white and transparent.	4
4	Colour of the external surface Munsell brown or olive brown. Colour of the internal surface Munsell very dark gray. Paste greenish brown or gray. Thickness >1 cm. Abundant non-plastic inclusions fine-grained, white and transparent (probably quartz or quartzite) and black.	3
5	Colour of the external surface Munsell, lighth brownish gray or lighth yellowish brown. Colour of the internal surface Munsell pink. Paste in varied tones, from pink to greenish gray. Thickness > 0.5 cm. Non-plastic inclusions from fine to coarse, white and transparent (probably quartz or quartzite). Scarce fine-grained, black non-plastic inclusions.	2
6	Colour of the external surface Munsell very pale brown or yellow. Colour of the internal surface Munsell very pale brown or yellow. Yellow paste. Thickness > 0.5 cm, Non-plastic inclusions from fine to coarse, white and transparent (probably quartz or quartzite) and black. In some pieces, red non-plastic inclusions.	
7	Colour of the external surface Munsell very pale brown or yellow. Colour of the internal surface Munsell very pale brown or yellow. Gray paste. Thickness > 0.5 cm. Non-plastic inclusions fine and medium sized, white and bright (mica).	
8	Colour of the external surface Munsell lighth red or red, in some pieces, blackened by use. Colour of the internal surface Munsell gray. Paste from reddish brown to gray. Thickness > 0.5 cm. Non-plastic inclusions fine-grained, white and transparent (probably quartz or quartzite) and black. Scarce white coarse inclusions.	
9	Colour of the external surface Munsell lighth red or red. Colour of the internal surface Munsell lighth red or red. Gray paste. Thickness c. 0.5-1 cm. Non-plastic inclusions fine-grained, white and transparent (probably quartz or quartzite) and black. Scarce white and black coarse inclusions. Very similar to the fabric 1.	
10	Colour of the external surface Munsell gray or grayish brown. Colour of the internal surface Munsell gray or grayish brown. Grayish brown paste. Thickness c. 0.5 cm. Non-plastic inclusions from fine to coarse, white and transparent (probably quartz or quartzite).	
Total		74

Table 4.2. Description of the common cooking pottery fabrics recovered in the Valpierre survey.

or black pottery with polished or burnished surfaces, a ware that we have identified in the ceramic contexts of the Duero Valley and that has its beginning in the first years of the 5th century (Ariño Gil and Dahí 2012; Dahí 2012), represented in Valpierre by a single fragment, as well as the Pompeian red ware imitation, dated around the 6th century (Ariño Gil and Dahí 2012; Dahí 2012, 225), with only two fragments in Valpierre (Figure 4.14). Thin-walled pottery, although characteristic of high-imperial contexts, are not uncommon in the late period, albeit in very small numbers (Ariño Gil *et al.* 2015). Thirty-two fragments have been documented of a type of ceramic which we have called common grey pottery for which we have found no parallels or dating (Figure 4.16). For example, nothing similar to this production appears among the ceramics of the Basque Country with chronologies between the 8th and 13th centuries (Solaun 2005). Nevertheless, it is a relatively standardised production. Its colour is uniformly grey on both surfaces (Munsell grey, dark grey), with pastes that are also grey in which fine white and transparent non-plastic inclusions can be identified (probably quartz or quartzite). Some



Figure 4.16. Common grey pottery fragments recovered at Valpierre.



Figure 4.17. Valpierre Plain. Distribution of late Hispanic terra sigillata, plain type (circles), late Hispanic terra sigillata, moulded type (squares) and possible undetermined late Hispanic terra sigillata (triangles). Sites: 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).

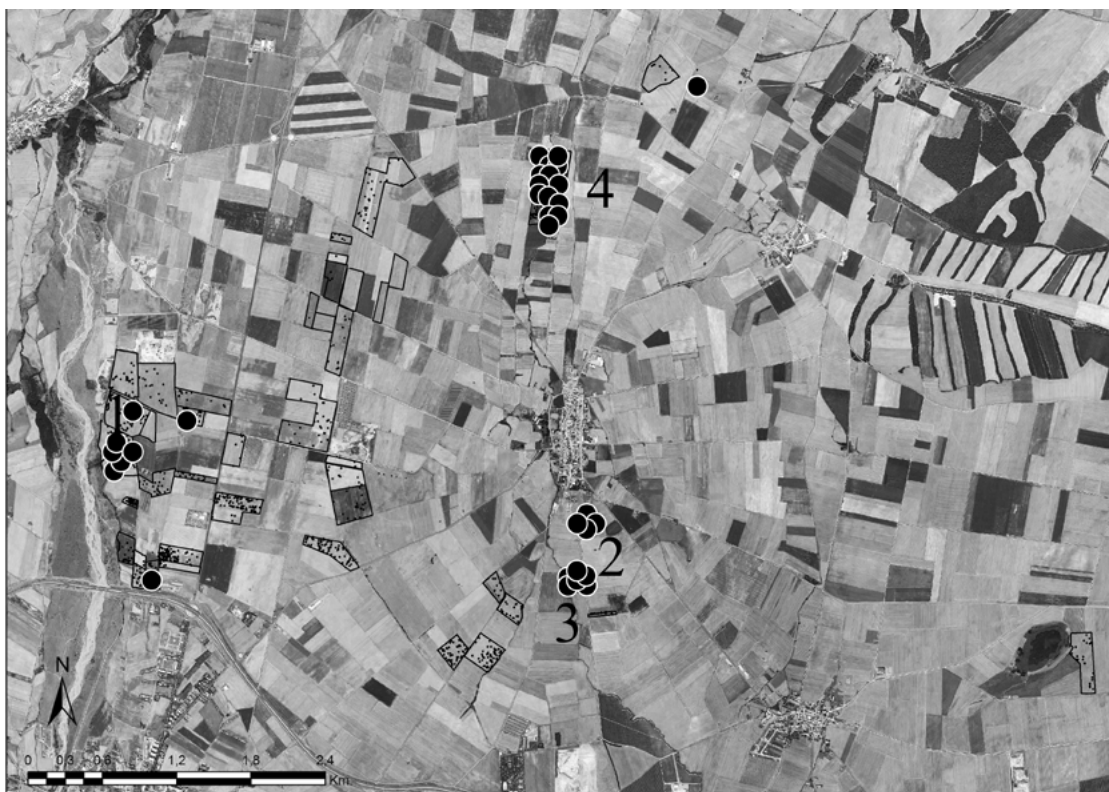


Figure 4.18. Valpierre Plain. Distribution of the common cooking ware. Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).

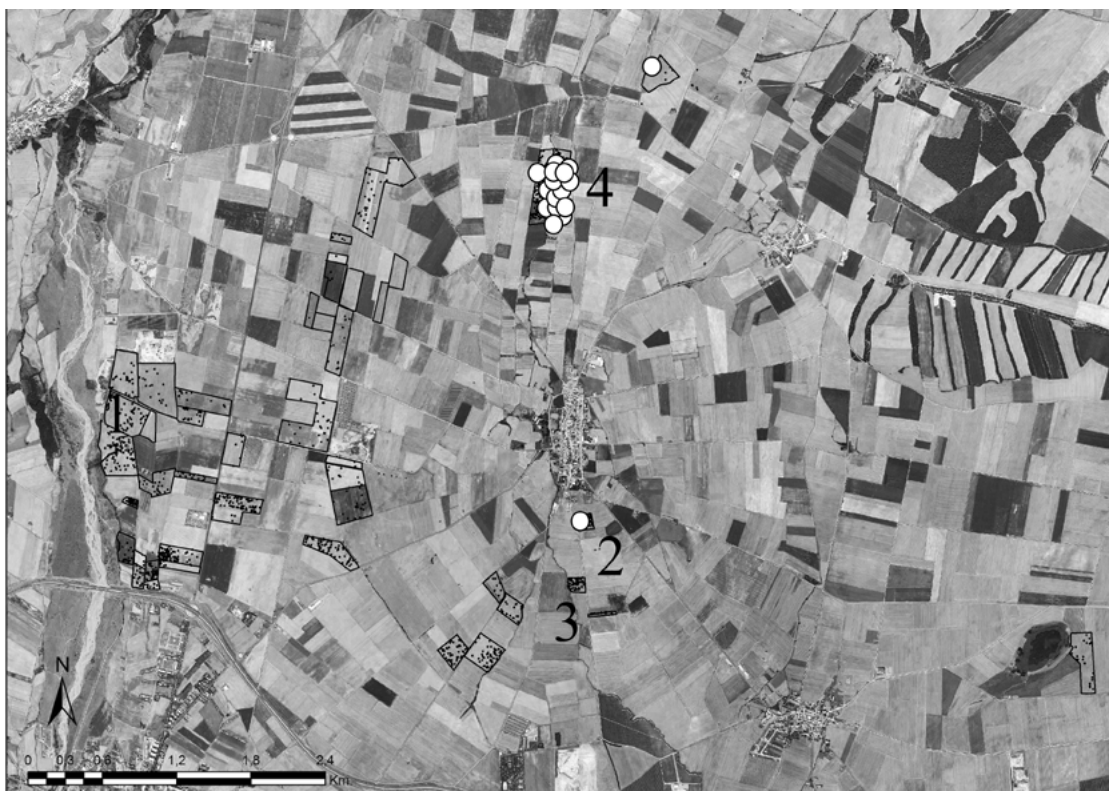


Figure 4.19. Valpierre Plain. Distribution of the common grey pottery. Sites. 1) Hill 663; 2) Los Manatíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).

Site	H-Mp	TSht plain t	TSht mould t	ARSW	TW	PRWI	CW
Gambomborra	1	10 (?) 7	2	1	1 (?)	2	214
	0,11	1,13 0,80	0,22	0,11	0,11	0,22	24,21
Hill 663	26	0	0	0	0	0	16
	24,53	0	0	0	0	0	15,10
Manantíos 1	0	2 (?)	0	0	0	0	22
	0	1,62	0	0	0	0	17,74
Manantíos 2	0	1 (?)	0	0	0	0	9
	0	1,88	0	0	0	0	17,00

Site	CP grey	G/BW	CCW	EW	Ind. EW	Porce	Total
Gambomborra	30	1	54	475	75	11	884
	3,40	0,11	6,11	53,73	8,49	1,25	100
Hill 663	0	0	5	56	3	0	106
	0	0	4,71	52,83	2,83	0	100
Manantíos 1	1	0	4	61	23	11	124
	0,81	0	3,22	49,19	18,55	8,87	100
Manantíos 2	0	0	7	34	2	0	53
	0	0	13,21	64,15	3,76	0	100

Table 4.3. Total numbers and percentages (in grey) of the ceramic productions recovered in Gambomborra, Hill 663, Los Manatíos 1 and Los Manantíos 2. H-Mp. hand made TSht plain pottery, t. late terra sigillata hispanica, plain type, TSht mould t. late terra sigillata hispanica, moulded type, ARSW. African Red Slip Ware, TW. thin-walled pottery, PRWI. Pompeian red ware imitation, Lamps. lamps, CW. common ware, CP grey. common grey pottery, G/BW. grey or black pottery with polished or burnished surfaces, CCW. common cooking ware, EW. traditional earthenware, Ind. EW. industrial stoneware, Porce. porcelain.

fragments of this production have lines (normally oblique) on their external surface, which seem to have been obtained by brushing the piece when the clay was still wet or in a leather hard state. We do not have any criteria for dating this ceramic, although the fact that 30 fragments appear in the Gambomborra site, associated with the typical productions of the late Roman/early medieval period, is a piece of information that may be indicative of its chronology. However, a dating in the full medieval period cannot be ruled out, considering that it is possible that, rather than being associated with the late Roman or early medieval sequence, this pottery is indicative of a continuity of human occupation in the same space.

The ceramic material of the late Roman and early medieval period cannot be strictly speaking considered off-site, as it appears to be concentrated in four well-defined spaces, with the sole exception of a single fragment of common grey pottery, to the north of Bañares (Figures 4.17-4.19, Table 4.3). At Hill 663, where the small Chalcolithic settlement referred to above was detected, five fragments of common cooking ware were recovered in addition to the material from the prehistoric sequence (plus another three fragments in its immediate surroundings and a fragment of common pottery which could perhaps correspond to a late Hispanic terra sigillata which had lost its engobe). The low values of the ceramic productions of the sequence hardly indicate anything other than the fact that this space was frequented in the late Roman or early medieval period, which is justifiable because it is a level that dominates the surrounding space, something unique in the plain.

To the south of Bañares two small polygons can be detected with a concentration of materials associated with the late Roman or early medieval sequence (Manantíos 1 and 2). The ceramic concentration value



on Manantíos 1 is 83.22 fragments per hectare. The site must be considered a small settlement dated in the late Roman / early medieval periods. Manantíos 2 shows a low value of shard densities (39.84 fragments per hectare) and its interpretation must remain open. It may, after all, be off-site material related to the nearby town of Bañares.

The fourth of the areas of concentration of late Roman and early medieval material is Gambomborra, a small settlement north of Bañares, on the right bank of the Zamaca stream. The ceramic concentration value on the site is 70.61 fragments per hectare. Although the numerical values of the productions of the late Roman and early medieval sequence are low, two factors lead us to consider that there was a small, stable settlement here. For one thing, the relatively high values of common cooking ware (54 fragments) and common grey pottery (30 fragments), and for another, the varied representation of ceramic productions characteristic of the period under study (late Hispanic *terra sigillata*, late Hispanic moulded-manufactured *terra sigillata*, ARSW, grey or black pottery with polished or smoothed surfaces and Pompeian red ware imitation pottery).

### ***The modern and contemporary sequence***

Most of the off-site material recovered in the Valpierre survey (and in overwhelming proportion) is made up of the productions that we have classified as earthenware (961 fragments), industrial stoneware (428 fragments) and porcelain (113 fragments). We define as earthenware the production of traditional pottery intended for both the kitchen and the table (Figure 4.20). The surfaces of this production are always covered with glaze, which may be of different colours, although the most abundant type (498 fragments) is made up of a transparent glaze which, when combined with the clay base, gives the pot a honey or brown colour. The formal repertoire of the honey-coloured earthenware corresponds almost exclusively to cooking pots. The glaze covers the inner surface and the outer edge of the vessel, dripping from the top to the middle of the wall. The second most abundant variety is white earthenware (203 fragments in total), usually with glaze coating on both surfaces and with a typological repertoire that indicates table service or personal hygiene functionality. The third variety, in terms of number of pieces, is yellow earthenware (186 pieces), with characteristics and functions similar to those of honey-coloured earthenware. The rest of the pieces are of varieties with other coatings of minor presence. There are 48 white and blue pieces and 26 green ones.

The term industrial stoneware is used to describe ceramic fragments which, due to their characteristics, are considered to be standardised productions of contemporary industrial pottery. Like the porcelain, these pieces can for all intents and purposes be judged as productions of the repertoire that supplies a home even today (Figure 4.21).

Only earthenware, stoneware and porcelain have a distribution in the surface of the fields that can strictly speaking be identified as off-site. These productions are present throughout the entire prospected area, in similar proportions and with associations that reflect the same distribution pattern (Figure 4.22). The analysis of the distribution model of these three ceramic groups reveals that, apparently, there is a certain relationship between their distribution and the runoff lines since the volume of fragments is particularly high in the spaces where the impact of surface runoff can be seen. It is possible that the dumping of domestic waste, with which the ceramic fragments were presumably incorporated into the fields, sought to counteract the loss of soil caused by the dragging of surface water.

It is difficult to determine the date on which this off-site ceramic material was incorporated into Valpierre's soils. The fundamental problem that makes it difficult to answer this question is that stoneware and porcelain are productions that do not offer much chronological margin for ascription and must certainly be dated to contemporary times as they are pieces that could be in use in any current

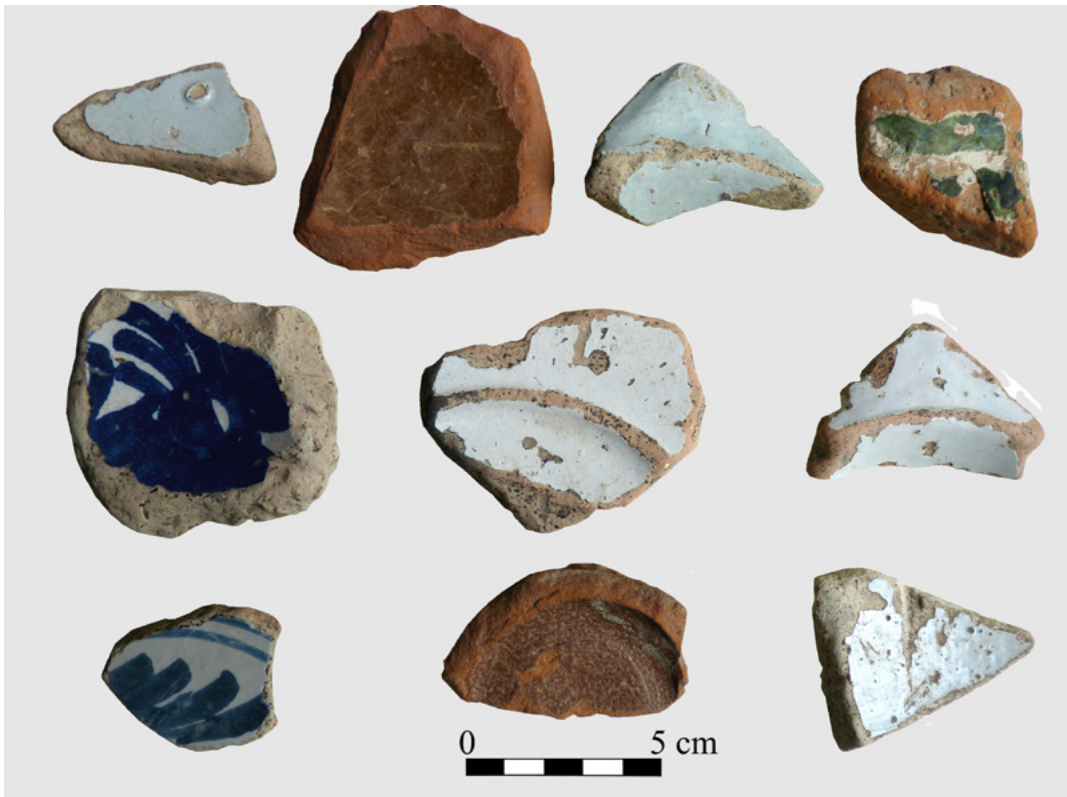


Figure 4.20. Traditional earthenware fragments recovered at Valpierre.



Figure 4.21. Fragments of industrial stoneware (1, 3-5 and 8-11) and modern porcelain (2, 6, 7 and 12) recovered at Valpierre

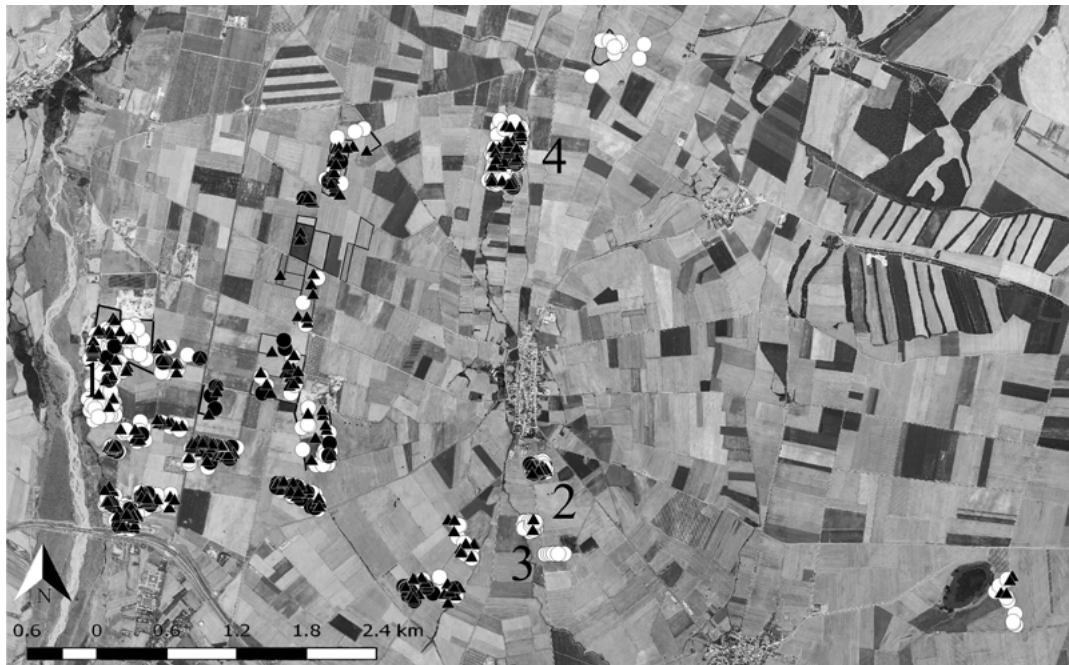


Figure 4.22. Valpierre plain. Distribution of traditional earthenware (white circles), industrial stoneware (black triangles) and porcelain (black circles). Sites. 1) Hill 663; 2) Los Manantíos 1; 3) Los Manantíos 2; 4) Gambomborra. Image from the National Plan of Aerial Orthophotography (PNOA).

home in the region. However, traditional earthenware is more difficult to define chronologically since it has been produced since the late Middle Ages up until today (Coll Conesa 2011; Martín-Salas 2011; Villanueva Zubizarreta 2011). It is possible, therefore, that some of these ceramic fragments date from the late medieval or modern period. However, we think that the pottery we have recovered in Valpierre should be largely dated to the contemporary period (19th and 20th centuries). It is likely to have been incorporated into the cultivated soils of Valpierre in conjunction with stoneware and porcelain since its distribution pattern is the same. We estimate that the most likely starting date for this phenomenon of dispersion of ceramic material through cultivation land would be after the mid-twentieth century and would be related to agrarian mechanization.

## Discussion

The archaeological survey carried out on the Valpierre plain confirms its importance as a humanised landscape with a long sequence of use from the Middle Palaeolithic to the present day. The evidences of occupation are, however, intermittent, being revealed in very specific cultural periods (Middle and Upper Palaeolithic, Chalcolithic and the late Roman period or the early Middle Ages). The absence of vestiges of periods that usually present a greater abundance of testimonies in archaeological prospecting, specifically the Iron Age, the Roman period and the Middle Ages, should be highlighted. This phenomenon is even more striking if we consider that there are significant indications of the exploitation of the Valpierre plain in Celtiberian and Roman times. Valpierre was almost certainly part of the territory of the Celtiberian city of *Libia*. In Roman times the area was the subject of a cadastral organisation that gave it a regular plotting of land. Furthermore, the agricultural area was connected to the town centre by a road that must have allowed flow traffic for people and goods. The absence of off-site ceramic material from these periods could be explained by the distance from *Libia*; carrying household waste to the fields of Valpierre would have been an expensive task. Stranger, however, is

the total absence of settlement from the Roman period as Valpierre has all the conditions that were attractive for the models based on which Rome exploited the land. It is possible, however, that this absence is the result of chance discoveries and that an extension of the surveying area would detect settlements it did not reach, especially on the margins of the watercourses that run through the plain.

The absence of off-site ceramic material from the medieval period is even more surprising, and more so still given the high density of medieval population that characterises our area of study and the proximity of some villages to others. Although the area to the north of Santo Domingo de la Calzada was prospected quite intensely, no ceramic material was detected in this zone close to the town, a period in which Santo Domingo was a centre of great relevance on a regional level. To the south of Bañares, the pottery concentration points of Manantíos 1 and 2 could be explained – given their characteristics – as areas of dispersion of off-site material and could be linked to the practice of fertilising with domestic waste from Bañares.

## Conclusion

Despite the existence of ancient and medieval grouped habitat in the region –the city of *Libia* and a dense network of medieval villages–, the Valpierre plain has not provided off-site material related to the fertilization of the fields from the period comprised between the Celtiberian times and the late Middle Ages. The intensive survey carried out on the Valpierre plain reveals that the only authentic off-site ceramic material belongs to recent productions of traditional earthenware, industrial stoneware and porcelain. The pattern of dispersion of these wares indicates that they are materials that have been incorporated to the fields as a consequence of cultivation practices, probably accompanying other domestic waste. The way in which they are distributed shows that this waste, in addition to being used to fertilize the crops, was also used to try to counteract or correct the dragging created by the significant surface runoff, especially in the western part of the Valpierre plain. Runoff seems to have also been an important agent in the configuration of the landscape and could explain why, in the western zone of the plain, the *kardines* are very well conserved, while the *decumani*, transversal to the course of the surface waters, have completely disappeared.

## Acknowledgements

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# Roman rural landscapes in the north-eastern sector of the Duero basin. Field survey and aerial archaeology in the Pisuerga-Arlanzón basin.

