

# Sites, rhythms and establishment and exploitation dynamics in the territory in the Early Neolithic (5,500-4,500 cal BC): the Pyrenees and Pre-Pyrenean mountain ranges

Cypsela 22  
Pàg. 259-284  
ISSN: 0213-3431

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## Abstract

Research on the Neolithic has until recently considered the Pyrenees as a secondary player in the process of introducing agricultural and livestock life forms as opposed to the pre- and coastal mountain ranges and the central depression. The work carried out in recent years in these territories, with a review of old collections, preventive excavations and new research projects, leads to a much more detailed and complex picture of the neolithic process of preconceived. In this sense, the work carried out in the high Pyrenees provides data from an incipient Neolithic since the second third of the sixth millennium BC at altitudes close to 2,000 meters, which opens a perspective of great interest unheard of a few years ago. On the other hand, consolidated projects such as the one developed at the Draga site make it possible to propose regional sequences for the eastern Pre-Pyrenees due to the introduction of the Neolithic.

## Keywords

Early Neolithic, La Draga, Regional Sequence, Pyrenees, High Pyrenees

## Sommaire

*Jusqu'à une date relativement récente, les recherches sur le Néolithique considéraient les Pyrénées comme un acteur secondaire dans le processus d'introduction des formes de vie agricole et d'élevage par opposition aux massifs montagneux pré et côtiers et à la dépression centrale. Les travaux menés ces dernières années dans ces territoires, avec un examen des collections anciennes, des fouilles préventives et de nouveaux projets de recherche, conduisent à une image beaucoup plus détaillée et complexe du processus néolithique de conception préconçue. En ce sens, les travaux menés dans les hautes Pyrénées fournissent des données d'un Néolithique naissant depuis le deuxième tiers du sixième millénaire avant notre ère à des altitudes proches de 2 000 mètres, ce qui ouvre une perspective d'un grand intérêt inouï il y a quelques années. En revanche, des projets consolidés comme celui développé sur le site de Draga permettent de proposer un séquençage régional pour les Pré-Pyrénées orientales du fait de l'introduction du Néolithique.*

## Mots clés

Neolithique ancien, La Draga, séquence régionale, Pyrénées, Haut Pyrénées

The proposal that the origin of the Neolithic in Catalonia comes from the Mediterranean influence, that is, from the west coast of the Peninsula in the mid-sixth millennium BC, is widely accepted. From the coastal lands, the colonisers gradually reached the inland regions, even the most mountainous ones. However, when we examine the record, we realise that reality may be considerably more complex and that territories located at the top of the Pyrenean valleys participated in the phenomenon of Neolithisation quite early on, even though the process of introducing a crop and livestock agricultural economy was not homogeneous in the different areas comprising this natural Pyrenean zone. We can partly attribute this fact to the different degree of connection among the different valleys, to the uneven distribution of resources and to the different dynamics of these settlements.

## 1. The territory and the climate

Based on our perception of urban society, yet also administratively speaking, the Pyrenees are viewed as a boundary and even a frontier. However, from the physical perspective, we can also consider them the backbone of a broader territory (Cazals *et al.* 2007). They comprised of a mountain range made of siliceous rocks that extends from east to west, from the Mediterranean to the Atlantic, reaching altitudes higher than 3,000 metres. Other lines of calcareous mountains, with altitudes exceeding 2,000 metres, run parallel both north and south of it, comprising the Pre-Pyrenean mountain ranges. As the mountains draw closer to the Mediterranean, the altitudes gradually decrease. On the southern slope, which is the subject of this article, the Pre-Pyrenean mountain ranges bisect the Transversal Mountain range and give way to the delta plain of the Empordà.

These east-to-west rows are bisected north-to-south by rivers which originate in the Axial Zone of the Pyrenees and cross the Pre-Pyrenean ranges; the more western ones head towards the Ebro River while the more eastern ones lead to the Mediterranean. Because of their erosive power on calcareous rocks, these rivers have carved out a series of valleys which separate the massifs. This phenomenon plays an extremely important role in the way human populations have occupied these lands, the activities they have engaged in and how they have connected with neighbouring territories. Thus, connections are more feasible north-to-south, taking advantage of river valleys, than east-to-west, hindered by the different outlying ranges. The different passes that crisscross the Axial Pyrenees are also good passes connecting north-to-south, while also facilitating east-to-west connections.