Jesús García Sánchez<sup>1</sup>

## Abstract

In this paper, I reflect on the artefactual field survey of the hinterland of Roman *Segisamo*, present-day Sasamón, Burgos, focusing on the methodological aspect and recording *off-site* material evidence. The field survey data is compared to other proxies, such as satellite (Google Earth, Yahoo Bing), airborne, and UAV aerial photography, to gain knowledge about Roman landscapes and diverse dwelling types. New archaeological evidence from the hinterland of two Roman cities, *Segisamo* (Sasamón) and *Deobrigula* (Tardajos) is presented to pursue the interpretation of the landscape and territory exploitation in Roman times. The aerial images were compared to other field survey data, such as site catalogues or official regional gazetteers.

## Keywords

Field survey; Off-site record; Landscape archaeology; Aerial photography; Duero valley.

## Introduction

Archaeological prospection is a consolidated research method in the Mediterranean basin due to the rich theoretical and methodological apparatus developed mainly since the 1970s by the New Archaeology. Since then, regional studies developed in Italy and Greece by Anglo-Saxon researchers or within this intellectual circle (the most recent review in Attema *et al.* 2020). The survey of various Hellenistic cities and landscapes of Boeotia in Greece, carried out by John Bintliff and Anthony Snodgrass (1988), has allowed the introduction of new concepts and research frameworks such as the so-called ‘manure hypothesis’ as a proxy of the activity of human societies on a regional scale. Therefore, as direct information on population density and the degree of economic activity in the long-term landscape.

The *manure hypothesis* (Wilkinson 1982; Bintliff, Howard, and Snodgrass 1999), introduced the concept of *off-site* record into the archaeological literature and opened new doors to the study of the landscape as a *continuum* (Campana 2018), beyond the boundaries of single sites. This concept, however, was not without strong criticism. Fentress (2000) points to hyper-intensity of this survey as a cause for the impossibility of regional or large-scale interpretations. Moreover, *off-site* survey was not endorsed by those who observe the practice of field survey from different geographical contexts, such as surveys in very extensive and open landscapes in North America (Blanton 2001). American scholars portray the *off-site* Mediterranean approach as something nearly incompatible with the scale of their research. Neither *off-site* record was recognised as a conceptual framework by those who still understand the site as the sole object of analysis and reject the detailed attention required by the *off-site* record to the detriment of the spatial study only through sites that complete the big picture of the human landscape.

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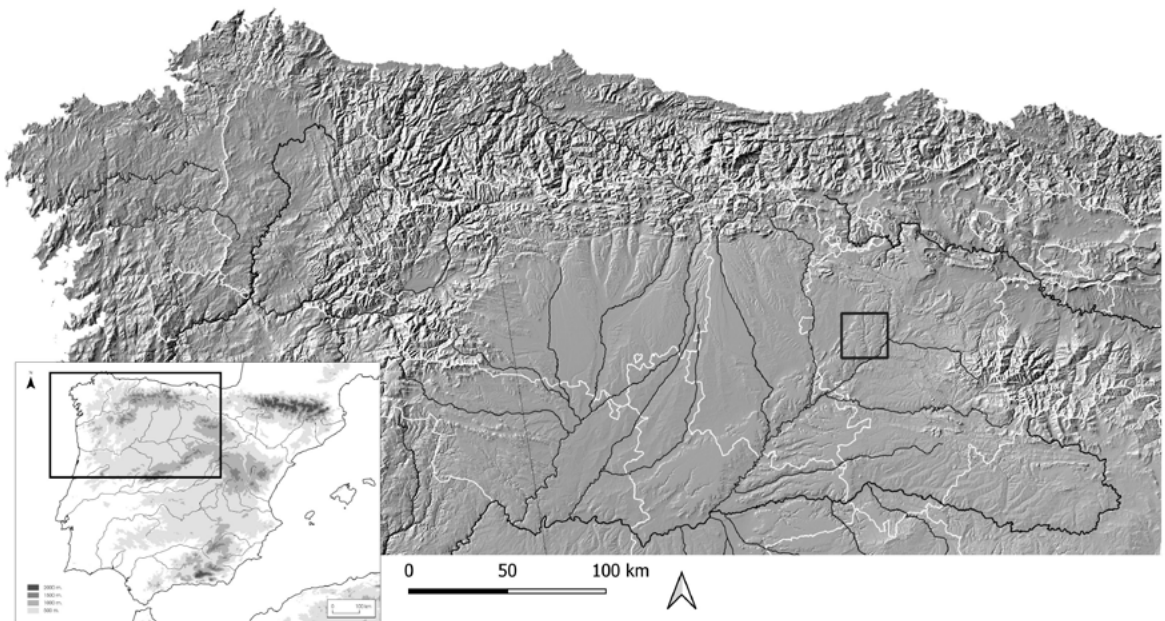


Figure 5.1. Study area in the Duero valley.

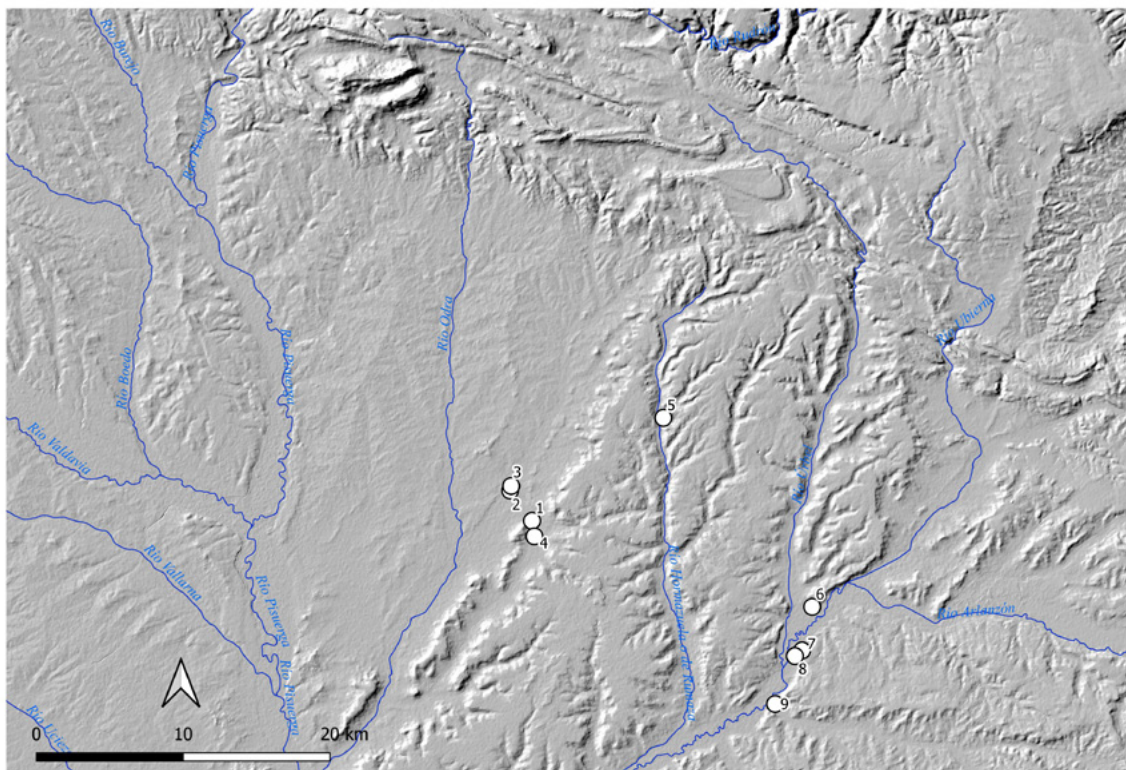


Figure 5.2. Sites mentioned in the text. La Serna (Olmillos de Sasamón); 2. Tisosa (Sasamón); 3. Trisla (Sasamón); 4. Carrecastrillo (Olmillos de Sasamón); 5. Mansegar (Manciles); 6. Quintanal (Tardajos); 7. Cuesta Grande (Buniel); 8. Molino de Arriba (Buniel); 9. Las Quintanas (Cavia)



One of the main advantages of field survey is its adaptability to different research contexts and the possibilities of integration with other types of methods. i.e. the field survey assisted with GPS technology (Attema *et al* 2020, Grau Mira *et al.* 2021, González Reyero *et al.* 2019). The very nature of archaeological prospection is the recognition of the environment as a space in which human, animal, and ecological activity are intertwined and where other natural processes also intervene. One of the aims of field survey, at any scale of analysis, micro, semi-micro, or macro, is to transmit relevant historical and spatial information using thematic cartography, not only dots on a map (Witcher 2006)

This last point is not without an exciting critique, for translating reality to a 2D digital map implies a series of decisions deeply rooted in western rational thinking that can prevent different human capacities from understanding space. This discussion stems from an ongoing line of thought that advocates the use of GIS (GIS-critique) (Barceló and Pallarés 1996; Hacigüzeller 2012) in a reflexive way. Thus, to move away from the 'black boxes' offered by software providers, which are often opaque to the end-user, i.e. archaeologists who transfer their work results to a desktop GIS (ArcGis, QGIS, etc.).

### **From the settlement pattern study to prospecting**

Between 2008 and 2011, an *off-site* field survey was carried out in the territory of the Roman city of *Segisamo* and the surroundings of the Late Iron Age *oppidum* (García Sánchez 2012, García Sánchez and Costa-García 2019) of Cerro de Castarreño (Olmillos de Sasamón). This project intended to study the transition from the indigenous world to the Roman period in the Odra-Pisuerga interfluvium using spatial analysis tools. In previous works (García Sánchez 2012), the pre-roman and Roman settlement pattern and its relationship with the territory was studied from an economic perspective since it emphasised the economic orientation of ancient sites. This approach leaves aside ritual or cultural aspects that complete the big picture of the society-landscape relationship. Despite the abundance of legacy datasets found in previous scholarship and official inventories, we still lack data on different types of sites that would allow us to recognise the wide range of human activity in the space, from productive spaces (working areas, infrastructures, marketing) to ritual ones (rural temples, necropolises, etc.) (Alcock and Rempel 2006). Projects oriented to documenting rural landscapes elsewhere in the Iberian Peninsula are achieving great results (Tejérizo 2022; Simmer and Revilla Calvo 2017).

Recent work led us to consider that the Late Iron Age settlement pattern is the best indicator of the social structure of the indigenous societies populating the fringes of the Duero valley (i.e., Sacristán de Lama 2011). Settlement patterns are indicative of the military and civil organisation of the Roman state and of the change that took place in the societies occupying this area when the *oppida* driven organisation of the landscape disappeared.

The assumption that the settlement pattern centred on large hillforts or *oppida* between the foothills of the Cantabrian mountain range and the Duero valley points to a social structure based on the generalised conflict between the indigenous societies, led by the military aristocracies. These aristocracies are known thanks to the necropolis in Vaccean or Celtiberian sites in the Duero valley, and necropoleis associated with Autrigon settlements in the Cantabrian mountain range (Jimeno *et al.* 2004; Ruiz Vélez 2003, Licerias Garrido 2022). Despite the presence of large fortified settlements such as Monte Bernorio (Torres Martínez 2007) or La Ulaña (Cisneros Cunchillos 2005), the pattern contemplates the possibility of small fortified settlements that would hypothetically serve as a refuge for small communities. Some examples of this type of fortified settlement pattern could be the hillforts of the Burgos region of Las Loras. The field survey of several of them, such as Peñas de Albacastro (Icedo, Villadiego), demonstrates that these sites could be dated to a so-called Classical period of the Late Iron Age thanks to the discovery of characteristic ceramic materials (pottery) and structural elements, similar to significant sites as the neighbour Ulaña hillfort.

The indigenous populations (Vaccean or Turmodigi as described by Latin sources) who inhabited the valley of the Pisuerga river in Palencia and the rivers Odra, Brullés, and Arlanza in Burgos had a settlement pattern centred almost exclusively on the large fortified *oppida*. Some of these are exceptionally large, such as the aforementioned Monte Bernorio or La Ulaña, and serve as the basis for Sacristán de Lamas's proposal of the Vaccean emptiness model. This model was built upon the evidence of large settlements. Nevertheless, the critical analysis of the archaeological data, and new surveys, allows us to detect other types of sites beyond the main category, i.e., the dump area related to a site in El Espinillo (Villalibado) (García Sánchez and Carmona Ballesteros 2017), or the isolated necropolis and possible settlement of Villamorón (Schüle 1969).

Using data from large-*oppida* across the Duero valley, Sacristán de Lama defined a model termed 'vacíos vacceos' (Sacristán de Lama 1989; 2011), emphasising the regularity of the uninhabited spaces around the large fortified settlements, territories that specific *oppida* would control. This landscape model could be interpreted as a sizeable liminal space without direct control by a community and subject to the activities of raiding, looting, and pillaging by the warrior aristocracies, which only increases their access to prestige goods, thus benefiting from a coercive system for the rest of the population. Furthermore, the control of liminal spaces also allows the development of activities of a supra-regional nature, such as the transhumance of livestock and herds. In this aspect, the pacts between individuals and communities through *tessarae hospitales* (Torija and Baquedano 2007) so characteristic of the Late Iron Age would make sense.

In this chapter, the interest is in the development of the peasantry and the lower strata of society between the world of the *oppida* and the Roman colonisation of the territory that was consolidated in the Imperial period. Of particular interest is demonstrating how this process could be traced using field surveys and other non-invasive methodologies, such as aerial reconnaissance. Roman peasantry (Bermejo Tirado and Grau Mira 2022) is a pushing field of research that must be taken into account in the forthcoming projects implemented in the area as the only means to create a comprehensive history of the Roman period in the Duero valley.

The occupation of the *oppida* meant a social control of the peasantry and artisans by the warrior aristocracies within the hillfort's physical limits. The protection of these aristocracies was necessary given the lack of control of the bordering space. On the contrary, the beginning of Roman rule, the end of *indigenous warfare*, and the beginning of the *pax romana* marked the beginning of the expansion of the 'Late Celtiberian' and Roman settlement throughout the Duero Valley. This situation peaked in the Late Roman period with the construction of large villas and manor estates and their subsequent transformation into the earliest village communities (Tejerizo García 2017; 2022; Escalona 2009, 126).

The following sections will explore the role of our off-site archaeological survey carried out since 2008 to approach the materiality behind our hypothesis about the Roman occupation of the Odra-Pisuerga interfluvium.

### **Off-site field survey**

The off-site archaeological survey covered a transect of circa 1800 ha. west of the Roman town of *Segisamo*, Sasamón (Burgos) (García Sánchez 2018; García Sánchez and Cisneros Cunchillos 2013), including the surrounding lands of the Cerro de Castarreño, Olmillos de Sasamón with the aim of documenting the material trace of the exploitation of the territory linked to opposing occupation patterns. Cerro de Castarreño hillfort site (García Sánchez and Costa-García 2019) was occupied from the 8th century BC until the last decade of the 1st cent BC. From 29 B.C. onwards, the presence of the Roman army in the area on the occasion of the Cantabrian Wars (29-19 B.C.) probably forced the abandonment of the

*oppidum* and the foundation of the *ex novo* city of *Segisamo* (López Noriega 1997; 1998), whose foundation could date back to the last decade of the 1st century B.C.

The site gazetteer compiled by Abásolo (1978) and the archaeological inventory of Castilla y León (Ruiz Zapatero and Fernández Martínez 1993) provides minimal data about settlement density within the proposed survey transect west of Sasamón. Therefore, we considered that this survey area could be relevant for tracing the material trace of human activity detached from the boundaries of the ‘archaeological site.’ In addition, one of the main objectives of this research was to track the evolution of techniques and methods employed in other Mediterranean regions, and to date, with little application within the peninsular survey traditions.

One of the main concepts to be tested is the study of the ‘artefact carpets’ of archaeological material linked to places of occupation and the extensive use of the territory with the aim of : a) discarding ceramic and organic materials from domestic environments; b) consciously increasing the productivity of the countryside thanks to the change in the properties of the soil. This type of record, also known as ‘background noise’ (Gallant 1986; Mayoral and Uriarte 2011), is key to offering new interpretations of the impact of rural communities on the environment and the intensity of this process, and its persistence over time. In the Iberian Peninsula, this type of study has gained great predilection associated with the technique of GPS geolocation of the primary item of study, ceramics. The geolocation of artefacts on a semi-micro scale (Mayoral Herrera *et al.* 2009; Garcia-Sanchez 2013; Grau Mira 2017, Pérez-Aguilar 2021) serves as alternative to extremely intensive surveys where the entire *off-site* record is studied and classified in a detail that only makes it possible to conduct campaigns over time or relying on large research teams, the paradigmatic case of this is the Beotian survey (Bintliff, Howard, and Snodgrass 2007).

### **Survey methodology**

The general lines of the field survey carried out in the Segisamo territory between 2008 and 2011 have already been published elsewhere (García Sánchez 2012, García Sánchez and Cisneros Cunchillos 2013). This survey follows the criteria (Mattingly 2000), used by research projects in the Mediterranean and whose best example is the survey of the Biferno valley developed by Barker (1995). Barkers aims to establish a relationship between the development of the Hellenistic landscape and the secular isolation or stability of certain forms of occupation of the territory of the Molise region, in the South of the Italian peninsula.

The recording methodology of archaeological materials was the geolocation with a hand-held Garmin GPSmap 60cx GPS, organised in three steps according to the interest of the materials for the achievement of the survey objectives.

1. The first step was to difference broader chronologies using *waypoint*’s symbol to plot modern materials (glazed materials, earthenware, etc.) and pre-modern ones (oxidising or reducing pastes without glaze or other characteristically recognisable productions such as *terra sigillata*).
2. The second step includes the description of ancient materials in paper forms in which GPS’s metadata (receiver number, date, and waypoint identifier) and the description of the materials are recorded; in this step, they record i.e. building materials such as tegulae or other laterite material, loom weights, etc.).
3. The third and final step consists of the collection of the most diagnostic materials, which could be used to characterise the functionality and chronology of the recorded material scatters. Archaeological materials are registered with GPS by modifying their symbology, registered in the documentation of the second step, and bagged regarding the metadata already noted.

Subsequently, the materials were analysed and documented in the laboratory. This method allows us to inspect the generated point cloud with different degrees of spatial resolution, which will be necessary when considering further geospatial analyses of the Roman landscape. In addition to the recording of artefacts, the use of GPS also allows us to accurately record the track followed by the surveyors involved in the process and thus calculate the percentage of areas prospected.

The field survey was conducted in field plots with similar land uses or visibility conditions. Moreover, other contextual data such as visibility, presence of modern material are recorded. The rich archaeological and landscape information was analysed under the light of a multi-scale method using the geographical concept of MAUP (Modifiable Area Unit Problem). MAUP states that the results of a geostatistical analysis can be related to the size of the basic units of aggregation of the data (Dark and Bram 2007; Wong 2004). Our registration method will allow us to analyse the data based on step grids from 10-20 metres, depending on survey intensity, to 100 metres or more, for smaller-scale images.

One of the most exciting elements that could be developed through geolocated artefact recording is the definition of site contexts on a quantitative and spatial basis. These areas of higher material densities were defined as sites instead of the traditional denomination of settlements. The former implies activity, and the latter a place of human occupation. However, the concept of site is associated with that of an indeterminate area of activity manifested on the surface by a series of materials grouped in greater or lesser density and is contrasted with the concept of *off-site*, the action that takes place beyond the limits of what we consider to be a site (Bintliff 2000; Dunnell and Dancey 1983; Caraher, Nakassis, and Pettigrew 2006). While density thresholds (5 fragments of material per square metre) are used in the Mediterranean area to establish the boundaries of a site while surveying (Stek *et al.* 2015; Attema, Burgers, and Van Leusen 2010), the management of geolocated data allows a quantitative study of ceramic scatters and their classification as a possible site, or their inclusion in more intensive sampling programs (Mayoral Herrera, Cerrillo Cuenca, and Celestino Pérez 2009; Bintliff 2013; García Sánchez 2013a, Grau Mira *et al.* 2021). The point cloud can easily be interpolated into a surface representing the continuum of data as density surfaces calculated in a GIS, either by applying traditional methods such as Nearest Neighbour or Interpolated Weighted Mean (Conolly *et al.* 2020) or by capturing the percentage of a probabilistic distribution (Pelgrom *et al.* 2014; Beyer 2004).

In the case of the *off-site* survey of the territory of *Segisamo*, a strategy for the *in situ* recording of archaeological sites was not defined, but it became evident even in the field that several concentrations of material were due to the presence of buried structures, some of them even of some importance, such as the suburban site of Tisosa, which was the subject of a detailed study in subsequent phases of the study (García Sánchez and Cisneros 2014; García Sánchez 2013a).

### **A holistic rural landscape**

One of the fundamental elements of modern field surveys is the capability to integrate (Chapman 2006) new data layers that enhances results. At the same time, new data makes geospatial analyses developed with geolocated point clouds more comprehensible.

In this section, we will focus on aerial archaeology to broaden the empirical data and contextualise the material evidence of Early and Late Roman periods located by the field survey around Roman *Segisamo*.

Aerial photography for archaeological landscape reconnaissance has enjoyed great predilection almost from the very moment of the invention of photography (Campana and Piro 2008); Its effectiveness in the type of landscape and soil of the Duero Valley (del Olmo 2017; 2006; Ariño Gil, Gurt i Esparraguera, and Palet Martínez 2004; Liz Guiral and Celis Sánchez 2009; García Sánchez and Costa García 2020; Orejas,



Ruiz del Árbol Moro and López Jiménez 2002; García Sánchez 2013b; Didierjean and Abásolo 2007) is well-known and keeps on producing great results fostered by the incorporation of new sensors and geospatial datasets (García Sánchez and Costa-García 2021, Fiz *et al.* 2021). In the present case, we will focus on satellite imagery accessible through open platforms such as Google Earth, Yahoo Bing or Apple Maps, which have allowed the recognition of traces of Roman encampments on a regional scale (i.e. Menéndez Blanco *et al.* 2020). However, the use of geospatial information produced by the Spanish IDEE, such as the historical series of the PNOA (Monterroso-Checa 2017), will improve the reconstruction of sites that are not adequately visible in satellite imagery.

## Results

### *Surrounding area of Segisamo, Sasamón*

In the 2011-2012 period, oblique aerial photography (García Sánchez 2012) led to the detection of several relevant sites such as Tisosa, or the documentation of the Carrecaastro camp (Fernández-Götz *et al.* 2017), already observed by Didierjean (Didierjean, Cerdán, and Petit-Aupert 2014). In the triennium 2017-2020 several UAV flights have been planned for the documentation of already known sites in the surroundings of the Roman city of *Segisamo*, in the *oppidum* of Cerro de Castarreño, or other already known sites in the immediate surroundings of the Odra-Pisuerga interfluve, including the indigenous settlement of Castrojeriz, the Late Roman building of Santa Olalla in Olmillos de Sasamón, or several rural sites along the Odra river (Castrorrubio in Sandavol de la Reina, and La Tejera in Villavedón).

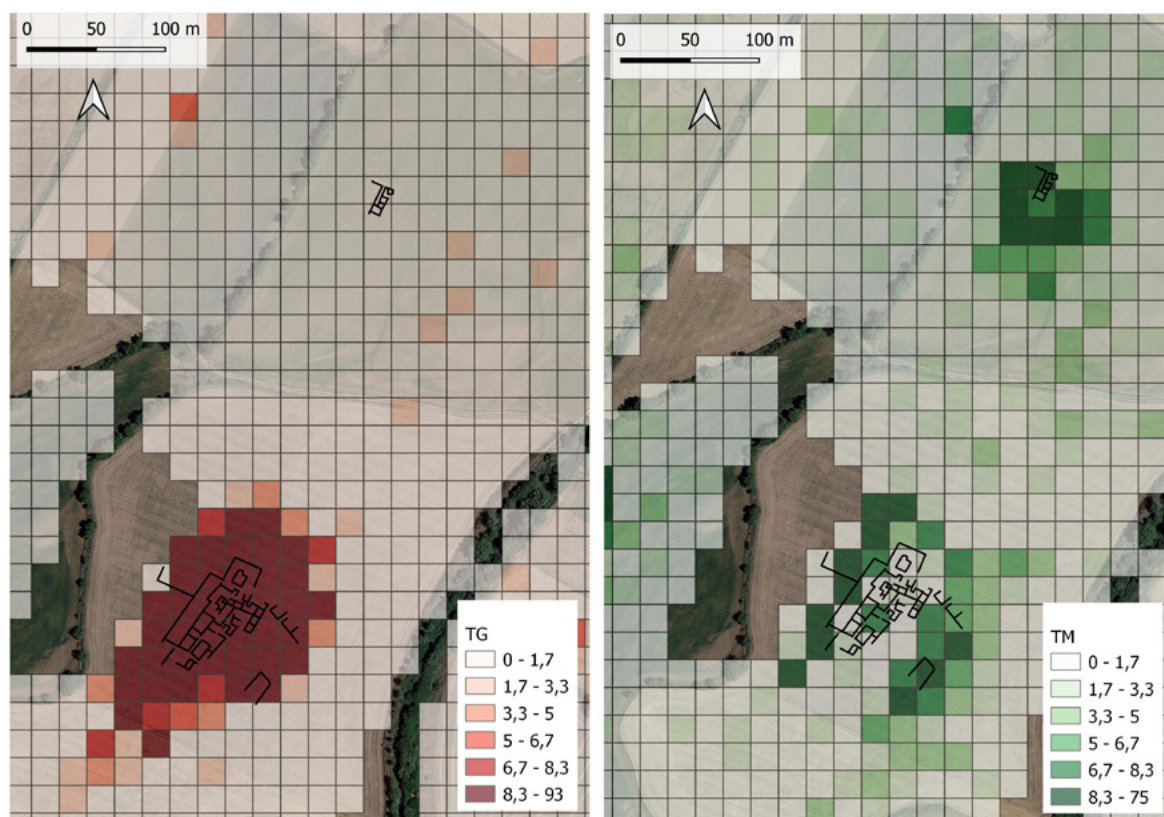


Figure 5.3. Left, density of materials (general type) at Tisosa and Trisla. Right, density of materials (modern type) at Tisosa and Trisla. Interpretation of archaeological structures from G.E. and UAV photo.

This new aerial photography campaign allows us to document those already known places again, increasing the datasets with UAV-derived Digital Surface Models, or new high-resolution images (Stek 2016; Campana 2017; Waagen 2019; Fernández-Lozano and Gutiérrez-Alonso 2016). In parallel, we have reviewed the new high-resolution frames served by open platforms (Google Earth, Bing, etc.). These diverse geospatial datasets provided the location of different elements that increase our knowledge about the Roman landscape, from the structures of the classical city to the exploitation of the rural environment through small settlements that crystallise in large complexes, the paradigmatic villa-landscapes of the Duero valley.

The area of interest extends from the river Odra to the outskirts of Burgos capital and from the Cantabrian Mountain range's foothills to the Arlanzón river valley plains. We present here the results of a survey of approximately 50,000 hectares, with particular emphasis on the Roman rural world of the territory of Sasamón associated with the *off-site* archaeological prospection.

The structures documented in the area around Sasamón coincide with some of the surveyed areas, specifically with the site of Tisosa, inventoried and published by ourselves (García Sánchez and Cisneros 2014; García Sánchez 2013); and the area of La Serna (or El Molino) next to Olmillos de Sasamón. In the case of Tisosa, we observed a series of rectangular structures organised regularly that coincide with the structures already documented in other flights over the area. Survey units 281 and 282 at the time of the initial visit (29/09/2010) were harvested and had ground visibility of 6 out of 10. However, the conspicuous abundance of ancient materials allowed the identification of this site. Thanks to subsequent visits we could classified the place as a suburban site. The chronology might be related to the foundation phase of *Segisamo* and its evolution until at least the 3rd century A.D. (García Sánchez and Cisneros Cunchillos 2014). Beyond the structures of Tisosa we find other traces in the Trisla area. These are organised in a small block measuring 20 by 7.5 metres, where we can recognise a corridor and 3-4 rooms. This area was also surveyed in 2011, nevertheless the result is quite different, in this area a small concentration of materials of modern chronology was documented, which could confirm the existence of successive phases of occupation and exploitation of the landscape of Sasamón over the Imperial and Late Roman periods.

In the case of La Serna, we see two equally organised rectangular blocks, the northernmost of which contains rooms measuring 5.5 by 9 metres on either side of a central courtyard measuring 24 by 40 metres. To the South of this first area, another possible structure of a similar type has been located, although probably of smaller preserved dimensions, but with rooms (at least 5) of a slightly larger size, measuring 7.5 by 10.5 metres. These two structures coincide with an area of high-density general type material that had not been considered a site until now. At the time of the first survey campaign (2008-2009) units 26 and 27 were ploughed, and the visibility was 8 and 6 out of 10. In addition, thanks to the inspection of the new Google Earth photograph, we have confirmed the presence of an enclosure whose chronology seems to go back to the Early Iron Age, perhaps synchronic to the first occupation of the northern spur of the Cerro de Castarreño.

At South of La Serna, next to Carrecastrillo, we find a small structure consisting of a large courtyard or room measuring 14 by 19.8 metres. This area was not surveyed in 2011, although the surrounding plots were, where abundant ancient and pre-modern archaeological materials were found.

The structures of Tisosa and La Serna can be interpreted as small production facilities under the control of the inhabitants of the town of Segisamo, or small rural communities / families that began to occupy the landscape around the Cerro de Castarreño, taking advantage of the fertile agricultural soils around the fertile plains of the Odra and Brullés rivers, and minor streams and watercourses.



Figure 5.4. Above, density of materials (general type) at La Serna, and interpretation of archaeological structures on the G.E. photo. Below, archaeological items located in prospection.



Figure 5.5. Left. Interpretation of the site of Mansegar on Google Earth photo dated 17 June 2019. Right Above, interpretation on the delimiting polygon of the Archaeological Inventory of Castilla y León. Right Below, traces of the site are visible in PNOA-NIR of 2011.



Another structure further away from the urban centre of *Segisamo* is located to the South of Isar, in the Huerta Angulo area. This structure has a preserved square floor plan measuring 51.6 by 48 metres, with a northeastern side where we can see a nave topped by a room measuring 8.1 by 7.1 metres on each side. As a modern plot boundary cuts it off, it is impossible to recognise any other elements of this structure.

Finally, a monumental building has been located in a small valley in the calcareous barren (paramo calcáreo) between Manciles and Susinos del Páramo. Although this site has already been catalogued as Mansegar site, only a wide distribution of materials of a broad Roman chronology was known. However, the site is reported as Late Roman in the Regional Archaeological Inventory. The mapping of Manciles-Mansegar have been done using PNOA RGB and Near Infrared data. However, the spatial resolution is very low in both cases. A UAV photogrametric flight was carried out in 2022 to improve the resolution of the photographic datasets. The building consists of three halls arranged in a C-shape open to the east. The upper aisle, with east and west orientation and a surprisingly regular module measures 73 by 73 metres on a side. The site is organised around a large courtyard, perhaps a peristyle with small rooms measuring 7 by 8 metres. To the north of this peristyle could be one of the entrances, which two small square structures would have flanked. To the east of the peristyle, the aisle is developed with other larger rectangular rooms or with no apparent partitioning. In the northwest sector we could perhaps find a small atrium, although the data recovered from this area are very fragmentary in all the available images.

The aisle, which runs north-south along a length of 52 metres, is only 20 metres wide, and apart from the small rooms, the apse-shaped top of one of them stands out. Finally, the southern aisle, with an east-west orientation and 36 by 78 metres on each side, is made up of rooms with little depth and very elongated, which are difficult to interpret. In addition, there is a large semi-circular apsidal room 16.7 metres in diameter, possibly a dining area linked to the enjoyment of the great landowners of the northern plateau in the Late Roman period. The three naves are arranged around a large courtyard on the west side. The organisation of the space could be comparable to other similar villas such as the proposed reconstruction of Almenara de Adaja-Puras, Valladolid (Sánchez Simón 1998; García Merino 2008) or the recent study of Horta da Torre, Fronteira, Portugal (Carneiro *et al.* 2019; Carneiro 2017).

### ***Surroundings of Deobrigula, Tardajos***

The environment and territory of Roman *Deobrigula*, located next to present-day Tardajos, a few kilometres west of Burgos, has been scarcely studied despite notable original works on the location of the site of indigenous occupation and the Roman city (Sagredo San Eustaquio and Pradales Ciprés 1992; Sacristán de Lama 2007; López Noriega 1997, 220; Abásolo and Ruiz Vélez 1977). Although it was Del Olmo (2017, 171-77) who provided the best images of the spatial configuration of the city. Geophysical prospection also contributed to define the structures of the urban centre (Reina *et al.* 1995). Moreover, the recent images also allow us to synthesise the available information and to create provisional planimetry while awaiting new interventions in the Roman city.

In the Quintanal and Las Quintanas area, as noted by López Noriega (1997, 220), various structures can be recognised over an area of approximately 9 hectares. One of the most conspicuous structures is a causeway, probably the *decumanus* of the city, which can be traced for 300 metres and on which at least five *kardines* converge to the north and three to the South. The *decumanus* seems to end close to the structure (perhaps the city wall) that delimits the city and is associated with some peculiar structures that could be infrastructures or funerary monuments. Among the *kardines* we can identify isolated structures belonging to urban buildings, *domus* or *insulae* similar to those recently located in *Segisamo* (García Sánchez and Costa García 2020). In the southern part of the *decumanus*, we find the well-preserved remains of a *domus* measuring 58 by 29 metres. For the moment we cannot locate the



Figure 5.6. Roman urban structure of Deobrigula in Quintanal, Tardajos.

classical elements around which the structure would have been organised. In the western part of the city of *Deobrigula*, we again find a possible boundary of the urban space and small structures flanking one of the *kardines* longitudinally.

To the South of *Deobrigula* is an alluvial plain crossed by the meanders of the river Arlanzón and delimited by the calcareous barren. In this area, the comings and goings of the meanders make it difficult to recognise traces of structures related to the exploitation of the territory around the Roman city. However, some structures could correspond to land plots before the formation and subsequent silting up of the meanders; a similar situation can be observed in the sedimentation of the centuriated territory of *Libia*, between Herramelluri and Bañares (Ariño Gil *et al.* 2019; Ariño Gil and Novoa Jauregui 2007). At the opposite side of the river Arlanza we locate several settlements possibly dedicated to taking advantage of the river environment for agricultural use. This geographical location is similar to what we encounter valley of the river Odra, from the Sasamón towards the foothills of the Cantabrian Mountain range, the region known as Las Loras, in the mountainous region located halfway between Burgos and Palencia.

One of these sites is located in a rectangular building measuring 26.6 by 16 metres, the sides of which are rooms opening onto a small central courtyard measuring approximately 9.5 by 8 metres. This site is located on a small hill, which gives it the name of Cuesta Grande. This element is reported in the documentation about the large excavated site of Buniel, which we will see below. Typologically, it is similar to other sites oriented to exploiting the countryside, perhaps to establishing peasant families or productive units. There is no evidence of social or activity differentiation within the building. One of the





Figure 5.7. Left, flood plain of the Arlanzón river with the location of A. Cuesta Grande, and B. Molino de Arriba. Right above, detail of the site of Cuesta Grande. Right below, reconstruction of the site of Molino de Arriba from a G.E. photo.

similar types recently discovered is located on a small hill overlooking the floodplain of the Guadajira and Guadiana rivers in Badajoz province.

Following the course of the river Arlanzón, at approximately 600 metres, we encounter the site of Molino de Arriba (Buniel), a building of notable dimensions and with structures paved with mosaics and the storage room of farming tools. The area with structures and materials associated with the site is located is approximately of 9 hectares. A large part of the building, dated between the 1st century A.D. and the end of the early 4th to 5th century A.D., has been excavated due to the construction of AVE (High speed train) infrastructures (Gorostiza *et al.* 2017; Palomino *et al.* 2011; Berzosa Ordaz 2016), while the rest of the complex has been documented thanks to the integration of the 2019 Google Earth aerial imagery.

In addition to the excavated part of the site, there is evidence that points to the continuation of the main building towards the west and the north. In these areas the construction of train facilities have also led to the excavation of test pits (the different actions on the Molino de Arriba site are described in Berzosa Ordaz 2016, 28-29). This site has been described as a villa combining a residential space in the *pars urbana* and the *pars rustica* oriented to the exploitation of the fertile plains of the Arlanzón.

Following the course of the river Arlanzón in a south-westerly direction and next to the convergence with the river Ausines, we find the town of Cavia, where another example of a building of notable dimensions from the Late Roman period called La Quintana was reported by Abásolo and Ruiz Vélez (1977, 28). This site is also of great importance due extension it covers (more than 3 hectares, while

the Archaeological Inventory reports a total of 20 hectares), and for the complexity of its structures. The main nucleus of the occupation of the villa of La Quintana seems to be organised in a rectangular block, arranged around a large courtyard similar to that of Molino de Arriba. However, in the case of Las Quintanas, the available information is not clear enough. In any case, the west side has a series of rooms arranged in symmetrical plan, two of the rooms are topped by a hemispherical apse, the rest are rectangular. Same plan could be define on the southern side, where long rectangular rooms with a southeast-northwest orientation predominate.

One of the most notable characteristics of the site of La Quintana is the organisation of the structures inside an orthogonal grid, resembling a urban layout rather than an archetypical Late Roman villa (Fernández Castro 1982). We found at least six blocks delimited by what could be a road or a way of delimiting or organising the space. And further to the east, we also find a small group of traces of uncertain chronology, which could even be interpreted as a cultivation area, a plot of land pre-dating the modern configuration area. There is no other information on the site beyond the general description of the materials found in surveys. Still, this configuration linked to the appearance of possible structures in the surrounding area could be interpreted as an aggregated site. The location of this type of habitat may represent a qualitative leap in the understanding of the organisation of the Roman landscape in the Duero valley beyond the prevailing classical scheme of city and territory dominated by manor villas (Pradales Ciprés 1985; Pradales Ciprés and Gómez Santa Cruz 2002; 2003a; 2003b).

Heading north from *Deobrigula* or Tardajos following the Urbel river, we can recognise several sites that exploit the fertile plain of the valley, a profitable territory in contrast to the calcareous barren. The barren landscape is challenging to exploit agriculturally with pre-modern tools, and perhaps it was only used for defensive purposes by Late Iron Age hill forts such as the Tardajos hillfort or the Páramo Ciudad hillfort, a possible *Bravum* of the Turmogos (Carmona Ballester, Vega Maeso, and Berzosa Ortiz 2019). We will not go into further considerations about this valley, currently under examination by another team from the University of Burgos and Cantabria. Nevertheless is worth to mention the interest of sites such as Quintanayus, in Pedrosa del Río Úrbel, the site of San Pelayo in La Nuez de Abajo, or the monumental villa of Vegas Negras (Huérmeces). All these sites are part of the dynamic that began with

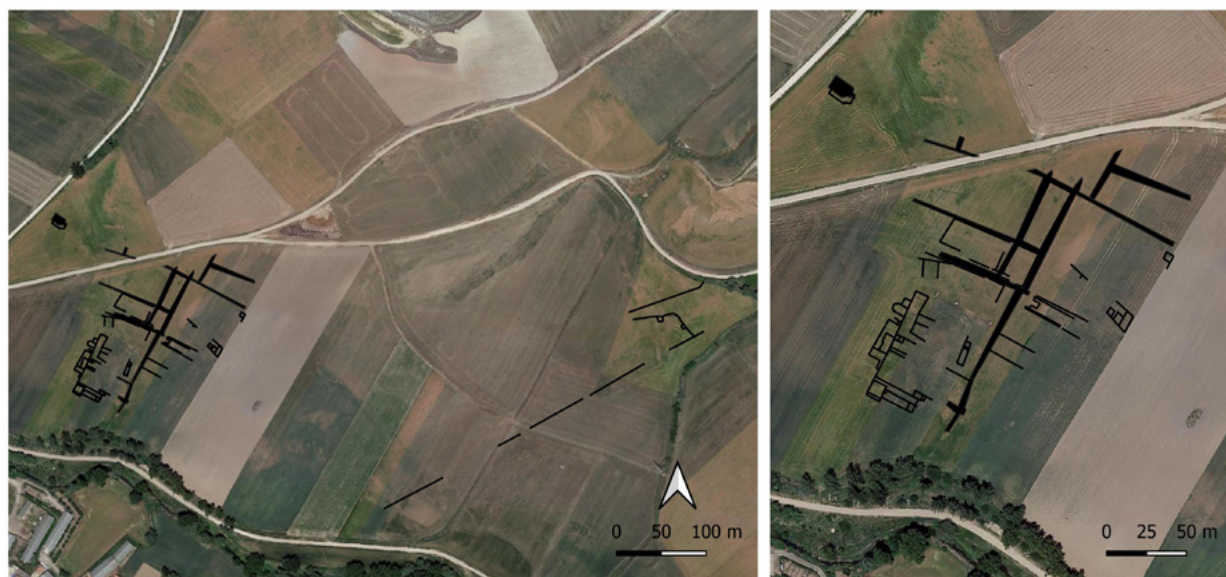


Figure 5.8. Left, archaeological structures at Las Quintanas on the Los Ausines river, Cavia. Right, detail of the archaeological complex at Las Quintanas, Cavia.

the abandonment of the pre-Roman occupation model in the Páramo Ciudad hillfort and the occupation and exploitation of the river meadows embedded in the calcareous barren. This model develops from the 1st century A.D. with the creation of small rural-oriented settlements whose material footprint is made up of materials that straddled the indigenous tradition and the first *sigillata* productions of the Ebro Valley (Blanco García 2015), which form the basis for the creation of the large Late Roman properties (García Merino and Sánchez Simón 2015).

## Conclusion

This paper aimed to reflect on the importance of the archaeological survey method in landscape and territorial studies. The implementation of an *off-site* oriented field survey does not deny the concept of a traditional site; on the contrary, it allows us to understand two fundamental issues. Firstly, the geographic context in which archaeological sites are located and their spatial relationship with overall settlement pattern. Secondly, *off-site* survey, as demonstrated for the case of *Segisamo*, allow us to understand the territory at different scales, the most important is the detection of the material expression of human activity at both macro and semi-micro scales.

Surveying as a method of territorial reconnaissance has an intrinsic spatial component that allows integration with various data sources. In this case, the time series of aerial photography of multiple origins, whether from the PNOA, platforms such as Google Earth or Bing, obtained by conventional airborne methods or UAVs, allow new layers of knowledge to be added to the study of the landscape. The study of the territory of the Odra-Pisuerga interfluve and the Arlanzón valley has allowed us to observe the details of a picture only painted with the information of the Archaeological Inventory of Castilla y León. In this sense, we can follow with increasing detail the urban layout of *Segisamo* and *Deobrigula* as well as some of the elements that structure the rural landscape. Thi study of the cultural landscape is the basis for an archaeology of the Roman peasant communities that are currently been revisited under new theoretical (Netting 1993) and material approaches (Bermejo Tirado 2013; Vaccaro *et al.* 2013).

As was to be expected, the monumental villas of the late Roman period are conspicuously present both in the surface survey of the territory and in the documentation of the photographic series. Thus, sites such as Las Quintanas, in Cavia, Vegas Negras in Huérmeces, or Mansegar in Manciles, acquire a significant presence in the study area, both attracting the interest of new research and dominating the interpretative paradigm of the late Roman world (see Ariño Gil 2013 for a thorough review of the topic).

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# Pottery, settlement patterns and agrarian practices between Roman and medieval times in the Eresma and Voltoya valleys (Segovia, Spain)

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## Abstract

This paper presents the results of fieldwork carried out in the central part of the Iberian Peninsula regarding long-term settlement patterns and the processes of middening and manuring. The basic hypothesis is that changes in the pottery scatter that can be seen through the period between Late Roman and medieval times, can be interpreted as reflecting different forms of agrarian practices and, ultimately, relate to different forms of production and social organization. In the last part of the paper I consider the possibilities and setbacks of this methodology and the results obtained.

## Keywords

Pottery scatter; settlement pattern; manuring processes; Middle Ages.

## Introduction<sup>2</sup>

Medieval Archaeology in the Iberian Peninsula has undergone major changes in the last decades. Originally a subsidiary discipline of a Medieval History which relied mainly on written sources, Medieval Archaeology has become mature enough to formulate its own theoretical problems, methodologies and historical narratives. The congress held at Vitoria-Gasteiz in 2019 -of which these proceedings are the published version- is a clear example of this coming of age process in Medieval Archaeology's capacity to tackle such complex problems as those posed by agrarian practices. A problem in their own right, agrarian practices have been the subject of an increasing number of works beginning in the 1990s (Fernández Mier 1999) and whose first archaeological proposals were made a decade ago (Kirchner 2010; Quirós Castillo 2009).

Through this process, new theoretical and methodological lines are being gradually incorporated into the discussions of Medieval Archaeology, expanding its horizons of possibility. Such is the case of the 'manuring hypothesis', based on the idea that the presence of off-site materials in a continuum called 'haloes or carpets' is a consequence of different processes related to agrarian practices mainly to 'middening' and 'manuring' (Bintliff, Snodgrass 1988; Forbes 2013; Wilkinson 1982). The former is understood as the 'spreading of domestic waste on arable lands', and the latter as the use of animal dung to recover the nutritional and chemical proprieties of arable land for future crops (Bogaard 2012, 25; Shiel 2012). Although this hypothesis has been applied as a theoretical and methodological frame

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in studies across the Mediterranean and covering different chronologies - including in the Iberian peninsula (García Sánchez, Cisneros 2013; Grau Mira 2014) - so far no systematic effort has addressed its potentialities for the analyses of medieval agriculture.

In the context of a project about early-medieval settlement patterns in the Central Iberian Peninsula -as part of the results already published elsewhere (Tejerizo García, *et al.*, 2015)-, I had the opportunity to obtain a significant amount of data which lead to some proposals regarding the 'manuring hypothesis'. Thus, the main aim of this paper is twofold. On the one hand, I will present the main results of this fieldwork regarding the pottery scatter and its connection with the settlement pattern in the period between Late Roman times and the Middle Ages. On the other hand, this work will explore the possibilities and setbacks of applying the manuring hypothesis to the site history and settlement pattern of this particular territory and its relation to such topics as social organization, power and peasant economies. As I will argue, the analyses of the halos and carpets of pottery, along with an analyses of the long-term settlement pattern may inform not only about the development and changes of agrarian practices, but also back the hypothesis that these practices may respond to different forms of social and economic organization (Bintliff 2014; Jones 2004) .

This paper is divided into five sections. The first and second sections will deal with the characterization of both the landscapes and the general history of the territory under scrutiny. The following section will describe the methodology used during the fieldwork in detail and specifically address how the intensive analyses of the distribution pattern of pottery, or 'field scatter' was made. The fourth section of the paper will present the main results of the fieldwork, stressing the interrelation of the settlement pattern and the type of halos and carpets of pottery which have been documented. A general discussion regarding the historic development of agrarian practices and the social and economic context of each of the periods tackled will centre the fifth section. Finally, I will make some general remarks on the potentialities and limits of the analyses and put forth a general consideration on the manuring hypothesis.

### **Geographical, geological and economic characterization of the case study**

The most immediate factor we have to take into account when dealing with archaeological fieldwork regarding manuring processes is landscape in its material definition (Orejas Saco del Valle, Ruiz Del Árbol Moro 2013). Characterizing a territory geographically, geologically and even economically is determinant in establishing the limits and possibilities for the analyses of middening and manuring. Such elements as the type of agriculture and/or husbandry, the geological milieu, or topography, are crucial to fully understand factors affecting the agrarian practices, like visibility during fieldwork, the impact of ploughing on historical sites or the movement of materials. In other words, a correct characterization of the territory is a mandatory starting point for analyses considering manuring or middening processes (Jones 2012a).