Based on the anthracological data from some sites on the southern slope, such as Cova del Sardo de Boí (Gassiot *et al.* 2015), Balma Margineda d'Aixovall (Heinz, Vernet, 1995), Plansallosa (Burjachs, Ros 1998), Cova 120 in Sales de Llierca (Ros 1995), Cova de l'Avellaner a Cogolls-Les Planes d'Hostoles (Ros 1990), Cova d'en Pau de Serinyà (Ros 1996) and La Draga in Banyoles (Piqué 1996), the Holocene landscape must have been predominantly forest, with conifers in the highlands, while the lowlands were most likely dominated by deciduous oaks (*Quercus* sp. *caducifoli*, *Buxus sempervirens*, *Corylus avellana*, etc.) and Mediterranean taxa (*Quercus ilex* and *coccifera*, *Arbutus unedo*). However, there is a more noticeable presence of deciduous

taxa in the Axial Pyrenees, and the altitudes were slightly during the central period of the Holocene than they are today.

In recent years, pollen studies have been conducted, yielding the records of multiple lacustrine and peat bog in both higher areas in the mountains, such as Bassa Nera in Vall d'Aran, Lac Redon and Estany Llebre in Alta Ribagorça, Estany Redó, Estanillas peat bog and Coma de Burg peat bog in Pallars Sobirà, and Bosc d'Estanyons peat bog in Madriu valley in Andorra, as well as around Estany de Banyoles (Catalan *et al.* 2013; Garcés-Pastor 2017; Miras *et al.* 2010; Pèlachs *et al.* 2011). Palynology confirms the expansion of the forested areas in the early Holocene and during the 'Climatic Optimum' thereafter. During the period studied in this article, the forest was larger than it is today, with an upper limit that was apparently over 2,400-2,500 metres in altitude, and there were more deciduous trees and mesophyllous taxa in the montane ecosystems and even in the subalpine system in the mountain range.

These records also show the recurring presence of fires in the Axial Pyrenees in the early Holocene, which dovetail with the oldest signs of human occupations in the highest areas. These fires are common after 6,500-6,000 cal BC in many records (see, too, Uria 2013), along with the occasional appearance in some of the earliest pollen from *Cerealia-t*, which became more prominent after the fourth millennium BC, sustained and accompanied by obvious signs of pastures being cleared. The studies conducted at La Draga and around Estany de Banyoles (Revelles *et al.* 2015) also reveal this same scenario.

## 2. The last hunter populations

In order to understand how the Neolithisation of this territory took place, we have to have information on the last hunter-gatherer populations who lived here in the Epipaleolithic or Mesolithic and their participation in consolidating new subsistence practices grounded on a crop and livestock economy. Unfortunately, the information available to us does not go far in helping to solve this problem: During the eighth and seventh millennia cal BC, what are called the bone and denticulate tool industries appeared on either side of the Pyrenees, which lasted in this zone longer than was common in other regions on the Iberian Peninsula (Oms *et al.* 2018).

These occupations were characterised by heterogeneous sets of stone flakes with simple and denticulate knapping, with very few scrapers and projectiles, and a poor and unexceptional bone industry. The main sites located at a medium altitude, such as Font del Ros in Berga (Martínez-Moreno *et al.* 2006; Martínez, Mora 2009); Bauma del Serrat del Pont in Tortellà (Alcalde *et al.* 2009); Balma Margineda (Guilaine, Martzluff 1995); Sota Palou in Campdevàrol (Carbonell *et al.* 1985) and Balma dels Fadrins in Queralbs (Díez-Canseco *et al.* 2020) show chronologies which are quite distant from the earliest Neolithic expressions. The most recent ones, the Mesolithic level at Bauma del Serrat del Pont, is still quite far from the start of the Neolithic and continues to occupy a time bracket that should correspond to a resumption of the geometric carving traditions along the entire coastal area of the Iberian Peninsula (Vaquero, García-Argüelles 2009).