The territory under consideration is located in the southern part of the Northern Iberian plateau, specifically in the north western part of the current province of Segovia and in the central part of the Duero river basin (Figure 1). The area is limited by two streams of the Duero, the river Eresma and the river Voltoya, framing a territory of approximately 32.000 has. Both rivers converge in the city of Coca, the ancient Roman town of *Cauca*, which was a central place for the territory during Roman times (Blanco García 2010) but has also had a profound impact on subsequent periods until this day. In geographical terms it is included in the so-called 'Unidad Morfoestructural de las Campiñas del Duero' (Morpho-structural Unit of the Duero Prairies), characterized, as many territories in the Duero basin, by its plain surfaces splattered by small hills and mounds . This general characterization slightly changes

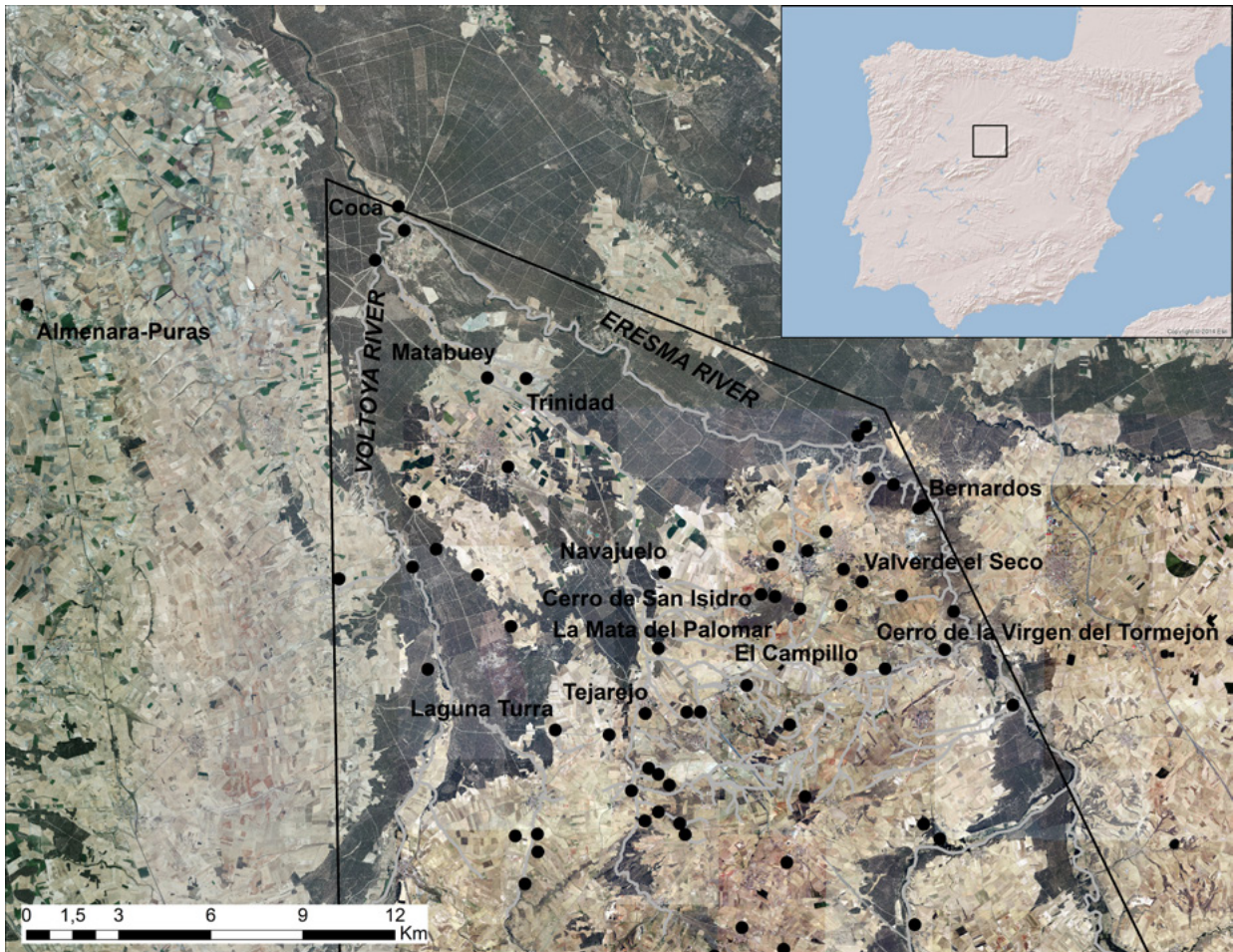


Figure 6.1. The territory under scrutiny. Dots represents the archaeological sites, with the names of the main sites cited in the text. The polygon frames the space where the fieldwork took place.

in the immediate surroundings of the river Eresma, which presents a steeper environment due to the geological emergence and development of the river itself (IGME 2007).

Geologically, the mountainous part of the territory belongs to is the so-called ‘Macizo Paleozoico de Santa María la Real de Nieva’ (Paleozoic Mountain Range of Santa María la Real de Nieva), a cluster of soft elevations which runs parallel to the Guadarrama mountain range, separating the plateau’s northern and southern parts. Most of the territory is mainly formed by tertiary detrital deposits, with some particular quartzite and schist outcrops from the Ordovician period (González Cabrera, Hervada Pascual 2008; IGME 2007). As we will see, some of these outcrops were recurrent spaces for human interaction, as illustrated by the rock-art site of Domingo García (Ripoll López, Municipio González 1999). This type of plain surfaces and the particular geology of the area generate elevated phreatic strata and have the effect of producing several ponds and particular spots of water accumulation dispersed within the territory, attracting population and settlements from Prehistoric times (Tejerizo García, *et al.*, 2015, 43). This territory is a classic example of the Continental climate, with hot and generally dry summers and very cold winters, with rains accumulating in autumn and spring, and determining the rhythms of cultivation and ploughing.



The territory's main economic activity was traditionally non-irrigated agriculture, mainly for barley-dedicated to fodder - but also for rye and, to a lesser extent, wheat and vines. In the last century, and even more so during Francoism, parts of this territory were repopulated by pines for the extraction of resin. As we will see, this has an important impact on archaeological fieldwork and the visibility of some sites. Husbandry in the area is mainly focused on sheep, although it has been in relapse during the 19th and 20th centuries due to the increasing arable land. In the last decades, pig breeding has increased, causing many environmental problems and the pollution of local water due to animal purines. Those lands which cannot be used for agriculture are dedicated to traditional coal production and mining, mainly schist from the Ordovician outcrops, a use which is documented from the 16th century onwards (Iguál Luis 2013).

Historically, another major economic sector was the textile industry. The area was well-known for its blankets and clothes (mainly the so-called *sayal*, a typical peasant garment). This sector thrived between the 17th and 19th centuries<sup>3</sup>, under the promotion of local elites (Iguál Luis 2013, 101). This had a big material impact on the landscapes surrounding the river Eresma through the construction of several windmills and fulling mills (*batanes* in Spanish) for the textile industry. During the mid 20th century this industry progressively decayed, the last textile workshop being closed in 1956 and replaced in the late 20th and 21st centuries by tourism as the main economic sector. This contemporary economic development had a big impact on the landscape and therefore on our study. A significant process regarding our analysis was the land's modernization and mechanization. Through the 20th century there was a progressive disappearance of fallow land due to the introduction of fertilisers and new crop rotation, mainly in short cycles. This, together with an aggressive mechanization of the land from the 1980s, has caused a process of land concentration (Botey Fullat 2009), with a high impact on the destruction of historic heritage, causing many conflicts between local communities, archaeologists and the administration<sup>4</sup>.

In a nutshell, we may consider the territory between the rivers Eresma and Voltoya as an optimal space for the analyses of manuring and middening processes (Bintliff, Snodgrass 1988; Wilkinson 1982). Its open geography and sedimentary geology simplifies some of the work related to the analyses of these processes, such as fieldwork, site detection or pottery documentation (García Sánchez, Cisneros 2013). Visibility is altogether quite good for our purposes (Figure 2). Also, local agricultural practices, based mainly on rye and on simple and repetitive cycles, contributed to study's strategy (see next section). Mechanization is here both a positive and a negative feature. On the one hand, the use of large-blade and deep-penetration tractors on the ground facilitates the location of sites. On the other hand, it has quite an impact on the sites and their destruction, and also on the movement of archaeological materials, which may distort the pottery scatter and the haloes. This is something to take into account regarding subsequent analyses of data. From the negative point of view, those areas dedicated to pine resin had to be rejected for this study, as archaeological visibility is almost non-existent. This is also a relevant factor for those territories where schists are being extracted. Furthermore, the process of concentration of lands from the 80s onwards produced large plots generally used for different purposes. Thus some of the areas under study had big differences of visibility between different plots, which had an impact on the results. However, and in general terms, we consider that the methodology applied and the outcomes are significant enough support this paper's main hypothesis.

<sup>3</sup> Following Pascual Madoz, in mid 19th century, 'the majority of the population from Bernardos worked in the textile production of cloths and *sayales made by hard wool* of the land'.

<sup>4</sup> An example of these conflicts affects one of the sites considered here, the Late Roman Villa of Matabuey: [https://www.eladelantado.com/provincia-de-segovia/el\\_psoe\\_denuncia\\_el\\_deterioro\\_de\\_un\\_yacimiento\\_arqueologico/](https://www.eladelantado.com/provincia-de-segovia/el_psoe_denuncia_el_deterioro_de_un_yacimiento_arqueologico/)



Figure 6.2. Typical landscape of the territory between the river Eresma and Voltoya. In the background, the site of San Isidro.

### The territory from the written sources

The aim of this section is to provide an overview of the historic landmarks of the territory coming from the analyses of the documentary sources, part of which has been summarized elsewhere (Tejerizo García, *et al.*, 2015)<sup>5</sup>. This will give some clues and patterns which complement, or even contrast, with the archaeological record regarding settlement patterns and manuring processes. However, there is not much documentary information for the period under study, as most part of the written record comes from the 15th century onwards, when the action of very relevant agents such as the cathedral of Segovia or the monastery of Santa María la Real de Nieva gave rise to different conflicts regarding common lands and ownership rights. Approaching the history of this territory from the written sources is a complex endeavour determined by two main factors. On the one hand, the existence of late and scarce written sources and, on the other hand, a historiography dominated both by the grand narratives of the frontier (García De Cortázar 1993; Portela Silva 1985), the repopulation and the colonization processes (Barrios García 1982; Barrios García, Martín Expósito 1983), and the historic and legal particularity of the ‘comunidades de villa y tierra’ (communities of village and land) (Martínez Díez 1983; Martínez Llorente 1990) and the council system (Monsalvo Antón 2003). These narratives have had a crucial influence on the historic research on the general region of Segovia (Asenjo González 1986; Villar García 1986) and on

<sup>5</sup> The revision of the written sources was made by Álvaro Carvajal Castro.

the main social and political actors, such as the cathedral of Segovia (García Sanz, *et al.*, 1981; Santamaría Lancho 1983).

Before considering the written sources themselves, it is worth highlighting here that the historiography amplified this territory's centrality during Roman times was based on the possible birth of the Emperor Theodosius in the city of Cauca (Blanco García 1997)<sup>6</sup>. This historic event even pervaded archaeological narratives about the territory during this period. For example, the Late Roman villa of Las Pizarras was interpreted as a possible property of the Emperor (Pérez González, Reyes Hernando 2009a, 2009b). Nonetheless, and as I will discuss below, the archaeological record indeed reflects this centrality at least during Late Roman times. Such importance was progressively lost from the 5th century onwards. Although we know about the existence of a bishop in Segovia and the presence of Christian churches in the town since the 6th century (Zamora Canellada 1979), there is no documentary evidence of its impact on the territory under consideration.

Thus the first documents regarding the territory between the Eresma and Voltoya date to the 12th century, when the expansion of the Christian kingdoms, and particularly the activities of the king Alfonso VIII, affected this area. The first direct mention to the territory in the written sources is dated at 1179, in a letter by which Alfonso VIII confirmed the ownership of lands for the monastery of Santa



Figure 6.3. Map of the territory.

<sup>6</sup> Even though there are some authors which question this assertion (Canto 2006).

María de Parraces, located in the village of Bercial (Segovia, located 20 km. to the south). This letter is signed at the village of Nieva: 'Facta carta in aldea que dicitur Neua, era M<sup>o</sup>CC<sup>o</sup>XVII<sup>a</sup>, octavo kalendas Decembris' (González 1960, doc. 330). The letter is important for a number of reasons. The first is that it proves that Nieva was already populated by mid 12th century, which is coherent with the archaeological record. Second, the letter demonstrates this place's centrality in the broader territorial articulation. This importance was implied in the fact that the king made political decisions there and is confirmed by other documents, like a particularly interesting (and possibly Modern-Age) map, The map comes from the Council Archive of Segovia and represents an outline of territories with Nieva standing at a central place (Figure 3). Third, this letter shows that by the 12th century the territory, the increasing action of important social agents (including the king), had provided enough structure for it to exhibit clear social and political boundaries and a structured local elite.

A second important document regarding this territory dates to the 13th century. During its first decades, the distribution of incomes of the Cathedral of Segovia caused a conflict between the bishop and the *cabildo* (town council). The confrontation was recorded in a set of documents signed in 1247 mentioning most of the parishes of the diocese of Segovia<sup>7</sup> (Linehan 1981). Based on this important document several studies were carried out focusing on toponymy and analysing the relative importance of the different settlements (calculated through different rent assignments) (Barrios García 1985; Barrios García, Martín Expósito 1983; Santamaría Lancho 1983). Although such studies should be revised in the light of new methodological approaches (Zadora-Rio 2001), this document clearly shows a fully developed parish division by the beginning of the 13th century and a settlement pattern based on differentiated towns and villages with defined territorial limits, albeit at the centre of political and social conflicts.

These two documents constitute the practical totality of the written information available for this territory in the Middle Ages. Even though the scope of this paper reaches only the 13th century, another two questions dealing with the written sources merit consideration. The first deals with the depopulation process of a village called Valverde el Seco. This is one of the villages mentioned in the 1247 document and also in a 1404 document suggesting a complex network of properties around this village<sup>8</sup>. A pastoral visit in the years 1446-1447 proves that this locality was 'in a good state' (Bartolomé Herrero 1995, 337). However, by 1470 Valverde el Seco was abandoned or, at least, no one was living there. In that year, in the context of disputes between the council and the archpriest Esteban de la Hoz regarding the loans of the ancient parish of Valverde a document mentions that the village has been abandoned 'for ten years and more'<sup>9</sup>. As attested by the archaeological record, during the 14th and 15th centuries many of the medieval villages were already abandoned, reinforcing the processes suggested by the written sources.

The other case is connected to the social memory of the shrines, most of them with early medieval origins (see below). One of the most interesting cases from the archaeological point the view is the village of Trinidad, to which we may return later. Trinidad is a medieval village which was probably abandoned during the 15th century. After that period, only the shrine was preserved, as shown in a 1612 document. In this document, the priest of Nava de la Asunción (a currently inhabited town), was asked about the council's devotion places, answering that

*'As well as these there is another church at the place of Santísima Trinidad (lit. Holy Trinity). On the day of the Holy Trinity this place is visited by processions of the people of Coca, those of the place Nabas de Oro and those from the place of la Nava. I am not aware of the reason why this place should gather throngs so much greater than the others. I can only ascertain that there*

<sup>7</sup> Villar García, L.m. (1990). *Documentación medieval de la catedral de Segovia* (1115-1300). Ediciones Universidad de Salamanca, doc. 140, 141.

<sup>8</sup> Archive of the Segovia Cathedral, Sign. 15-6

<sup>9</sup> Archive of the Segovia Cathedral, L-81.



*is no other reason than the fact that it is far from the town, and people understand that Our Lord appreciates the trouble they take to walk such a long way in His service'* (Rodríguez Martínez, F (2010). *Coca documentary Corpus*. Madrid: Visión Libros, doc. 88).

Today this shrine is practically missing, although local memory can place its exact location, showing the persistence of the memory from the 17th century, a common feature of this and other places within this territory (Tejerizo García, *et al.*, 2015)

### **Methodology of study**

As has been stated in the introduction , the archaeological fieldwork focused on the early medieval settlement pattern rather than a specific analysis of long-term manuring and middening processes. However, in the course of the work, some particular sites showed interesting features regarding the distribution of pottery from different historic periods which provided specific empirical base for the analyses of particular agrarian practices.

Fieldwork was carried out in two different campaigns during the years 2013 and 2014. These took place during the months of September and October, which were chosen to coincide with current manuring processes. These implied the massive movement of earth with heavy tractors and thus of the archaeological material. Besides, in terms of climate, this period brings the earliest Autumn rains, increasing the visibility of the materials moved. There is no particular study of the movement of archaeological material from its original deposition due to these practices. However, until specific considerations of this matter exist, we suppose that these movements should not be very dramatic



*Figure 6.4. Intensive fieldwork at the site of La Trinidad.*

and, mainly, that they did not have a significant impact on the results of our fieldwork and subsequent analyses.

In general terms, fieldwork consisted in a twofold task. On the one hand, an extensive survey of the entire territory in order to: a) recognise and confirm those sites that had been detected in previous surveying work or in the existing literature. This resulted in the reconsideration of the chronology of some of the sites, such as La Trinidad, originally considered as Prehistoric, but also featuring a post-Roman phase; and b) to detect the areas with the highest potential for further exploration. This allowed setting apart those territories with no potential for our purposes, such as areas planted with pines.

On the other hand, we conducted an intensive survey directed to those areas within the territory with the potential to show early medieval presence (Figure 4). These areas were chosen following three criteria: a) presence of previously recognised sites from this period in order to calculate its extension and the presence (or absence) of other historical phases; b) high visibility, taking advantage of the movement of earths during the fieldwork; c) potentiality of locating an early medieval settlement, taking into account the characteristics previously recognised in other similar known sites -a heuristic methodology which resulted in the discovery of several new sites (Tejerizo García, *et al.*, 2015).

The survey was carried out with a team of five people in 2013, four of them with previous experience in archaeological fieldwork, and eight people in 2014, with three experienced archaeologists and five graduate students of Archaeology, which made up an optimal team for the detection of sites. The general strategy for the fieldwork was similar in both campaigns. Current plots were used as the main spatial reference for documentation (which included a specific sheet with all the basic information about each plot) and team-members were aligned with five meters' separation, following other similar studies (García Sánchez, Cisneros 2013; García Sanjuan 2005). This survey covered 1810 hectares (5,6% of the total of the considered territory between the Eresma and Voltoya).

As said, in the course of the fieldwork, some of the sites presented exceptional characteristics for a more intensive survey in order to detect distribution patterns of the material record. This particular strategy was applied to four different contexts (Campillo; La Mata del Palomar; San Isidro; La Trinidad/Matabuey), whose main characteristics are summarise in the following table:

Site	Total calculated extension	Surveyed extension	Chronology	Notes
Campillo	6,7 has	2,1 has	Late Roman Post-Roman Medieval	Presence of shrine
La Mata del Palomar	38 has	8 has	Post-Roman Medieval	Presence of shrine Excavated village
San Isidro	10,7 has	2,7 has	Post-Roman Medieval	Presence of shrine and necropoleis (rock burials)
La Trinidad/Matabuey	39 has	6,6 has	Prehistoric Late Roman Post-Roman Medieval	Abandoned shrine Excavated villa

Table 6.1. Exceptional sites detected during the survey

This intensive survey was carried out using the same strategy (with plots as the spatial reference both for walking and the documentation) and number of people, although with a closer separation of 3 metres. Each of the workers carried a set of visible flags which were placed when materials were detected and

subsequently located with a high accuracy GPS<sup>10</sup>, of an average error of 2-4 cm. GPS-recording included not only the materials' position but also a code which defined both the typology of the material (pottery, metal, brick/tile...) and its potential chronology, using general categories such as 'Roman', 'Post-Roman', 'Modern', etc. The GPS and coding were used by a member of the team with enough experience and knowledge to differentiate both typology and chronology. Chronology was established following previous knowledge of the local pottery sequence and the analyses of specific sites, such as La Mata del Palomar or Bernardos (Blanco García 2003; Caballero Zoreda 1989; Gonzalo González 2007; Gozalo Viejo, *et al.*, 2013; Juan Tovar, Blanco García 1997; Larrén, *et al.*, 2003; Strato 2002; Tejerizo García 2020b; Villanueva Zubizarreta 2011), which provided the general patterns. Furthermore, selective gathering of pottery material was carried out from each site for further characterization and correction of previous considerations. Even though there is an evident potential for error during fieldwork, we consider that this was minimised and thus results were reliable enough for subsequent analysis. All this data was transferred to a GIS, with which subsequent density analyses were performed<sup>11</sup>. These analyses mainly implied a Kernel estimation of density<sup>12</sup>, which is the most frequent in this type of studies (García Sanjuan 2005; Grau Mira 2014).

### **Settlement patterns, pottery and manure from the Late Roman period to the Middle Ages**

In this section I will present the main results of the analyses, considering both settlement patterns and analyses of pottery distribution patterns. I have divided this section in three chronological periods: 'Late Roman', which comprises the 4th and 5th centuries AD; 'Post-Roman', corresponding with the period between the second half of the 5th century and 8th centuries AD; and 'Early medieval', from the second half of the 8th century and 12th/13th century AD. This division is heuristic and considers changes in settlement patterns, our capacity to differentiate pottery from these periods during fieldwork and the subsequent results of the analyses. In other words, it is in these periods that we can clearly recognise coherent patterns.

#### ***Late Roman period (4th to first half of the 5th century)***

During the 4th century AD the economic and social structure of Roman Iberia underwent important changes. These had repercussions on settlement patterns, in a well-known process that has been widely studied for both the Iberian Peninsula and the whole Western Roman Empire. Through this period, structural changes in the economic and political realms (from the Empire's limits and borders to the geography of the main centres and peripheries and the main commercial routes) caused local and territorial elites to slowly change their strategies for maintaining their power and control, mainly by redirecting their influence to rural lands (Fernández 2017). In large parts of the Empire including the Iberian peninsula the rural world acquired a renewed centrality (Ariño Gil, Díaz 2002), which included two interconnected processes: the concentration of lands and the restructuring of settlement patterns turning Late Roman villas into the main axis of control of the Roman hinterland (Wickham 2005, 2009).

Some areas within the Empire reinforced their role by intensifying agriculture - without abandoning local and territorial husbandry (Ariño Gil, Díaz 2002; Vigil-Escalera 2015). This is the case of the territory between the Eresma and Voltoya (Figure 5). As mentioned, this territory fell under the control of the city of *Cauca*, main urban centre. Even though excavations at *Cauca* show some significant changes during the second half of the 4th century, it seems that the city retained its role as a central place throughout this period (Blanco García 2002). The rural hinterland, however, shows some crucial changes, with

<sup>10</sup> The GPS used for the fieldwork was a Leica GNSS Viva GS08 Plus.

<sup>11</sup> The software used was ArcGis v. 10.2.

<sup>12</sup> Which calculates a magnitude-per-unit area from point or polyline features using a kernel function to fit a smoothly tapered surface to each point or polyline.



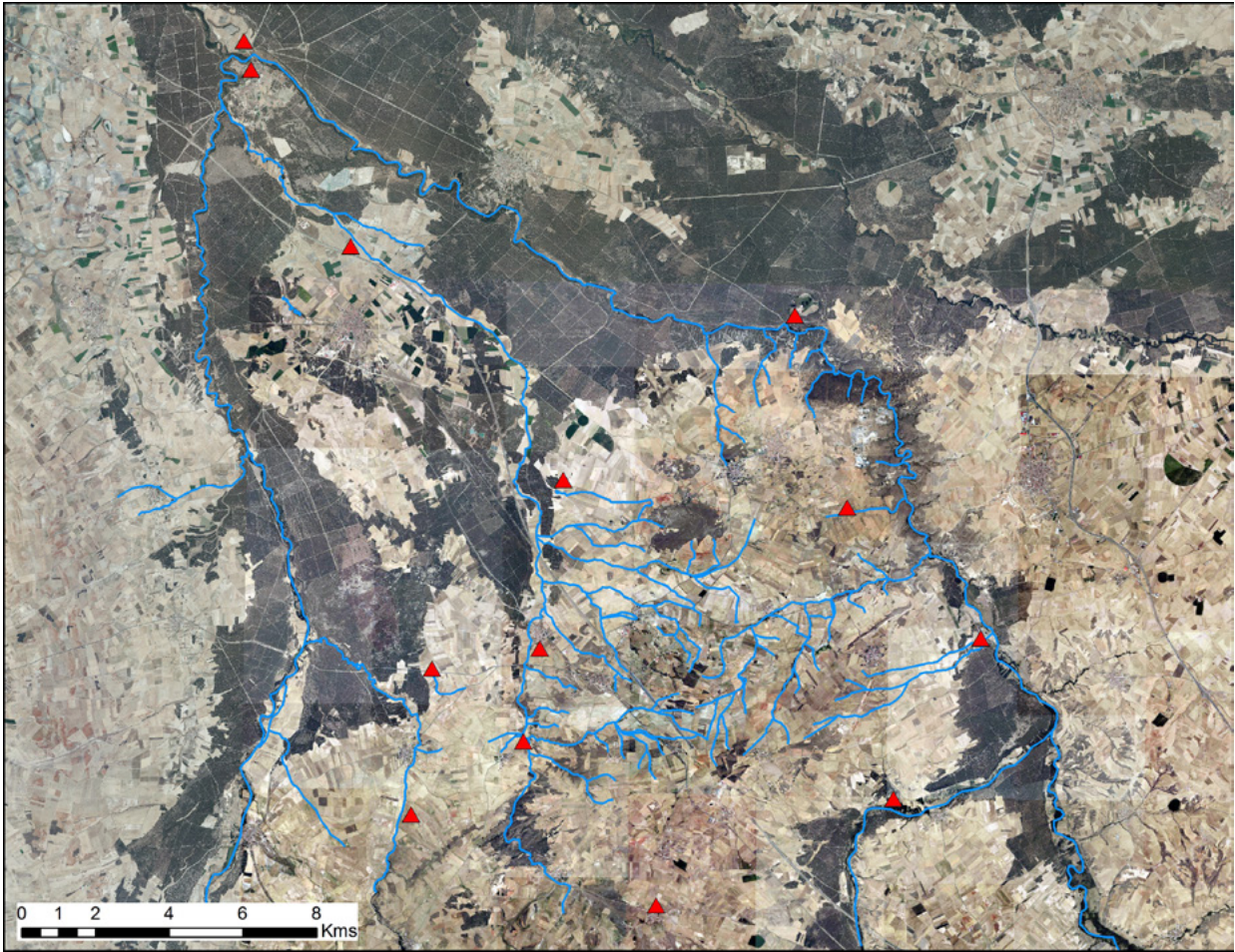


Figure 6.5. Distribution of Roman sites in the territory.

the appearance of both some important Roman Villas -that is, rich buildings subjected to important economic and social investment - and a dense network of subsidiary settlements in their vicinity (Grey 2011; Lewit 2004).

The few excavations available for this territory outside Cauca addressed precisely these luxurious buildings, showing quite a striking concentration of this type of settlement. This is the case of the well-known Roman villa of Almenara-Puras. This site, found at the end of the 19th century, has been the object of many excavations uncovering circa 7000 m<sup>2</sup>. Although there are evidences of structures from the Early Empire, the villa was totally renewed during the 4th century, with subsequent additions and reforms including one of the most impressive mosaic assemblages of the Northern Iberian plateau (García Merino, Sánchez Simón 2001). Another significant Roman villa is Las Pizarras, interpreted as a suburban villa of the city of Cauca. This site has also been the object of several archaeological interventions, whose results have been partially published (Pérez González, Reyes Hernando 2003, 2009a, 2009b). One of the most interesting features of this villa is that a reoccupation during the Visigoth period has been documented, including sunken featured buildings and a post-Roman cemetery (Pérez González, Reyes Hernando 2012-2013). Although there are less excavations, we have information for other Roman villas in the territory. This is the case of Matabuey, which was excavated in 2013, documenting luxurious rooms of a big building (Aratikos 2013). Although excavated in the 50s, the villa of Los Casares, in the southern part of the territory, also featured an elite building, with a significant number of constructive



furnished elements (Storch De Gracia 2010). Besides, during our fieldwork we revised other settlements, such as Santa Inés or Tejarejo, which also showed evidence of a luxurious building, including high quantities of *Terra sigillata* and painted stucco (Tejerizo García, *et al.*, 2015).

This dense network of Roman villas was paired with an equally dense network of subsidiary settlements. As is common in the archaeology of the Northern Iberian Plateau, there are no archaeological interventions on these settlements, so the evidences about these type of sites comes mainly from fieldwork surveys and indirect information (Pérez Losada 2002). However, we were able to detect them through the concentration of material evidence from the Late Roman period resulting in valuable information. The archaeological data shows the presence of small settlements (around 6-14 has), probably farmsteads or small villages mainly dedicated to productive and storage activities. One of the best examples is the site of Navajuelo, located in the central part of the territory, close to a small pond named 'Charca del Bon', whose water must have been used for production. The site, with an exceptional total extension of 23 has, provides a large chronological sequence from the Bronze Age to the Middle Ages. However, most of the evidence pinpoints a Roman occupation from the 1st century to the beginning of the 5th century AD. Furthermore, near 2000 fragments of metal slag were documented, suggesting the presence of a productive area for metal tools. Interestingly, this site is quite far from a Roman villa (some 4 km. to the closest site), which, taking into account similar sites distributed in the area, suggests dense occupation of the territory during the Roman period, especially during the Late Roman phases.

In summary, Late Roman settlement patterns in the territory between the rivers Eresma and Voltoya were characterised by a dense network of sites mainly of two different types: Roman villas and subsidiary farmsteads or productive spaces. Distances between the Roman villas and their potential territorial hinterland -calculated through Thyssen polygons at approximately 1500-2000 hectares - show an organized hierarchy of the area. It is within these territories that arable lands should be sought to understand the patterns of manure distribution.

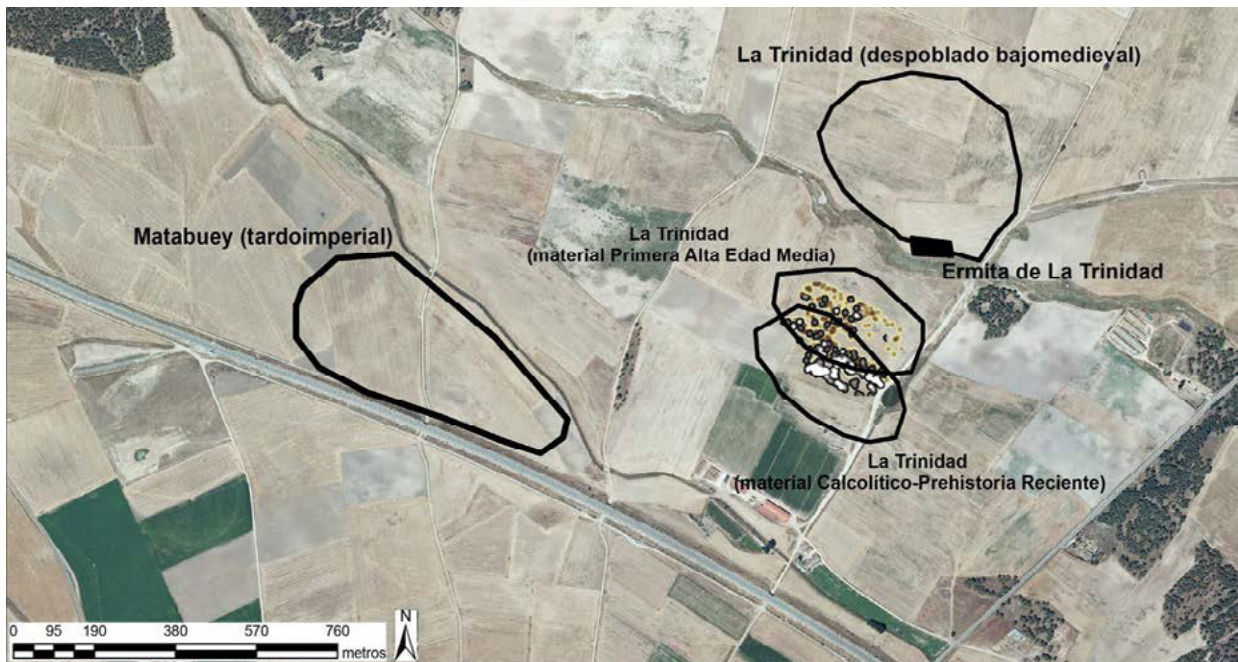


Figure 6.6. The site of Matabuey/La Trinidad and the concentration materials for each period

Analyses of the distribution of pottery from the Late Roman period show high levels of movement and dispersion. Late Roman pottery is found in most of the sites throughout the territory, whether as the central part of sites or as residual material in other sites. One interesting example is the case of Matabuey/Trinidad (Figure 6). As discussed, Matabuey was a Late Roman villa from the 4th-5th century AD whose main materials are distributed in a limited space of 1 ha. However, pottery from this period is found quite far away from the site's central part, at 1-1,5 km., showing a large type of halo/carpet of pottery. This shows both that the potential arable lands of the villa were at this distance and also that manure processes implied long-distance distribution from the central parts of the Late Roman sites. Similar characteristics have been detected at other Late Roman sites in this territory such as Navajuelo (a subsidiary productive site), Tejarejo (a Roman villa) or Santa Inés (a Roman Villa).

Another significant example is La Mata del Palomar. Excavations at this site have dated it between the 6th and the 8th centuries AD, and discarded the presence of previous phases from the Late Roman period (Vigil-Escalera, Strato 2013). Furthermore, the closest site from this period is Tejarejo, located 2 km. away from La Mata del Palomar. However, during the intensive fieldwork carried out at La Mata del Palomar some pottery sherds from the 4th to 5th century AD were documented. Thus, the best hypothesis to explain the appearance of this material is precisely its distribution as part of the manure for arable lands of the Late Roman period. As a result, we may propose the hypothesis that during Late Roman times the pottery scatters reached large distances, at least these 2 km. and, therefore, that arable lands lay far from the settlement's central parts.

#### ***Post-Roman period (second half of the 5th-8th centuries)***

The second half of the 5th century was a moment of major changes in the settlement patterns of the Northern Iberian plateau (Figure 7). The system based on the close articulation of Late Roman towns, Roman villas and their subsidiary settlements was transformed in the course of a few generations. The last moments of occupation of the villas (as such) is precisely dated at this moment (Tejerizo García 2016). The best example regarding the territory under consideration is, once again, the villa of Almenara-Puras. Recent pottery analyses have established the its abandonment around the mid-5th century (García Merino, Sánchez Simón 2017), when part of a cemetery was settled in the building's surroundings (García Merino, Sánchez Simón 2020). The case of Almenara-Puras is not an exception. None of the Late Roman settlements in the territory show hints of occupation after this moment, except for Las Pizarras, whose occupation is, as described, related to a post-Roman rural settlement rather than a Late Roman villa. In other words, whether by a process of abandonment or through a change of function, its settlement pattern was totally transformed during the second half of the 5th century.

Two changes in the settlement pattern are particularly visible in the archaeological record. The first was the occupation of hillfort sites, a very common phenomenon in Northern Iberia (Tejerizo García, Canosa Betés 2018). The territory between the rivers Eresma and Voltoya is interesting in this respect, as a high density of this type of sites has been documented. Five hillfort sites have been documented throughout the streams of the river Eresma although there is evidence of the presence of up to seven (Tejerizo García, *et al.*, 2015). Although with slightly different specific characteristics, all of them show a similar general chronological and archaeological pattern. Two of these features should be highlighted for the purposes of our analyses. First, the high density of sites in the territory may indicate that most of the population in the territory lived in these hillfort sites during the period between the second half of the 5th century and the mid-6th century. Secondly, crossed analyses of visibility and of potentially arable lands in their surroundings shows that it is quite probable that their main areas of production should have been located close to the central fortified part of the sites. This possibility is reinforced by the evidence that pottery remains from this period have been found exclusively within the immediate area of these sites. This moment's pottery is very recognizable, as it is characterised by the presence of



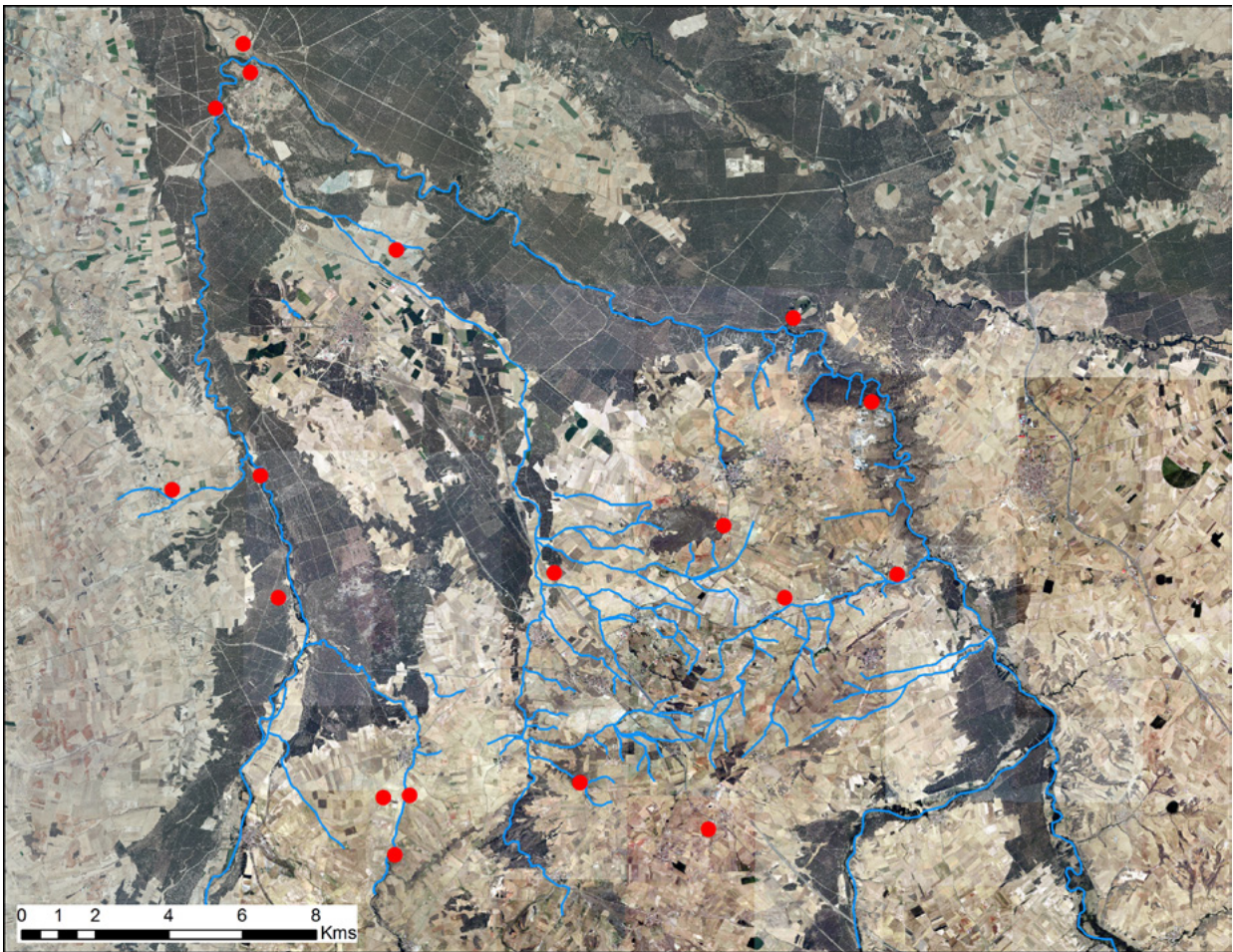


Figure 6.7. Post-Roman sites in the territory between the Eresma and the Voltoya rivers.

a well-known stamped decoration on vessels (Tejerizo García 2020b). This type of vessel has only been detected in the surroundings of sites like Bernardos or El Cerro de la Virgen del Tormejón, the latter being precisely recognised as a centre of production for this type of pottery (Gozalo Viejo, *et al.*, 2013). Thus, haloes for this period are very restricted, and manuring processes must have taken place in a limited space, centred around the immediate surroundings of these sites. Another interesting finding is that most of these areas in the hillfort sites' surroundings present pottery remains from the 6th-7th centuries, after the sites were abandoned, which may imply that these spaces continued to be used as arable lands in subsequent centuries.

The second significant feature of this period in terms of settlement pattern is the emergence of a network of farmsteads and villages throughout the territory during from the mid-6th century, a phenomenon also found elsewhere in northern Iberia (Quirós Castillo, Vigil-Escalera 2006). Our fieldwork has come to the detection of a total of 17 rural settlements, a number that was probably higher. Within them, only the village of La Mata del Palomar has undergone extensive archaeological excavation. Deep analyses of this excavation determined that this site was composed by approximately 10 domestic units, of which 3-4 were excavated during the archaeological intervention (Tejerizo García 2017). Comparing the archaeological record with other similar sites, such as Gózquez, allowed the interpretation to emerge that the site of La Mata del Palomar was a village organized into different domestic units, each of one



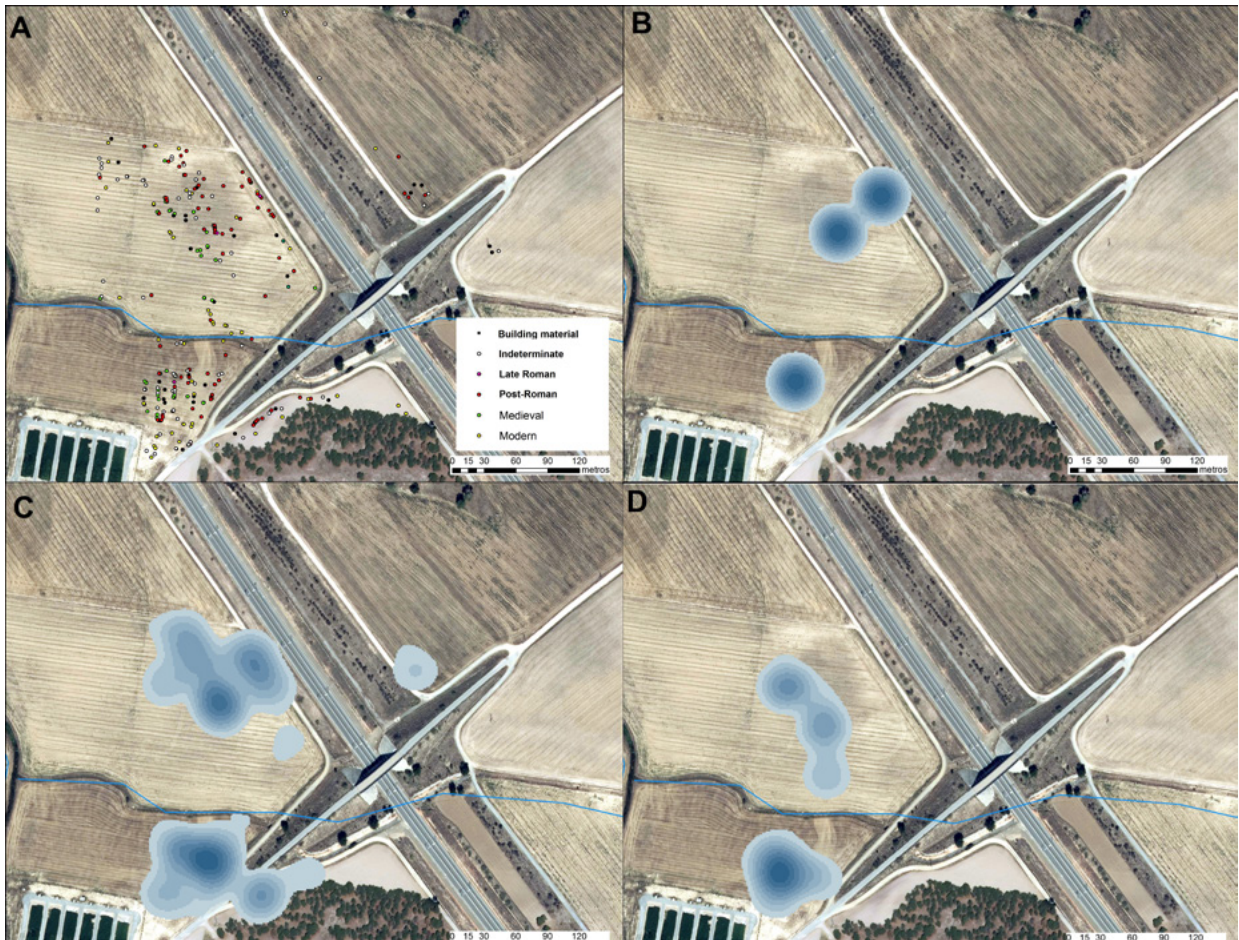


Figure 6.8. Pottery scatter in the context of La Mata del Palomar. A) Pottery documented; B) Roman pottery scatter; C) Post-Roman pottery scatter; D) Medieval pottery scatter

with a plot of approximately 1000-2000 m<sup>2</sup> similar to what is known for other similar contexts (Vigil-Escalera 2010; Vigil-Escalera Guirado 2022).

Taking this into account, the intensive fieldwork carried out in the immediate surroundings of La Mata del Palomar came to two important findings (Figure 8). On the one hand that pottery remains from La Mata del Palomar are quite restricted to the site, that is, that the pottery scatter is very limited in extension and materials from this phase are not found far from the site. On the other hand that there is a direct correspondence between the distribution pattern of the pottery and the domestic units, forming a ‘leopard spot’ pattern which may underline the organization through plots of arable land surrounding each domestic unit. Thus, what the evidence suggests is that middening and manuring during this period took place mainly within the limits of the site, not trespassing the space of the domestic units. In other words, arable lands were mainly restricted to these plots, probably using the territory outside the limits of the domestic units as part of the communal space for other functions, such as cemetery spaces, grazing areas for husbandry -as the analyses of the faunal remains of the site shows- or common lands (Jones 2004).

This pattern is very similar in other contemporary sites, like La Trinidad (Figure 9). As discussed, this site is close to Matabuey, a Late Roman villa which is located 1-1,5 km. away from La Trinidad. Intensive surveying of this site’s surroundings has come to a very long chronological sequence from



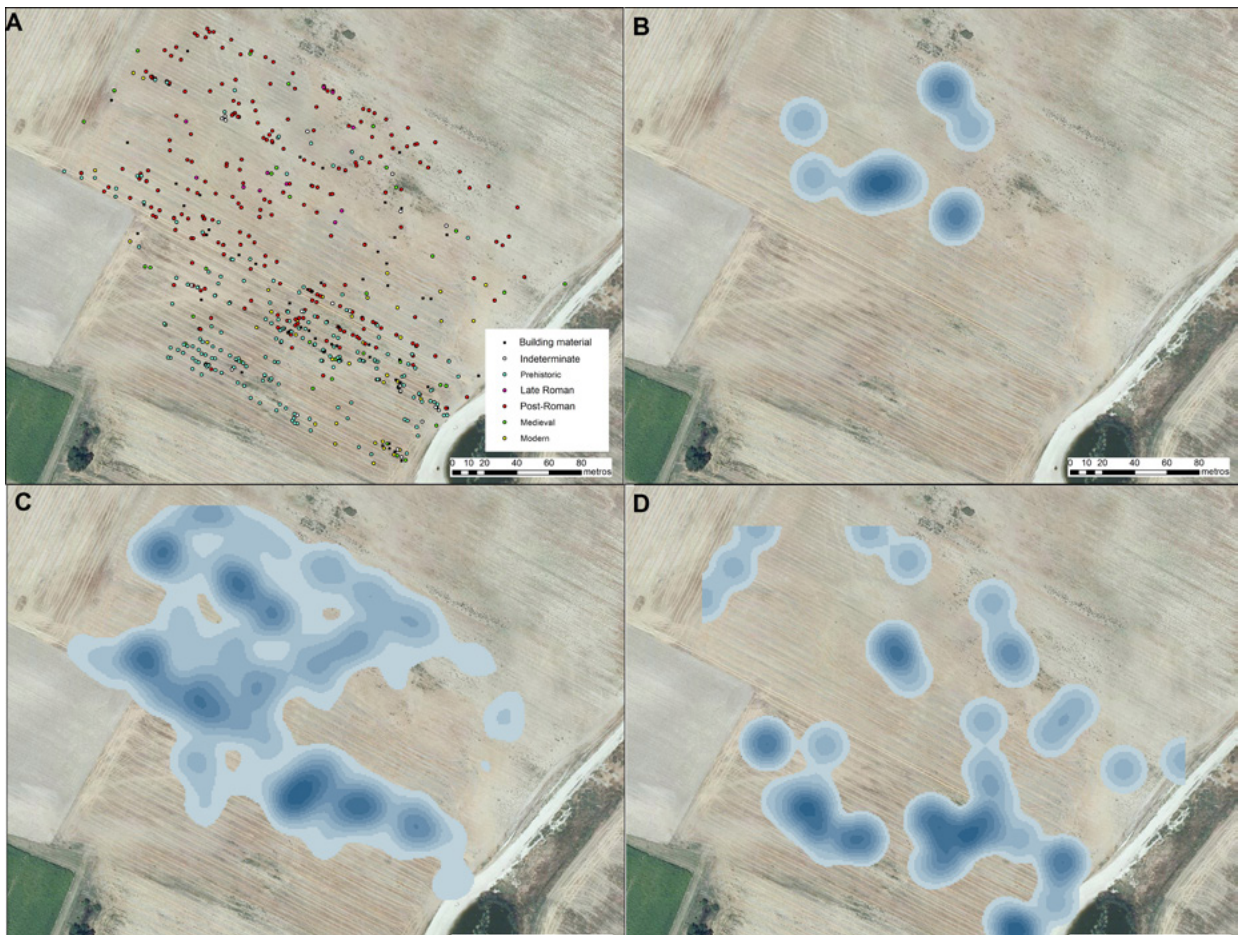


Figure 6.9. Pottery scatter in the context of La Trinidad. A) Pottery documented; B) Roman pottery scatter; C) Post-Roman pottery scatter; D) Medieval pottery scatter.

Late Prehistory to the Middle Ages, including quite a clear post-Roman phase dated between the 6th-8th centuries AD (Tejerizo García, *et al.*, 2015). The pottery scatter in this area shows this ‘leopard spot’ pattern which may be signalling the central parts of different domestic units (probably two or three) and the haloes of manuring within the plots. We should take into account that in this case, due to the limited space surveyed, it is difficult to differentiate whether this distribution pattern is a consequence of the middening/manuring processes or if it is caused by the current ploughing of the land. However, the differences between the distribution pattern from prehistoric and medieval times and the post-Roman period suggests that our hypothesis of the ‘leopard spot’ pattern may be valid and a useful starting point for future research in this respect.