Research in recent years has also documented sites occupied by Holocene hunters-gatherers in the Axial Pyrenees, which means that Balma Margineda is no longer a unique case. Unlike it, however, they are all higher-altitude occupations, over 2,300 m: Orris de la Torbera de Perafita I in Andorra (8,765-8,480 cal BC); the Obagues de Ratera shelter in Espot (with an older occupation of 8,180-7,727 cal BC) and Abric de l'estany de la Coveta I in Espot in Pallars Sobirà region (7,000-6,575 cal BC). Only one possible level under the dolmen in Font dels Coms in Bajasca (8,750-8,560 cal BC) is located at a lower altitude, specifically at around 1,800 m (Gassiot *et al.* 2014, 2017; Gassiot *et al.* 2021). Generally speaking, there are many small occupations with a very limited material record, except for Abric de les Obagues de Ratera, to which we shall return later. Nonetheless, the identification of these sites is valuable because it shows that just after the last cold late-glacial period, the Dryas III, the higher zones in the Pyrenees began to be frequented by the human groups that had also settled in the valley bottoms.

Different assessments of this record have been made. One is the survival of the macrolithic bone and denticulate tool industries in most of Catalonia, which contrasts with the surrounding territories, such as the Ebro River valley and the northern part of the region of Valencia, where geometric industries are documented in juxtaposition with the first Neolithic expressions. At first glance, one could posit the marginal survival of the communities that carved these industries due to potential geographic isolation, but this seems difficult to understand as there is a very good connection between the Ebro River valley and the river valleys of the Catalan Pre-Pyrenees. A bit further west, in Upper Aragon, at sites such as Forcas II in Graus (Utrilla, Mazo 2014), there is also a level of geometric items, with a balance between triangles and trapezoids, albeit from dates considerably earlier than the first Neolithic expressions.

Another proposal is that the loss of references to the Mesolithic settlements in this territory is the consequence of the episode of climate cooling which happened 8,200 years BP (6250 cal BC) (Alley *et al.* 1997; Alley, Ágústssdóttir 2005). We can also accept different arguments that climate change forced a shift in human activities which left no record in the known sites, or more likely that it led to the disappearance of the sedimentary layers where Mesolithic records would have been found (Oms 2012). Of the aforementioned sites, both Bauma del Serrat del Pont and Balma Margineda have Cardial levels superimposed directly over the Mesolithic levels. In the other sites in this territory, the early Neolithic is located at archaeological levels superimposed over much older or sterile ones.

Therefore, we could conclude that we have no evidence of Mesolithic populations who interacted with the first Neolithic populations to reach the Pyrenees and Pre-Pyrenees, yet we cannot be certain that they did not exist. The most likely scenario is that this was a sparsely settled territory which would have made it easier for Neolithic populations to settle there, and that they occupied the ecological niches that best matched the development of a crop and livestock farm economy.

### 3. The first Neolithic evidence

The first Neolithic populations to appear on the western Mediterranean coasts were characterised by impressed pottery and were widely disseminated on the Italian peninsula, from which they spread to the coasts of the Gulf of Lion and Languedoc. In terms of the Iberian Peninsula, only a few sites on the Alicante coast have been found before then. The timeline of their spread westward is situated between 5,800 and 5,500 BC. Their pottery which is an identifying element, has printed grooves (sometimes called *boquique*) and deep Cardial impressions, usually running vertically (Manen, Guilaine 2007). Even though they used the *impressa* technique, the decorative theme of the pottery differs from Cardial decorations.

In the Pyrenees, just as in Catalonia as a whole, recent reviews have identified no element that could correspond to this phase, and the *boquique* impressions which appear in some Cardial sites in the inland regions are more closely related to the development of the Neolithic in the inland regions of the Iberian Peninsula. Furthermore, they are from a later date in the development of the early Neolithic (Oms *et al.* 2018).