### **Early Middle Ages (8th-13th centuries)**

The ‘long 8th century’ (Hansen, Wickham 2000) meant another process of major changes in the territory considered (Figure 10). The joint processes of political disintegration of the Visigothic state, the Islamic conquest of the Iberian Peninsula and the reorganization of local elites could explain the abandonment of many sites around the mid-8th century, such as La Mata del Palomar (Tejerizo García 2017). This radical change of settlement patterns was the base of the historiography of the 50s and the 60s’ discourse about depopulation. However, the idea of complete abandonment this discourse espoused has been contested for the last centuries in favour of a more nuanced process of settlement re-organization (Escalona



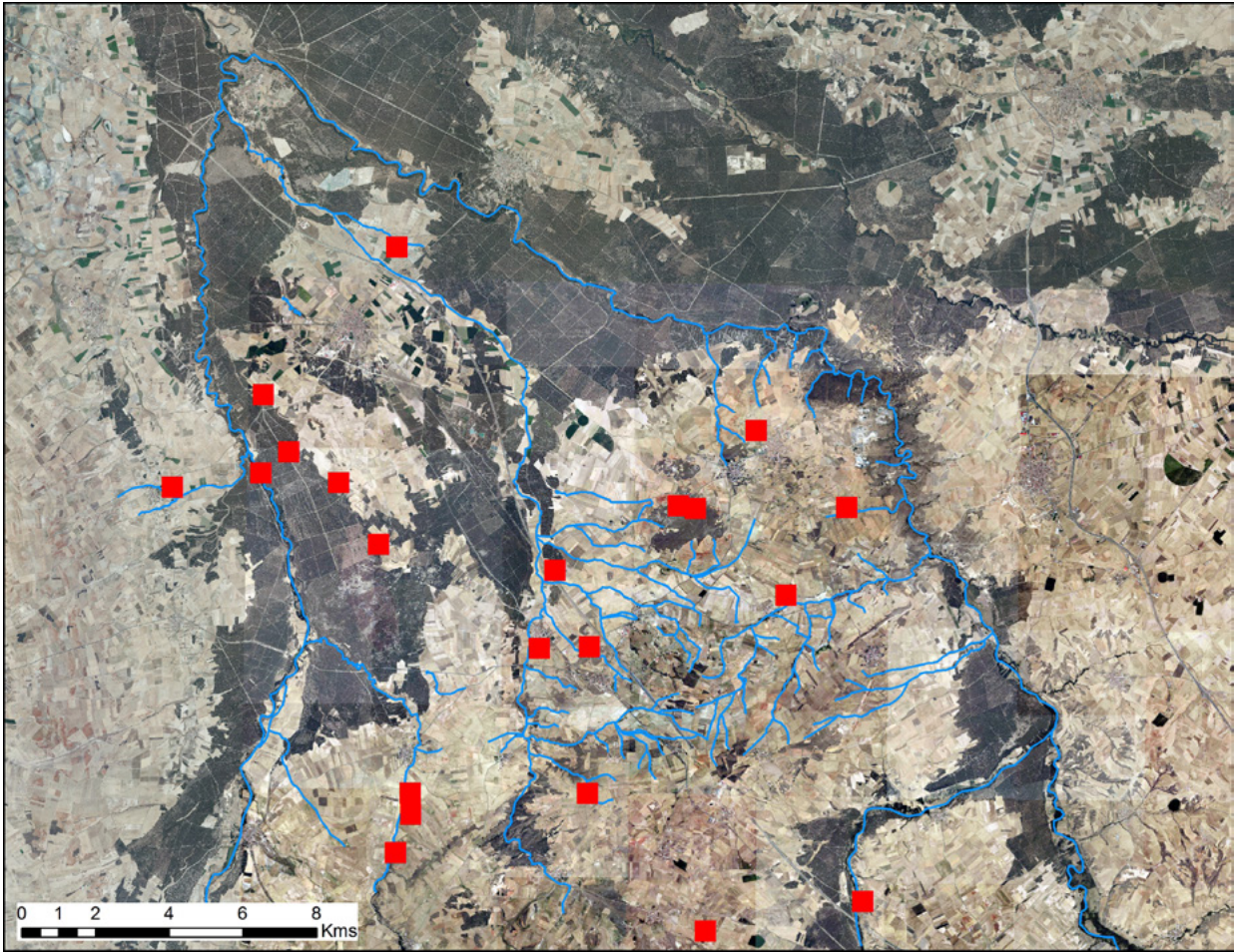


Figure 6.10. Medieval sites documented in the territory

Monge, Martín Viso 2020). This idea is increasingly reinforced by the archaeological evidence. In our case, the survey fieldwork in the territory between the Eresma and the Voltoya and the distribution pattern of the pottery from the 8th-10th centuries points towards a concentration of population both in specific central places and in rural settlements may have formed the nucleus of the currently inhabited towns in subsequent centuries (Tejerizo García, *et al.*, 2015).

The site of Domingo García/San Isidro is the best example of population concentrating in central places. This site is located in the central part of the analysed territory, occupying a small hill of schist outcrops and its surroundings within an extension of 5 has. An abandoned shrine with phases from the 11th century onwards and a small cemetery of ten tombs stands on the upper part of the hill. The cemetery shows a long sequence with different typologies of burials, including rock burials dating probably from around the 9th or 10th centuries. One of the most interesting elements of this site is the presence of a big rock art site occupying a large part of the hill, including carvings from the Palaeolithic to the Contemporary Era and also from the Middle Ages (Ripoll López, Municio González 1999). Even though further analyses should be carried out, we have interpreted this site as a probable assembly site from the Middle Ages, underlining its central character during the early medieval ages (Tejerizo García, *et al.*, 2015).



The other type of sites with evidences of the 8th to 10th centuries are the current inhabited towns such as Nieva or Miguel Ibáñez. Pottery sherds from this period are located in small but significant quantities within the current limits of the towns or in the immediate surroundings. Our hypothesis is that the medieval network of nucleated villages has its roots in this early medieval period from the 8th century onwards and the subsequent reorganization of the settlement pattern, something that has been proposed for other Iberian territories, like Galicia (Sánchez Pardo 2010). However, evidence is still very scarce for this period and further work must be done in order to corroborate this hypothesis.



*Figure 6.11. Shrine of Santa Inés. This building was built on a Late Roman villa.*

We have more information for the period between the 11th and the 13th centuries. As we have seen, we know from the written sources that by mid the 11th century these places not only already existed, but were organized in a complex hierarchy of nucleated villages. Places like Nieva acted as potential central places together with others like San Isidro/Domingo García, while significant agents of territorial and state power acted in this territory. The archaeological picture of the settlement pattern coming from all the available information reveals a landscape formed by a network of nucleated villages and towns throughout the territory. It is interesting to underline that in many cases, this network partly recovers the prior settlement pattern. In cases like La Mata del Palomar, La Trinidad or the abovementioned case of Valverde el Seco, medieval material overlaps the post-Roman evidence, showing continuity in the use of the landscape, albeit for potentially different functions. In the case of La Mata del Palomar or La Trinidad, our survey fieldwork and the archaeological excavations point towards the hypothesis that the medieval villages used the post-Roman dwelling spaces precisely as arable lands. This is corroborated by the excavations of La Mata del Palomar, as there is no evidence of a medieval occupation, although medieval materials appear on the surface. As other studies suggest, the abandonment of buildings and its subsequent decay, collapse and earth covering may function as manuring, making these lands a potential space for cultivation (Bogaard 2012).

Another interesting feature of the medieval landscape in the territory under study is the direct relationship between post-Roman settlements and the presence of medieval shrines. This is the case in a significant number of cases, with La Mata del Palomar, La Trinidad San Isidro/Domingo García or Valverde el Seco as the best examples. Although further studies are yet to be carried out, most of these buildings show phases from the 11th to 13th century. Analyses applying the methodology of Building Archaeology to the shrine of Saint Inés, close to Valverde el Seco (Figure 11), show a long sequence from the 12th century to at least the 16th-17th centuries, precisely when the village of Valverde el Seco was abandoned (Tejerizo García 2014). Another interesting example in this respect is El Campillo, a site with materials from both the post-Roman and the medieval periods. What stands out from this case is that even though both materials appear in the surroundings of the current shrine, they do not completely overlap, suggesting again that in medieval times former dwelling spaces were used as arable lands which is advantageous for intensive farming methods (Bogaard 2012). A quite similar pattern is found in the intensive fieldwork carried out in the site of Trinidad.

Another site where intensive fieldwork has been carried out is San Isidro/Domingo García (Figure 12). At this site, the halo of medieval pottery sherds is by far the biggest detected, near 1 km. away from the medieval shrine and the cemetery in a continuous carpet, from where the medieval site was supposedly established. The density analysis shows a clear contrast both to the Late-Roman and the post-Roman periods, revealing more dense and extensive haloes around the centre of the nucleated villages, which



Figure 6.12. Pottery scatter at the site of San Isidro/Domingo García. A) Total pottery scatter; B) Post-Roman pottery scatter; C) Medieval pottery scatter.



decrease after a distance of 1-1,5 km. Thus, the correspondent manuring processes shows the capacity of transportation of midden and dung to large distances, although less than in Late Roman times, and in contrast to this period, in connection to the villages.

## Discussion

Once we have presented the analyses of the settlement pattern in the territory under scrutiny and its relation to the manuring and middening processes through pottery detection and density analyses, we will discuss some general trends, hypothesis and ideas regarding the economy and agrarian practices. This is possible due to the connection established between the distribution pattern of pottery and the social practices behind it, the basic tenet of the ‘manuring hypothesis’. Thus, for example, ‘the level of labour-intensity depends on the methods of transport (on the hoof, with or without animal draught, etc.), distance of transport, amount and periodicity of application, and degree of additional soil working to incorporate the material’ (Bogaard 2012, 25).

The first result of the analyses is that, although further studies are yet to be carried out, differences among the different periods are recognizable in the archaeological record. Pottery scatters and their densities, the type of carpets and haloes or the distances from the central parts of the settlements and thus the capacity of transport are some of the characteristics which can be distinguished from one period to another. As A. Bogaard puts it, ‘the nature of middening reflects rubbish disposal practices, which in turn are linked with settlement patterns’ (Bogaard 2012, 27). Furthermore, ‘manuring intensity is constrained by two factors: availability and transportation. The number and type of animals kept and the extent of stall-feeding determine manure availability. Similarly, availability of domestic waste depends on the scale and permanence of human occupation’ (Bogaard 2012, 33). Following this idea and the abovementioned evidence, we can summarise these characteristics as follows:

Period	Settlement pattern	Type of halos	Distance	Manuring intensity
Late Roman	Villas and subsidiary settlements	Discontinuous	Long (>1 km.)	Extensive
Post-Roman	Hillfort settlements	Discontinuous	Short (surroundings)	Intensive
	Villages and farmsteads	Continuous	Short (200-300 m.)	Intensive
Middle Ages	Nucleated villages and towns	Continuous	Long (>1 km.)	Intensive

*Table 6.2. Diachronic patterns detected in the survey*

As stated at the beginning of this paper and following other contributions to this matter, we should establish a hypothetical relation between the distribution patterns of pottery and the presence of different manuring and middening processes. Furthermore, I have defended here that these processes are primarily related to the type of settlement pattern which was hegemonic in each of these periods. What I will argue here is that, in addition, all these characteristics may point towards different types of agrarian practices and, ultimately, to different modes of production.

During the Late Roman period the presence of discontinuous haloes in different spots at long distances from one another could be related to extensive forms of manuring and with the capacity to transport dung and midden to long distances from the central part of the settlements. This is particularly the case with Late Roman villas, where crops and production, and potentially waste disposals and midden, are mainly stored. The presence of Late Roman material at a distance of more than 2 km. away from the potential stall manure indicates this high capacity of transportation if compared with other ethnoarchaeological examples (Bogaard 2012, 26). Thus, extensive processes of manuring correlate with an intensive and organized use of the arable lands which hypothetically correspond to each of the Roman villas documented in the territory. The presence of sites like Navajuelo, focused on metal

production and storage suggests a functional specialization of the space and thus a high capacity of territorial control under a coherent economic and political unity. From this perspective, manuring processes would be, organized agrarian practices within a hierarchy system of power in which the landed aristocracy and large-scale state power determined the great productive decisions.

As described, this settlement pattern was deeply transformed during the 5th century. The Post-Roman settlement pattern presents two different kinds of settlements. Between the mid-5th century and mid-6th century most of the population probably lived in the hillfort settlements. These settlements' arable lands seem to have been restricted to their immediate surroundings, as proven by the archaeological evidence. Pottery assemblages from this period are only recognizable close to these sites, which may point towards intensive manuring processes within a short distance from the sites. Midden and dung disposal may also have taken place in these sites' immediate surroundings. In the hillfort settlement of Castro Ventosa, sunken features with domestic waste have been located outside the walls (Misiego Tejada, *et al.*, 2002). This not only refers to waste management, but also reflects the possibility that these structures may have been used for midden and subsequent manuring of the surrounding arable lands. I have argued elsewhere that these sites are related to the territorial elites' attempts to maintain their power and control in a moment of major changes (Tejerizo García, Canosa Betés 2018). Thus, the agrarian practices shown by the archaeological record would suggest a concentration of the arable lands directly controlled by these sites.

After the mid-6th century, the landscape was characterized by the presence of different farmsteads and villages throughout the territory. As we know through the excavation of La Mata del Palomar (and other similar sites like Gózquez), these settlements were organized through the juxtaposition of different domestic units within a well-demarcated plot for the different tasks of production and reproduction (Vigil-Escalera 2007, 2010). The distribution pattern and density of this period's pottery assemblages at villages and farmsteads shows this plot distribution of settlements. Thus, middening/manuring processes seem to have been very intensive within the limits of the plot, forming what A. Bogaard has called the 'kitchen gardens' where 'middens may accumulate on a small scale in open areas or former house plots within the settlement' (Bogaard 2012, 27). Haloes and carpets of pottery from this period are quite restricted, indicating low distances for manuring. In other words, arable lands seem to have been restricted to the limits of the domestic units and thus of the village and farmsteads. This may point toward a multifunctionality of the landscape in which large parts of the territory may have been used for husbandry, common lands or forestry. This pattern is coherent with a type of mode of production in which each domestic unit organizes most of the production, along the lines of what C. Wickham and others called the Peasant Mode of Production (Da Graca 2015; Tejerizo García 2020a; Wickham 2008).

After the 'long eighth century' a total reorganization of the settlement pattern took place, with the abandonment of several settlements and the concentration of population both in central places (such as San Isidro/Domingo García) and in different rural settlements which would eventually constitute this territory's future towns and nucleated villages. By the 11th century, the territory was fully organized and the limits of each settlement clearly established, which caused disputes to increase. Pottery scatter points toward this type of landscape, with an extensive use of the territory for arable lands, coherent with the general picture of peasant landscapes painted by classic authors such as G. Duby (Duby 1998). As we have seen in cases such as San Isidro/Domingo García, haloes and pottery carpets are quite large, reaching up to 2 km. from the (theoretical) central part of the settlement. These nucleated villages predominate over the surrounding territories while the midden and manuring processes of each domestic unit requires transportation to longer distances. As R. Jones suggests, these pottery-scatter patterns may show the implementation of the open-field system and simultaneous restriction of pastures (Jones 2004). This type of land management contributed to control over production by the seigniorial powers a process which runs parallel to their firm control over the territory, as established

by the written records for the period between the 11th and the 16th centuries, when several villages were abandoned. Landscapes of increasing inequality materialised in buildings such as the churches and shrines which marked this control of the territory (Quirós Castillo 2016).

### General conclusions and further research

I started this paper underlining that the fieldwork carried out in the territory between the valleys of the river Eresma and the river Voltoya did not seek to analyze long-term agrarian practices and manuring processes. However, the interesting results obtained along with the development of medieval archaeology in recent years and the proposals made within the context of the Vitoria congress pushed forward the possibilities of this study. We want to finish this paper with a general consideration of the possibilities and setbacks of our study's analyses of manuring processes.

As I hope to have argued clearly, the possibilities for studying agrarian practices and the middening and manuring processes through the analyses of pottery scatter are interesting enough to be carried out and expanded. Based on the 'manuring hypothesis', the distribution and density patterns of the pottery sherds analyzed through an intensive methodology paired with GIS show significant long-term differences in our case study. Patterns that, as we have argued, are related both to a different historic concept of settlement patterns and also with different forms of social and political organization. In other words, we state a high correlation between pottery sherd distribution, the settlement pattern and the manuring processes, which are determined by different modes of production. Although more analyses are yet to be carried out, we think the basic hypotheses of this paper are strong enough to push the study forward. These subsequent studies should not only expand the proposed methodology by enlarging the area analyzed (basically, more fieldwork in a wider space to see how the halos/carpets of pottery develop), but also implement other methodologies that have proven extremely useful for the analyses of past agrarian practices. These methodologies refer mainly to geo-archeological procedures such as phosphate, soils micromorphology or isotope analyses, crossed with the pottery distribution in order to obtain information about the different functions of the spaces around the settlements (Bull, Evershed 2012; Kenward, Hall 2012). On the contrary, such methodologies as the analyses of terraces which are valid for other geographical contexts (Narbarte-Hernández, *et al.*, 2020), have proven inapplicable for the territory under study because of its geographical environment, dominated by flat lands, also as a consequence of the territory's historic economic development.

At the same time we should be aware of the limits of the study carried out here, the most significant of them being the question of methodology and the representation of results (Bintliff 2014; García Sánchez, Cisneros 2013). In my opinion, the intensive analyses of the pottery distribution and density is limited by three important factors, all of them related with the question of the visibility of manuring. As R. Jones states, 'To study manure, however, we first have to see it. This is not always easy, since the very qualities that make this substance so useful for farmers -its ability to break down quickly and integrate itself into the soil on which it was spread -means that visible signatures of past manuring are either difficult to detect or non-existent (Jones 2012b, 9)'. Thus the first limit is visibility due to the selective movement of earths during the fieldwork, which made the ploughed plots extremely visible in contrast to the fallow lands. This produced an important partiality of pottery distribution maps that we should take into account in order to understand the subsequent results of the analyses.

The second factor is assessment of the impact of other factors beyond manure transportation. H. Forbes mentions alternative interpretations for the pottery scatter, such as the presence of meaningless background noise, non-habitation activity areas or scatters created by geomorphological processes' (Forbes 2013). In this case study some of these factors should be further considered, as for example the impact of plowing regarding the movement of pottery. As asserted, we estimate this movement

at a maximum of 200 metres, although we do not have an exact estimation. Although we think this impact should not affect the results statistically, it may have caused sequences to overlap in a way that distorts both analyses and results. However, this question can be addressed through a more thorough methodological design and not by reformulating the hypothesis itself, that has proven to be accurate from the ethnographic studies (Forbes 2012).

A third limiting factor is a historic one, and refers to the question of how pottery was produced, distributed and consumed in different periods and in different economic and social milieus (Jones 2009), which may include social differentiation and inequalities (Jones 2009). As A. Bogaard correctly states, 'field scatter data mostly relate to periods in which copious amounts of (mass-produced) pottery were routinely discarded' (Bogaard 2012, 37). Thus, we should be careful in using the same analytical tools to consider different periods such as the Roman or the post-Roman times, when pottery production was quite different (Tejerizo García 2020b).

Acknowledging the limits of this study, but also its potentialities, I think that the Medieval Archaeology of the Iberian peninsula having reached its maturity, it is necessary to push forward the theoretical frames and the methodologies applied in order to make progress in the discipline. The aim of this paper has been to contribute to the necessary path of trial and error which may contribute to a deeper understanding of those peasant realities, such as the post-Roman and the early medieval, that are crucial to understanding both the past and the present of the current rural world.

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# The manure hypothesis, off-site records and the archaeology of agricultural practices in the Alava plain

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## Abstract

The objective of this paper is to present the results of a multiproxy archaeological project aimed at studying historical agricultural practices in the North of the Iberian Peninsula. Through an intensive research strategy in a microregion, such as the Alava plain, the project is intended to evaluate 'off-site' records allowing to define verifiable trends in terms of transformation of agricultural practices and rural societies over time. For this reason, there have been considered the results of intensive surveys, intensive excavations of some deserted sites, biochemical analyses of charred seeds, human and fauna remains, some written and oral sources, ethnographic information, and the study of terraced agricultural spaces.

The integrated analysis of a diversity of records has allowed to characterize the main features of agricultural practices and their transformations between the Roman period and nowadays, comparing the trends observed in 'off-site' records and other evidence. Consequently, it is concluded that this record is a complex artifact, conditioned by a diversity of variables that must be defined and understood in their chronological and spatial context, avoiding both possibilistic and uncritically skeptical interpretations.

## Keywords

Multiproxies, intensive survey, unmanured fields, manured fields, statistic, taphonomy, alterations, fieldwalk.

## Introduction

Despite the subalternity traditionally attributed to archaeological surveys in comparison to excavation, this has been one of the main tools used by generations of archaeologists to identify, evaluate and interpret the remains of the past.

Survey objectives, orientations and methods have changed markedly over time. At least since the 1980s, the paradigm of 'site' has been progressively, blurred in favour of an approach tending to an extensive and diffuse spatiality that ended up crystallizing in an archaeology of the landscapes. It is in this context that intensive archaeological surveys carried out in the Mediterranean, in the United Kingdom or in North America began to quantify and, on occasion, collect and geolocate those archaeological materials located around the sites in the form of 'halos' or 'off-site' records. Relying on ethnographic observations, the so-called 'manure hypothesis' was soon formulated, which led to an important scientific production (Forbes 2013). According to authors such as T. Wilkinson, pottery and other materials recovered 'off-site' would be the testimony of the use of household waste to fertilize intensive cultivation fields and to maintain or increase production (Wilkinson 1982; Wilkinson 1989). This interpretation has been

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questioned by different authors who have demonstrated that there are other cultural and natural causes that could explain this type of findings (Alcock *et al.* 1994; Fentress 2000). Beside, supply and pottery consumption patterns were not homogeneous and stable in geographical and diachronic terms, so the composition of these records is conditioned by other cultural filters (Witcher 2006). Other studies have highlighted that ‘off-site’ records would be the result of the progressive erosion of the sites by the deep plows used in recent decades, in such a way that the visibility of these places has been modified over time (Librenti, Cianciosi 2011). Likewise, ethnographic observations have shown the tendency to the formation of household waste in the periphery of inhabited spaces, forming an area defined as infield, as opposed to outfields located at a certain distance from homes (Attema *et al.* 2020).

But with due caution, this interpretation has been assumed by practically most scholars, exploring its consequences in terms of landscape uses, economic cycles, social complexity, the notion of waste and garbage, the visibility of different agents, etc. (Jones 2004; Bintliff *et al.* 2007; Jones 2012; Poirier 2016; Conesa, Poirier 2019).

Except for specific exceptions, the study of the ‘off-site’ records in Iberian archaeological surveys has been carried out just in the Mediterranean, Baetica and Lusitanian areas, and usually following a segmented diachronic approach (Carreté I Nadal *et al.* 1995; Mayoral Herrera, Sevillano Perea 2013; Grau Mira 2017; Mayoral Herrera *et al.* 2021; Grau Mira, Sarabia-Bautista 2022). In other sectors, such as the northwest, fieldwalk surveys have continued to use the paradigm of the ‘site’. Among other reasons, this has been due to the enormous effort made by regional administrations to create archaeological inventories and the preventive policies.

Obviously, this picture is a simplification of a much more complex and nuanced reality, and some of the most innovative and relevant research groups in southern Europe have been working and continue to do so in Galicia, Castilla y León or Aragón. But even in most of the projects carried out by these groups, ‘off-site’ records have rarely been taken into consideration for several reasons.

The objective of this paper is to present the results of the study carried out in the Alava plain considering ‘off-site’ records within the framework of a long-term research program (Figure 7.1). This is one of the most densely studied microregions from the perspective of Medieval Archaeology in all Southern Europe, according to C. Wickham (Wickham 2015). Two main topics will be considered in this work. In the first place, one of the aims is to analyze the potentialities and limitations of ‘off-site’ records when studying agricultural practices, questioning the static and traditional consideration of agrarian societies in the past. To do this, a long-term perspective is adopted, covering the period from the Roman age to nowadays. Secondly, another aim is to combine critically the results offered by this record with the numerous data obtained in excavations, oral sources, bioarchaeological studies, biochemical analysis, written sources, archaeological evidence, the surveys of mountain spaces, terraced spaces, aerial photographs, etc. This inclusive and integrative approach contributes to review the nature of the inferences drawn from the materials found ‘off-site’.

The starting point will be the results obtained by the intensive and continuous surveys carried out throughout the years 2002 and 2003. This work is organized in four parts. First of all, a brief geographic context of the Alava plain is presented. Then, the objectives and the methodology used are introduced. Thirdly, the results obtained by the surveys in the light of the changes in long-term agricultural practices are shown in quantitative and qualitative terms. Finally, these results are discussed considering other evidence.

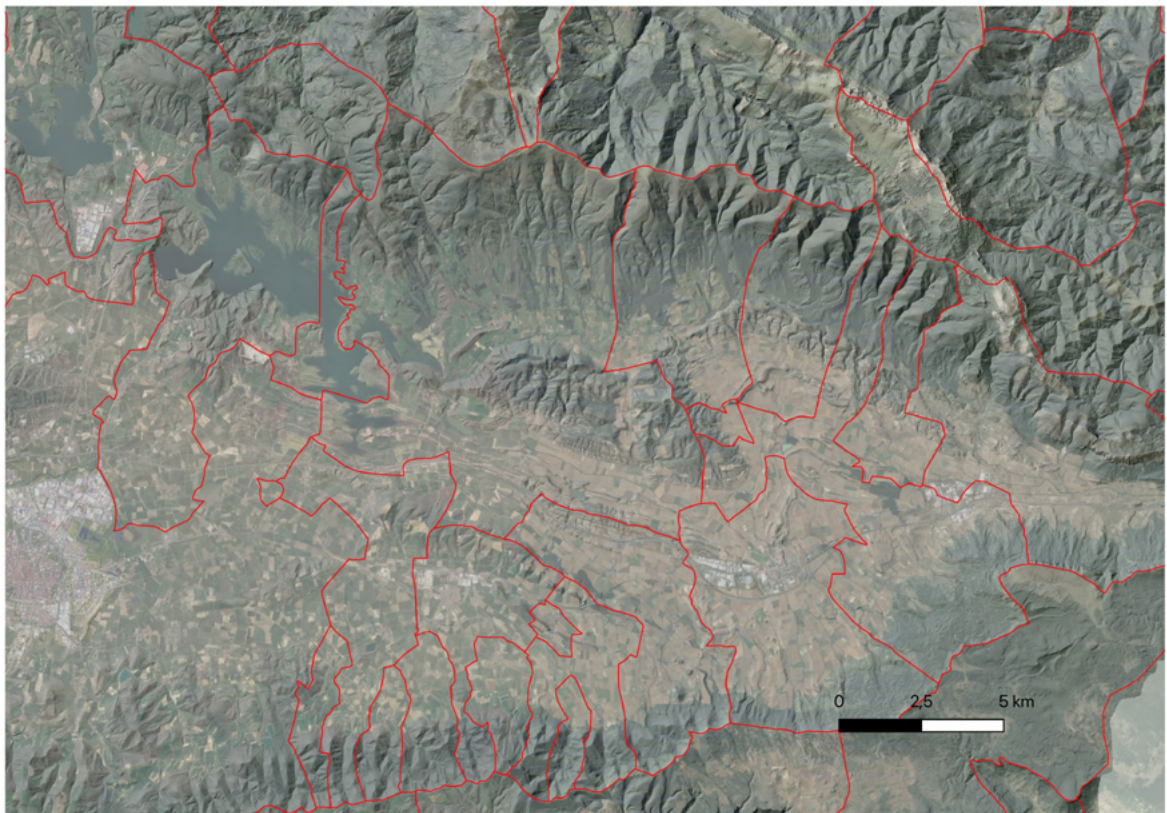


Figure 7.1. Location of the Alava plain and the limits of the municipalities.





*Figure 7.2. Photographs of ploughed fields in the Alava plain.*



### The case study: the Alava plain

The region of the Alava plain (about 674 km<sup>2</sup>) is an elongated valley of tectonic origin of about 46 x 23 km drained by the Zadorra River (tributary of the Ebro) and delimited by a crown of mountain systems that are around 1000 m to the South, and 1200 m to the North (Elguea, Enzia). There are sometimes 400 m difference between the valley floor, currently cultivated extensively through mechanized practices, and the highest levels of forested spaces, which were also used for pasture in the past. The slopes, covered by different types of wooded spots, have been intensively exploited and modeled over time, favouring the multifunctional integration of the spaces at the bottom of the plain and of medium and high mountains. As a consequence, the current municipalities of the plain have an elongated morphology incorporating the different dedications. Even today these mountains are still publicly owned (Figure 7.2).

The dominant soil is vertisol, dense and rich in clay. These are deep and fertile soils, with good water retention capacity. In fact, geographical and historical studies coincide in characterizing the plain as a space endowed with very favourable ecological conditions for the development of intensive agricultural activity, especially compared to other regions of the Basque Country. In fact, in the 16th-18th centuries wheat production produced surplus and fed nearby markets (Bilbao, De Pinedo 1984).

With the exception of Vitoria-Gasteiz city and some intermediate centres such as Salvatierra, the plain is occupied by a large number of small villages made up of a handful of houses grouped around a church and surrounded by cultivation spaces dedicated to cereal, potatoes and other crops. A state-promoted land concentration carried out from 1956, with the consequent mechanization of agricultural practices, has forever transformed the rural landscapes. Between 1956 and 1972 the number of plots was reduced by 85% and the average size of each farm was multiplied by six (Ruiz Urrestarazu, Gabana Cuesta 1990). An intensive form of cultivation based on the use of sprinkler irrigation was implemented, integrating annual crops (cereal, potato, and beetroot) with fodders.

This concentration did not only affect the morphology and dimensions of the plots, but it also modified road layouts, watercourses, forest spots, delimitations, and other constituent elements of the rural landscapes. In addition, it led to the normalization of slopes and drops in order to create continuous cultivation areas that allowed for the introduction of a capitalist agriculture. In short, this operation conditioned the legibility and preservation of the cultivated areas in use until the middle of the 20th century.

The use of deep ploughs over the last five decades has brought to light a remarkable amount of pottery and other archaeological remains (and to a lesser extent also constructive materials, metallic objects, lithics, etc.) that make up a carpet of artifacts of variable density. The Archaeological Inventory of Álava published in 1987 (Llanos Ortiz De Landaluze 1987) and the official inventory carried out by the Basque Government (See Portal Ondarea: <https://www.euskadi.eus/app/ondarea/patrimonio-arqueologia-vasco-destacado/>) collected an enormous number of 'sites', areas of archaeological presumption and information that constitute still today the state of the art.

According to written, oral and archaeological sources, the dominant agrarian regime in pre-industrial times in the Alava plain was mixed agriculture, in which domestic livestock was fully integrated into the cultivation processes as working animals, food source and soil fertilization (Harris, Fuller 2014). In addition, ethnographic testimonies indicate that until the 19th century the plough used in the plain was the curved bed type, popularly called Roman plough or *aladro*. Only then a new and more efficient heavy plough began to be used (Barandiarán, Manterola 2017).

Ethnographic, historical and archaeological evidence reveal that the strategies used in the Alava plain to maintain the fertility of intensively cultivated land or to increase productivity in pre-industrial times were very varied. And fertilization with household waste, which is recognizable through 'off-site' halos, is only one of them. Some of the best known are the rotation of complementary crops, fallow, animal bones, ashes, green manure, lifting of the fences, the collection of manure (sometimes mixed with ferns, sand, human excrements, river sludge) or the use of certain plants as fertilizer, etc. However, most of them cannot be tracked in the archaeological record.

### **Intensive survey, 2002-2003**

During the years 2002-2003 several campaigns of intensive and continuous archaeological surveys were carried out in the Alava plain. The three objectives followed by this archaeological project were:

1. First of all, to analyse settlement patterns in historical times, from the Roman period to nowadays. Thanks to the role of the Roman city of Iruña-Veleia, a network of medieval small-towns and the dense number of rural sites in use during Middle, Modern and Contemporary Ages, the Alava plain is a suitable laboratory to analyse the transformations of landscapes.
2. Secondly, to analyse agrarian landscapes and practices by documenting 'off-site' records, in order to assess the applicability of the 'manure hypothesis' to explain the meaning and nature of the material halos found in the plain soils.
3. Thirdly, to analyse in detail medieval and modern deserted villages, considering the relevance of these places to study not only settlement patterns, but also agrarian uses. Besides, deserted settlements have been privileged spaces to claim and compare local communities, as well as arenas of competition for villages and the elites, so that practices such as late medieval new cultivations, conflicts over communal pastures, rights of way, or the negotiation of social memories have frequently arisen in these places.

To address this work agenda, an intensive and continuous archaeological survey was designed in accordance with the standards used in other projects carried out in Mediterranean areas, such as Tuscany or the *ager Tarraconensis*, among others (Cambi, Terrenato 1994; Carreté I Nadal *et al.* 1995; Attema *et al.* 2020), or the Whittlewood Project in England. (Jones 2004)

From a methodological point of view, the four fundamental keys on which the project was based were:

1. A sampling strategy was used based on the delimitation of four 1-km wide transects separated from each other 6 km, crossing the entire eastern sector of the plain from north to south. In this way, 12% of the entire surface targeted would have been covered. However, it was not always possible to access all the plots, so the actual percentage covered was closer to 10%. (Figure 7.3).
2. Within each of these transects, a systematic, high-intensity inspection of the land surface was carried out during the months of October and December, once the crop fields had already been ploughed. A distance of 10-15 m between prospectors ensured good coverage of the plots selected. However, when more significant concentrations of archaeological materials were identified, a second inspection was carried out increasing the intensity of the prospection to less than 5 m between surveyors.
3. At the time the survey was carried out the democratization of digital tools had not happened yet, nor had the technification that characterized archaeology in the following years. Given the impossibility of having individual gps or precision instruments for the geolocation of artifacts, the plot was established as a minimum unit of documentation. Consequently, a difference was established between prospecting units identified with plots (UC = Cadastral Unit) with respect to the places where more significant concentrations of artifacts were found (UT = Topographic

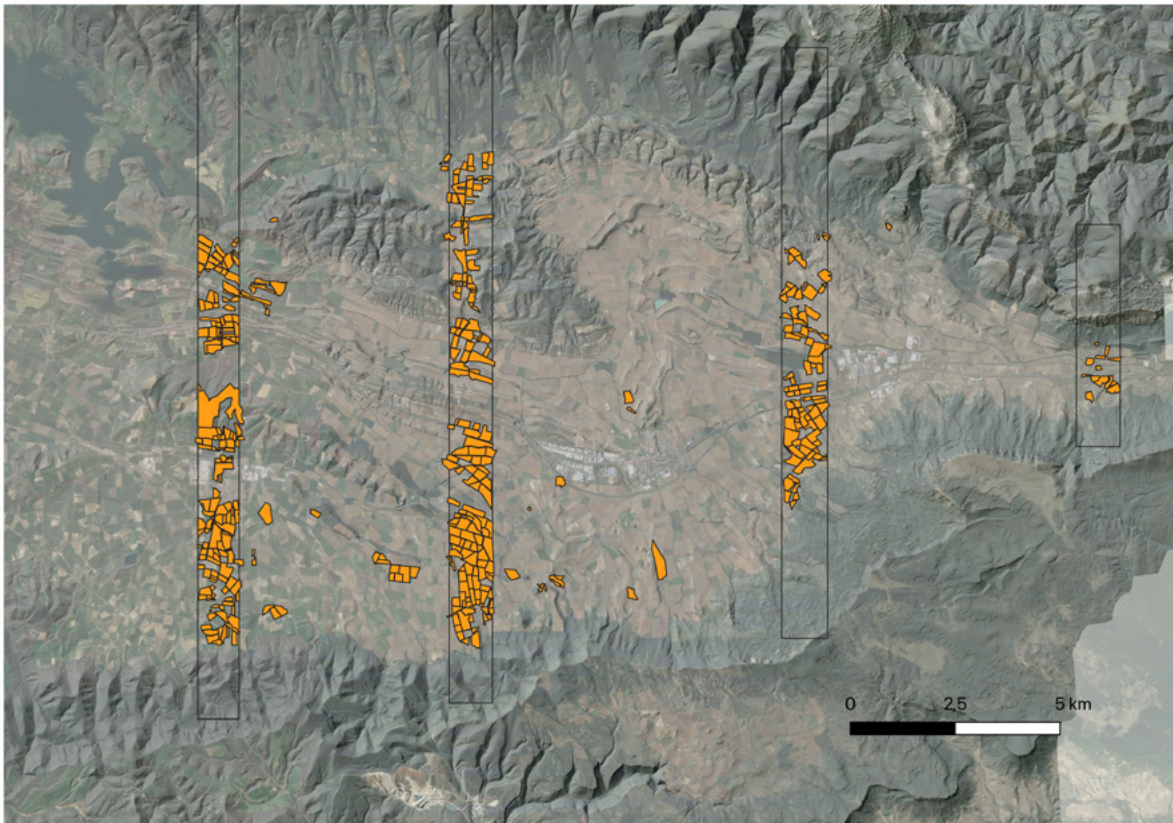


Figure 7.3. Photographs of ploughed fields in the Alava plain.

Unit). Therefore, the identification of site was based on the interpretation of high-density peaks of material in comparison to halos or background noise (García-Sánchez, Cisneros 2013). The use of plots as a minimum unit of documentation certainly hindered the possibility of carrying out refined distribution analyses. However, spatial treatment by GIS allowed certain inferences to be made about the distribution of ‘off-site’ material, in particular in the Topographic Units. And although at that time it was not possible to use an artifact record unit, one of the main values of this survey is that most of the ‘off-site’ records identified have been eroded in the last two decades, so just as the stars, they reflect a sky that no longer exists.

4. Another methodological decision adopted was the collection of all the pottery fragments found, while construction materials (mainly fragments of tiles and masonry) were only quantified. In this period the knowledge of pottery dated to historical periods was still partial, since the archaeological contexts that later allowed to build very refined chronological tools had not been published or processed (Martínez Salcedo 2004; Solaun Bustinza 2005; Escribano Ruiz 2014). And although a broad chronological attribution was made then, the collection has been recently revised in the light of the more updated studies. In total, more than 11,000 ceramic fragments were recovered, and more than 16,000 construction materials were quantified. This is a relevant number in the Northwestern Iberia context (see table 7.1).

	La Mata del Palomar	Cea	A Segisamonensis	Llanada Alavesa
Surface	856 Ha	112 km <sup>2</sup>	944 Ha	28 km <sup>2</sup>
Work days	10	nd	40	55
Num fragments	2,495	1,476	52,727	11,018
Intensity	5 m	7 m	5 m	5 - 15 m
Reference	Tejerizo <i>et al.</i> 2015	Fernández Mier <i>et al.</i> 2014	García 2003	This paper

Table 7.1. Comparative table of some intensive surveys carried out in Northwestern Iberia

In the following sections we present the results of the surveys, considering the location and the qualitative and quantitative analysis of pottery in order to characterize the taphonomic processes and their diachronic distribution during the last two millennia.

### Places of discovery

The main results obtained in quantitative terms have been, on the one hand, the recognition of 35 topographic units, defined by high concentrations of archaeological materials on the surface and sometimes supported by toponymy, oral sources and/or textual documentation. This group could identify domestic spaces in inhabited settlements (Figure 7.4). Despite the variability, it was common

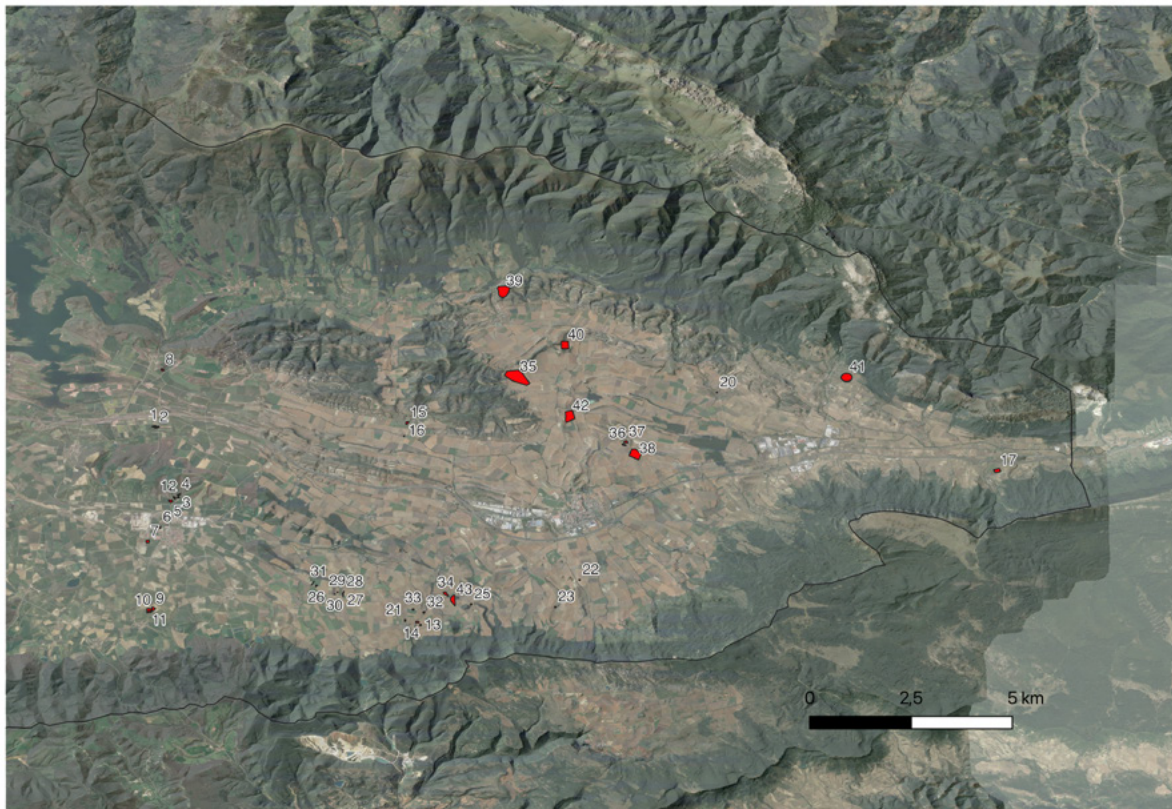


Figure 7.4. Location map of the Topographic Units.





Figure 7.5. The deserted site of Quilchano (Etxabarri-Urtupiña, Álava).

for these concentrations to be distributed in a single pole, but they occurred discontinuously. This distribution pattern of non-concentrated domestic units has been confirmed through extensive excavations, such as those carried out in deserted sites of Zornoztegi or Zaballa, and it is also reflected in written sources. The ‘alveolar’ morphology of early medieval settlements illustrated decades ago by J. Ortega Valcárcel or J. A. García de Cortázar was based on the existence of orchards, gardens, plots, storage spaces, and other services interspersed among households (García De Cortázar 1969; Ortega Valcárcel 1974). Although the excavations have shown that this morphology was replaced in the High and Late Middle Ages by nucleated patterns around churches or new axes of social and spatial ordering, this survey suggests that this pattern was not necessarily predominant.

The remaining 458 plots that were surveyed were classified into two groups. The second group of plots were characterised by average densities of surface archaeological materials forming a crown of ‘halos’ around the sites. They were interpreted in almost all cases as intensive cultivation spaces fertilized with household waste. It is important to note that in some cases there is not a simple correspondence between the chronology of the occupation of the site and that of the materials recovered in this crown of ‘halos’. One of the best example is the case of Quilchano (Etxabarri-Urtupiña), a medieval village abandoned on around 1337 as a result of the foundation of the nearby royal village of Elburgo (Fernández De Jauregui *et al.* 1995) (Figure 7.5). Although the village was abandoned, the social memory was reworked through the reform and maintenance of the old parish church of San Pedro, transformed into a hermitage from the 15th century on and still standing today. The ceramic materials recovered in the surrounding plots can be dated in most cases to after the abandonment and more precisely to the Modern Age. Consequently, it can be said that, although the community based on co-residence was dissolved, the agrarian plots continued to be exploited through practices like those used in inhabited places: enrichment through regular contributions of household waste.

The third set of plots, characterized by lower densities of materials and greater distances to Topographic Units, would have formed extensive cultivation areas, which were only fertilized by domestic waste occasionally, constituting ‘background noise’ (Forbes 2013). Usually, these plots are located at a certain distance from inhabited places.

Category	Number
Type 1	43
Type 2	50
Type 3	400

Table 7.2. Number of plots allocated to each of the three defined categories

### Diachronic trends

In order to assess the quality of this record in terms of displacement, alteration and characteristics of ceramic materials, we adopted a taphonomic approach taking into account five variables of analysis: origin, type of production, size, degree of alteration of the surfaces and ceramics edges. To define these categories previous studies based on cultural biography approaches were considered (Peña 2007; Banducci 2014).

The first variable has been defined according to the Topographic Unit. The second one according to the classification of pastes and ceramic productions of reference. The last three were based on standards defined according to the characteristics of the sample.



Figure 7.6. Dimensional standards used in the taphonomic study.

The size of fragments was recorded in three categories: small, medium and large, always taking into account that they are irregular in shape, so it is a variable with a certain degree of flexibility. As a general rule, small fragments are those that do not reach 2 cm in length on either side; medium ones are between 2 and 3.5 cm, while large ones are those that exceed 3.5 cm (Figure 7.6).

Another element that was considered in this study is the degree of rounding. To this end, three categories have also been identified: sharp, rounded or very eroded (Figure 7.7). Sharp cuts are those in which the fracture is clearly seen, without signs of alteration. Rounded are those in which the cut has



Figure 7.7. Classification of the degree of rounding of ceramics used in the taphonomic study.





Figure 7.8. Classification of the degrees of alteration of the surfaces used in the taphonomic study.

lost definition, that is, is slightly altered at the edges, which are rounded. Finally, very eroded cuts are those that present the entire surface altered, generating a curve from the outside of the piece to the inside (Banducci 2014).

As for surface alteration, three categories have also been defined. Well-preserved pieces have been classified as intact. The second group are the altered ones, when have suffered some minor alteration on the surface of the piece, with marks, adhered remains or similar. Finally, there are the pieces that have suffered loss of surface (Figure 7.8).

Considering these criteria, a total of 3,743 ceramic fragments from nine sites that had off-site material halos were recorded and processed in a database (Figure 7.9). Then, statistical analyses were performed to assess the association between the different variables using the 'chi-square independence test' and 'Fisher's exact test' (Monte Carlo procedure). Although the interpretation of these analyses has not been concluded yet, certain patterns were identified.

It can be concluded that place and edge alteration variables were statistically associated, as well as place and surface alteration. As a hypothesis, it is thought that surface alteration is the result of the use of deep ploughs in recent times, while edge alteration would depend on the characteristics of ceramic pastes, as well as the degree of displacement to which they have been subjected over a long period of



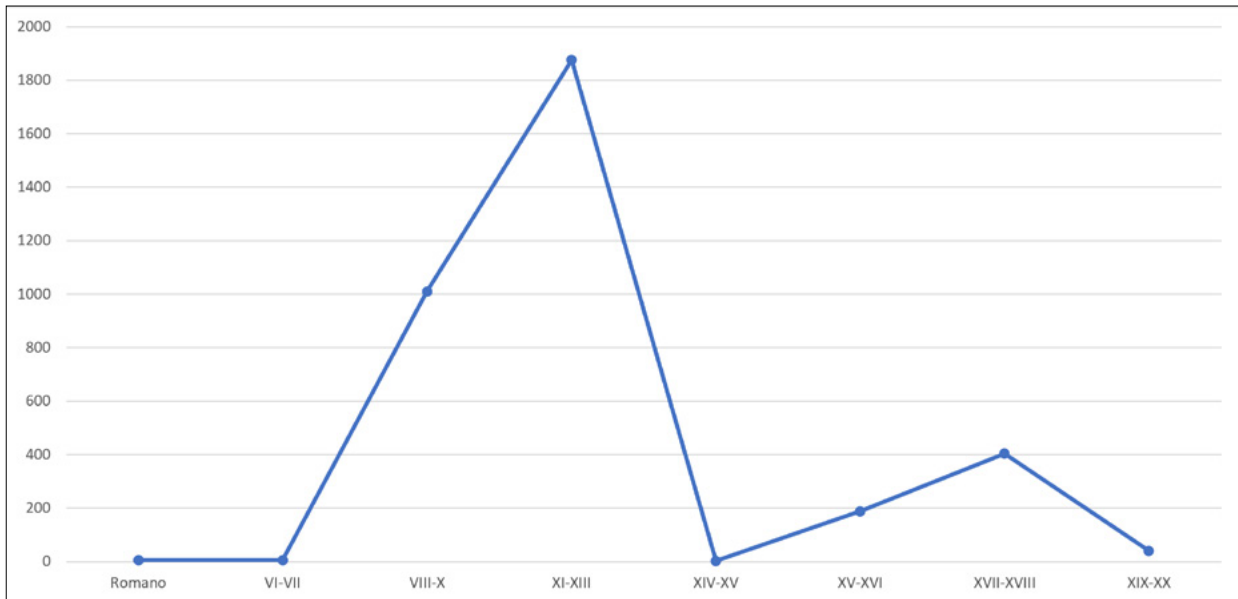


Figure 7.9. Quantification of the number of fragments according to the defined chronological ranges.

time. Among the contexts with the best-preserved fragments the halo of Quilchano stands out, while Abaunza and Elguea have the most altered ones. At the same time, recent ploughing is very intense in Quilchano, while it is insignificant in the case of Ayala. Some productions, such as groups V and XXIV, are characterized by having rounded edges, while in groups XXXI and LVI sharp cuts are statistically significant.

We aim to refine this analysis in future works, but the main conclusion obtained from this first assessment is that in taphonomic terms the assessment of the entity and characteristics of the materials recovered in site halos must consider the existence of numerous variables. This does not nullify its informative capacity, but it does invite us to consider the genealogy that determined their formation, transformation, and alteration.

### Discussion: agricultural practices in the last two thousand years

On this occasion, only the 'off-site' records from the Alava plain will be analysed from the perspective of the diachronic transformations of agricultural practices. Future works will address topics such as the notion of waste and its forms of management, the archaeological impact of the transition periods defined from textual records, as well as taphonomic processes.

To carry out this approach to agricultural practices, many archaeological and historical information obtained over the years within the framework of the research program developed in the Alava plain and in other research will be taken into account (Figure 7.10). In this way it will be possible to evaluate, in a critical way, the potentiality and limitations of the inferences made from the materials found 'off-site' to study the agrarian practices in the last two millennia. Consequently, the eight periods defined in the previous figure 7.9 are summarised.

1. The number of 'off-site' materials from Roman times found in the Alava plain is very small; nor have settlements from this period been found on mountain ridges, which would allow us to think that domestic livestock herds were reduced. One can suggest that herds were managed by professional

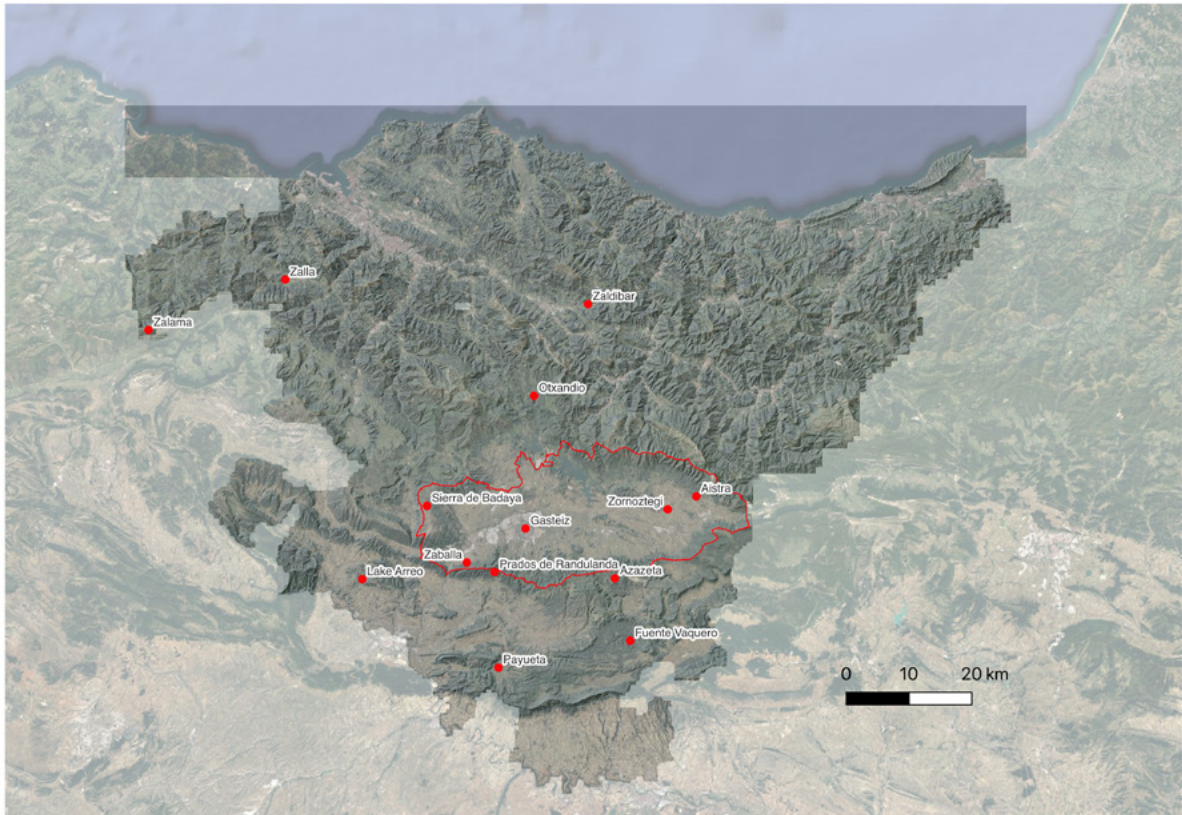


Figure 7.10. Location map of the main localities mentioned in the discussion.

shepherds following patterns not visible in the archaeological records of the Basque mountains. However, the high number of rural occupations documented in the valley and the data provided by excavations carried out in specific sites advocate for an intensive agricultural use (Núñez Marcén *et al.* 2009). There are several reasons that could explain this silence. Just as a hypothesis, it can be proposed that a post-Roman hydrogeological imbalance could have produced alluvial movements and the erosion of slopes, causing the occultation of previous agrarian surfaces. This hypothesis would be supported by paleoenvironmental studies carried out in nearby Lake Arreo (Corella *et al.* 2013) and Prados de Randulanda (Pérez Díaz, López Sáez 2014). Consequently, the visibility of the occupations from this period would be hindered by depositional processes and only when medieval and post-medieval cultivation areas were altered or removed the Roman remains emerged. The example of Zornoztegi is illustrative (Figure 7.11). It is a medieval deserted village of which a large area was excavated. Thanks to an intense diagnostic work it was possible to recognize a series of prehistoric and medieval negative structures excavated in the bedrock. However, only after 4 years of intensive work it was possible to locate on the NE slope a 160 m<sup>2</sup> Roman occupation. More than 1,000 ceramic fragments, the stone baseboards of two structures and an abundant number of faunal remains, metal, glass, etc. were recovered. Paradoxically, in Zornoztegi it was easier to identify the Chalcolithic and early medieval occupations, characterized by a low density of structures of impossible to perceive on the surface, than the Roman remains that had a significant amount of domestic waste (Quirós Castillo 2019).

2. There is more paleoenvironmental evidence at a regional and territorial scale to support the existence of important environmental imbalances in the Late Antique period in the northwest of Iberia (Muñoz Sobrino *et al.* 2014). However, it has not yet been possible to assess the local impact of phenomena





Figure 7.11. General view of the site of Zornoztegi (Agurain, Álava).

such as the so-called ‘Little Ice Age in Late Antiquity’ (Büntgen *et al.* 2016). The visibility of domestic occupations and halos with materials dated to the 6th and 7th centuries in the Alava plain is conditioned by the features of the pottery consumed in this period and by the characteristics of settlements. So far only a small number of domestic units dated to this period are known (e.g., Aistra period 1; Zornoztegi period 3) and they have not generated a significant amount of household waste. There is also a certain consensus among specialists in that there was an increase in livestock herds at that time, and precisely from then on occupations began to be documented in the high-altitude pastures that delimit the Alava plain, which seems to confirm this hypothesis (Izdebski, Mulryan 2019). Therefore, the question that arises is to what extent the invisibility of materials attributed to this period in halos can be explained by the characteristics of materials and settlements rather than by a more systematic use of domestic livestock for fertilization processes.

3. From the 8th century on the archaeological evidence available is densified, and it is possible to characterize agro-livestock practices in the Alava plain with a certain degree of detail. On the one hand, the isotopic values of charred seeds show that the fertilization of crop fields with animal input was not a very widespread phenomenon in this period (García-Collado *et al.* 2022). At the same time, there was a significant reduction in the size of domestic animals, which were predominantly raised in wooded pastures and meadows, as inferred from the isotopic values of their diet (Sirignano *et al.* 2014; Grau-Sologestoa 2015a). Also in this period there is a notable contraction of tree pollen in the diagrams available for the Alava plain (Hernández-Beloqui 2015), as well as a more intense and varied use of forest and high pastures, as been observed in places such as Prados de Randulanda, Fuente Vaquero or Zalama (López-Sáez *et al.* 2019). Those traits suggest the progressive implementation of forms of vertical

transhumance (called *trasterminancia*) within the framework of a diversified agricultural economy based on the integration of different dedications and ecological niches. All this is reflected in human diet, as shown by isotopic analyses, fauna remains or carpological records (Grau-Sologestoa 2015B; Lubritto *et al.* 2017; Quirós Castillo *et al.* 2020).

In short, all this information suggests an important development of agro-livestock activities in the Alava plain in a context where numerous concentrated and stable rural settlements are being consolidated. This framework is a compatible result of agricultural extensification, understood as a process of increasing cultivated areas (Bruno 2020). In this context, resorting to domestic waste that makes up the halos identified in the surveys is one of the main mechanisms used to preserve field fertility over time. There might have been some form of crop rotation, as suggested by the consumption of C<sub>3</sub> and C<sub>4</sub> cereals combined with other plants such as legumes. But there are no testimonies of stubble practices, or a mixed agrarian economy based on domestic animals stabled for long periods of time.

4. On the other hand, from the year 1000, in addition to extensification, there are testimonies regarding an intensification of agricultural production in the Alava plain and its surroundings. Intensification implies a workload increase in order to maintain or make production per unit of cultivated land bigger (Bruno 2020). Among other signatures, it should be pointed out the extension and expansion of terraces and terraced systems at this time (Figure 7.12), as well as the significant increase in the amount of domestic waste found in the halos.

This interpretation is convergent with other available information. Paleoenvironmental studies show a significant regression of forests, both in the valley and in mountain ridges, as well as a notable increase in anthropic activities, so that cereals, nitrophilic and coprophils herbs reach the maximum values of

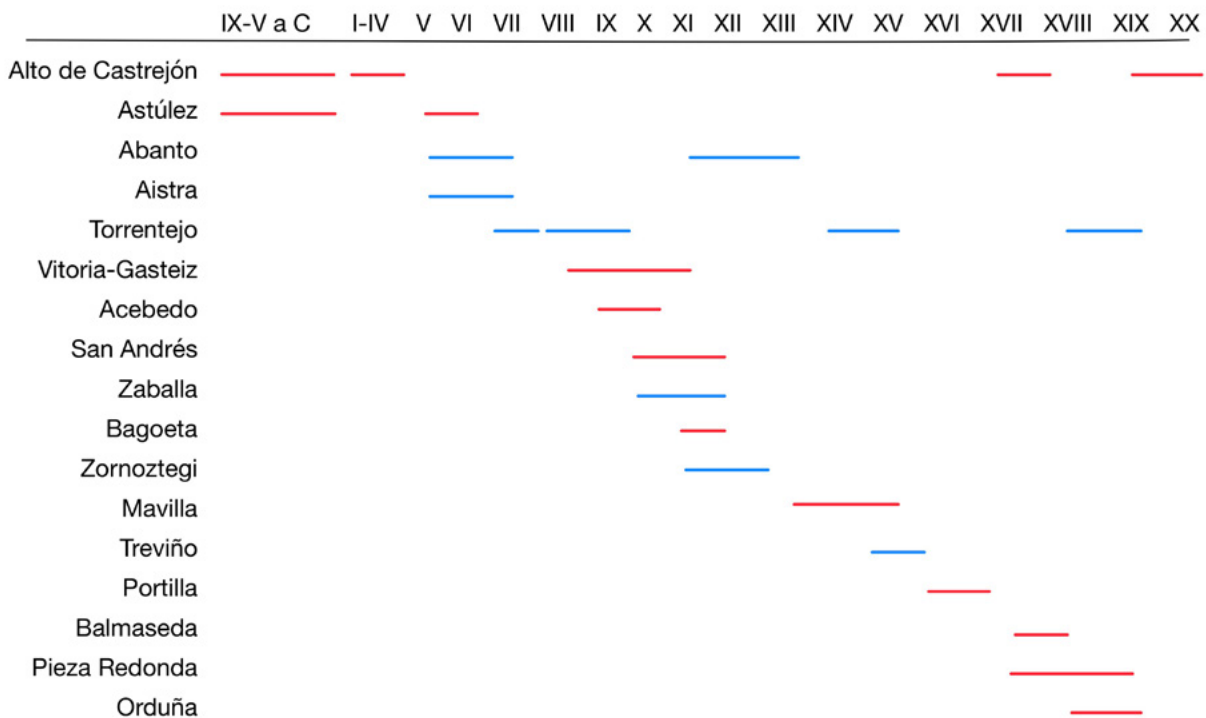


Figure 7.12. Chronologies of terraces and terraces for agricultural use investigated in the Basque Country.



the last two millennia (Corella *et al.* 2013; López-Sáez *et al.* 2019). In addition, from this period there are domestic animals permanently housed and raised in domestic environments, which implies a greater integration of domestic livestock in agricultural practices (Sirignano *et al.* 2014). And yet, the isotopic values of the seeds show no variation from the previous period (García-Collado *et al.* 2022).

Another important fact to understand the transformations of agricultural practices in this period is that from the 11th century there is a change in human food as a result of an increase in C<sub>3</sub> cereals (wheat, barley) and a progressive abandonment of C<sub>4</sub> (millets and breads). It is possible that this transformation, which clearly differentiates early and late medieval agrarian landscapes, has determined deep changes in crop rotation and in the forms of collective exploitation of agricultural spaces. In short, household waste was used massively to supplement the use of manure to maintain and increase field fertility.

5. In the Late Middle Ages there is a deep contraction of the number of ceramic materials recovered in the halos explored in intensive surveys. This is a phenomenon that has been observed in other European contexts. Recently C. Lewis has argued that the demographic effect of the plague and the late medieval crisis can be observed and quantified from the amount of ceramics consumed in England. Although there are important local and subregional differences, she has estimated that the combined effect of both events would have determined a decrease in population of around 45% (Lewis 2016). But this inference rests on the presumption that ceramic consumption has been a stable variable over time. On the other hand, other authors have argued that there was neither a contraction in ceramic consumption in the Late Middle Ages nor a significant reduction in halos (Jones 2004; Orecchioni 2022).

Even if deserted sites do not produce useful information to understand the transformations of agricultural regimes and practices, this was a time of important changes in rural landscapes. The growing amount of written information combined with material data also makes it possible to show the notable differences at a subregional level. In Lake Arreo, an expansion of forest cover and a contraction of agricultural activity are documented in this period (Corella *et al.* 2013). On the other hand, in the Alava plain there was a profound transformation of the forest and mountain spaces. Documents seem to reflect a demographic and agricultural production crisis during the 14th century and the first half of the 15th (Fernández De Larrea Y Rojas 2004). But in reality, the material record suggests a contrasting picture. Between 13th and 15th centuries numerous inhabited places were depopulated, but this did not lead to the abandonment of cultivated spaces, nor was it a phenomenon that developed in a short period of time as a direct result of a crisis. From the second half of the 14th century there was an expansion of cultivated areas and a retreat of the forest, breaking large portions of common resources (Díaz De Durana Ortiz De Urbina 1986; Pastor Díaz De Garayo 1986). This double process led to a reduction in pastures (Stagno *et al.* 2020), so cattle had to be raised domestically for longer periods of time. Extensive livestock farming was progressively replaced by a more intensive regime (Aragón Ruano 2009). Consequently, the availability of manure increased, and in turn the need for meadows with which to feed the stabled animals became more urgent. The combination of all these variables could explain this paradox: while the number of ceramics from the 14th and 15th centuries is significantly reduced in the plain halos, other procedures are used to increase the productivity of the fields cultivated intensively in the context of the always stressed mixed agriculture. In short, in isolation, 'off-site' records do not allow us to adequately understand the transformations of agricultural practices in the late medieval period.

6. The period between the 15th and 16th centuries is characterized by an exponential growth in the number of ceramic materials recovered in the halos compared to the previous period, although in the graph the numbers do not clearly visualize the entity of such an increase. And even if the amount of ceramic waste will never reach the peaks documented in the Middle Ages, numerous studies have maintained that in these centuries there was a notable expansion of agricultural production in several sectors of Alava. The paleoenvironmental records of Lake Arreo show a significant increase in

agricultural activity in the 15th-18th centuries (Corella *et al.* 2013). In the Alava plain this increase was remarkable, in such a way that already in the 16th century surpluses that were marketed to nearby territories were produced. But as R. Porres has pointed out, this increase in production was mainly based on the extensification of crops rather than on intensification, which could explain the modest increase in the number of household waste documented in the surveyed halos (Porres Marijuán 2003). Besides, in these centuries the composition of herds and livestock regimes was profoundly transformed, and cattle was replaced by sheep. As a result, the forms of mixed agriculture were modified significantly with respect to the medieval period in a context of greater competition for finite resources by a diversity of subjects that have an increasing relevant role: the monarchy itself, the villas acting as collective lordships, the lords reinforced by royal privileges (the so-called Mercedes Enriqueñas), hidalgos and intermediate groups active at a local scale (Díaz De Durana Ortiz De Urbina 2004; Díaz De Durana Ortiz De Urbina, Dacosta 2014). In this case, the agency of subaltern groups, which finds a channel of expression precisely through the cultivation of communal spaces and the use of domestic waste as the main form of fertilizer, contributes to explain the characteristics of the halos attributed to this period.

7. The archaeological characterization of the most recent centuries is greatly penalized by the scarce development of rural archaeology in modern and contemporary times in our territory. Nor do we have much information of a paleoenvironmental nature. This makes it significantly difficult to interpret the halos documented in the surveys of the Alava plain. But the distribution graph shows a peak of abundance precisely in the 17th and 18th centuries.

Traditionally the 17th century is considered a time of economic and demographic crisis throughout Castile, and also in Álava. Available data show that in this century there was a demographic contraction, depopulation of several localities, and a series of bad harvests that led to the implantation of mitigation measures, such as the so-called 'Arcas de Misericordia' (Angulo Morales 2004). The quantitative studies carried out on agricultural production in the Alava plain outline a panorama marked by a slow and progressive reduction of agricultural production followed by a recovery in the 18th century (Bilbao, De Pinedo 1984). And although the paradigm of the crisis has been increasingly questioned in recent years (Yun-Casalilla 2020), there is no doubt that this is a period of profound transformations. How can we explain the contradiction between the increase in household waste found on crop fields areas and the contraction of agricultural production? In the current state of our knowledge, it is not possible to provide a simple answer. But there are some indications that can be pointed out.

In the first place, in this period a certain number of potteries of 'popular ceramics' will be made in several localities of the plain (Escribano Ruiz 2008). This increased availability of ceramic containers at a local scale might have favoured a reduction in replacement rates and increased consumption of these products.

Secondly, studies carried out in forest and mountain spaces have shown an increasing pressure on communal resources clearing forest in a context marked by a profound transformation of livestock practices (Aragón Ruano 2009; Stagno *et al.* 2020). It could be suggested, therefore, that these ceramic materials would be the expression of subaltern groups resilience when it comes to putting new surfaces into cultivation and/or seeking to increase productivity using household waste.

Third, the difficulty in differentiating fragmented materials dated in the 17th century from those of the 18th century may be homogenizing a more articulated reality.

Fourthly, it has not been possible to assess the impact that the introduction of new American crops in the Alava plain might have had. Written records suggest that corn or potato did not have a significant diffusion in these centuries.

What is more, studies carried out in villages still inhabited in proximity to the plain, as is the case of Azazeta or Payueta, have shown that the 17th century was a period of profound transformation of the domestic spaces that would force to review the paradigm of the crisis from another perspective.

In short, we still do not have all the necessary elements to interpret the meaning of the increase in the number of artifacts recovered in the halos of the Alava plain in all its complexity.

8. The archaeological characterization of the 19th and 20th centuries is also hindered by the small number of studies carried out in rural areas to date. In addition, the most significant works have been carried out in uncultivated spaces, which have shown the process of erosion of the communal ones from the 19th century. This has been a much more pronounced phenomenon in the Cantabrian area of the Basque Country than in the Alava area (Stagno *et al.* 2020; Narbarte *et al.* 2021). On the other hand, ethnographic information acquires a growing role, which illuminates key aspects of agricultural regimes in the Alava plain and the effect that the progressive mechanization of agriculture has had in recent decades (Barandiarán, Manterola 2017). It is known that in Sierra de Badaya, which delimits the plain to the West, it has been common to auction the manure among nearby towns to be able to fertilize cultivation fields (Ortíz De Zárate 2019). In the orchards of Otxandio, Zaldibar and Zalla, a regular integration of different strategies aimed at maintaining and increasing the fertility of these intensely cultivated spaces was used (Peña Chocarro *et al.* 2003).

But the reference framework is provided by economic history, which has shown that the growing connectivity of rural markets led to a stagnation of agricultural production in Alava during the first half of 19th century (Bilbao, De Pinedo 1984). Likewise, Soler's survey on Alava agriculture at the end of the 18th century photographs the agrarian regimes very precisely. It is a very detailed survey since 244 questions were asked to 415 villages. Among other information, this document reports on yields, the type of crop, agricultural practices or the predilection for animal fertilizer, because the use of lime has a high cost (Pastor Díaz De Garayo 2011). Historical geography has also shown the important transformations of agricultural practices and producer communities throughout the 20th century (Ruiz Urrestarazu, Gabana Cuesta 1990).

From this reference framework it could be suggested that the obvious invisibility of domestic waste in cultivated fields in these centuries responds to a profound transformation of agrarian regimes. Paradoxically, the most recent materials are the least represented in the assemblage recovered during the surveys.

## Conclusions

The main thesis that has been presented in this work is that the heuristic capacity of a systematic survey focused on the study of material halos located 'off-site' is amplified when inserted in a strategy of high intensity microregional analysis capable of integrating a diversity of records.

Secondly, it can be argued that 'off-site' records in the Alava plain, and to a certain extent in other sectors of the northwestern peninsula, have some distinctive features with respect to what has been observed in other projects carried out in the Mediterranean or in other European sectors. Specifically, there are three particularly significant features. In the first place, the amount of pottery consumed in certain historical periods (e.g. Early Middle Ages) is very contained in comparison to the standards observed in other areas of the Central Plateau, Baetica, Lusitania and other peninsular sectors. Secondly, domestic architectures had some distinctive features in certain historical periods. The predominance of domestic architecture in perishable materials in the Early Middle Ages contrasts with the dominant earth and stone constructions in Al-Andalus. Finally, the importance of terraces, canalizations and other

improvement works of agrarian spaces should be considered modest with respect to what has observed in the Mediterranean, but also in other sectors of the northwest of Iberia (Ballesteros Arias *et al.* 2006).

Thirdly, although ‘off-site’ records in the Basque Country have often been marginalized and questioned, this study has shown that the ‘off-site’ materials make up a complex and multidimensional record, which can be studied to understand aspects such as agricultural practices. In the Alava plain, the manure hypothesis can be assumed with the appropriate precautions. But on the other hand, agrarian regimes cannot be defined solely through this record, especially in periods such as the first Early Middle Ages or the Ancient Régime. Integration with the information provided by historical, paleoenvironmental, landscape, bioarchaeological or isotopic biochemistry studies is essential to understand the limitations and meanings of domestic waste halos.

Fourthly, crop fields and household waste found in them are relational artifacts resulting from the complex interaction of a diversity of actors, dedications, but also of social practices. The massive use of household waste during the early and high medieval period is not only the expression of forms of extensification and intensification, but above all the result of the negotiation, regulation, resilience and agency of cohesive producer communities in a context of relatively little intervention of dominant groups in the management of agricultural practices and regimes (Wickham 2020). On the other hand, from the Late Middle Ages it becomes more evident the relevance of aristocracy empowered by the



*Figure 7.13. Erosion of traditional agricultural surfaces caused by heavy machinery.*



privileges obtained from the monarchy, but also a diversity of agents implicated in a more capillary way in the organization of agro-livestock activities.

Fifthly, the weak status attributed to crop fields and productive spaces in heritage terms means that there is a lack of active policies of valorisation and protection (Figure 7.13). Both in the plain and in other nearby regions, such as the case of Rioja Alavesa, this means that in a few decades capitalist agriculture has eroded these records in a very incisive way. In other words, the materials and distributions documented in the years 2002-2003 no longer reflect the reality of 2022. Repeated surveys over time, both at ground level and from aerial means, have revealed the progressive erosion of this record.

## Acknowledgments

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