We should also discard the peri-Cardial phenomenon, a name which has been used for some sites on the northern slopes that had little or no presence of Cardial impressed ware. Recent reviews (Manen, Guilaine 2007) have confirmed the lack of homogeneity of these sites and the problems that could arise with their dates, as they are very old. Currently, most of them fall within late phases of the early Neolithic.

Therefore, it seems clear that they were populations who brought Cardial ware and introduced the Neolithic way of life and material culture to all the Pyrenean and Pre-Pyreneans lands, and they most likely did so after the first settlements were founded on the Mediterranean coast.

With the current record, the key document is probably Cova de Chaves (Bastarás) in the Aragonese Pyrenees. It is a large cave that was inhabited for hundreds of years which yields old dates before 5,500 cal BC, as confirmed by recent excavations and new absolute datings (Utrilla, Laborda 2018; Laborda 2019). It is surprising to find a Neolithic settlement this important at such an early date and so far from the coast without intermediate points, as the sites found so far in the eastern Pyrenees are much more recent.

Related to Chaves, there is an important Neolithic nucleus in the central Pyrenees, where sites like Forcas (Utrilla, Mazo 2014), Cova del Moro in Olvena (Baldellou, Utrilla 1985) and Coro Trasito in Tella are located (Clemente *et al.* 2020; Gassiot *et al.* 2021) along with Cova Lòbrica (Clemente *et al.* 2020; Gassiot *et al.* 2021), Puyascada in La Fueva (Mazzucco 2018) and Trocs in Sant Feliu de Veri (Rojo 2013; Rojo 2020; Alt *et al.* 2020), which leads us to assume there was a route that penetrated from the coast of Languedoc following the course of rivers that originate in the Pyrenees. Thus, at first the easternmost territories were left out of this stream (Baldellou, Utrilla 1999; Utrilla 2002). However, if we examine the materials yielded by the excavations in Chaves, we find clear parallels with the sites on the coast of the Iberian Peninsula, and there is even a series of pebbles painted with figurations which may be related to the macro-schematic paintings in Alicante, such as the ones in Pla de Petracos, and schematic ones from the Segre and Cinca River valleys (Utrilla, Baldellou 2002; Hernández 2017). The massacre documented in Cova dels Trocs tells us that the Neolithic settlement process was quite complex and that the interaction

among groups with Mesolithic and Neolithic origins or among Neolithic groups with different affiliations was not always easy (Alt *et al.* 2020).

If we focus on the strict administrative area of Catalonia, in the origin of the Neolithic we can distinguish between two broad zones which may have developed parallel to one another, one with the central Pyrenees and Pre-Pyrenees on the eastern part of the Segre River basin, which is most likely closely related to the set of sites in the Aragonese Pyrenees (west of the Segre and Cinca River basins), and the other in the eastern Pyrenees and Pre-Pyrenees, more closely related to the coastal and precoastal areas in the central Catalan coast and the coast of Languedoc.

## 4. The early Neolithic in the central Pyrenees and Pre-Pyrenees

### 4.1 Sites and chronology

The scant number of archaeological sites from this period in the central and western Pyrenees of Catalonia is particularly notable west of the Segre River, which conditions our understanding of the process of the first Neolithic communities settling the mountains (Fig. 1). Still, the scene has changed substantially since the Montserrat Round Table was held (Guiu *et al.* 1981), especially in the inland ranges and the Axial Pyrenees. Broadly speaking, we have witnessed a significant growth in the number of known prehistorical sites and occupations, which also has to do with those situated between the second third of the sixth millennium cal BC and the mid-fifth millennium cal BC. This process has been caused by different factors which can basically be folded into two.

The first is associated with the preventive archaeology actions which have enabled outdoor sites like Font del Ros and Sanavastre, in Berga and Das, respectively, to be identified and excavated. The second, perhaps more important in terms of basic research, is archaeology's increasing interest in high-altitude mountainous regions, spaces that had traditionally remained largely outside the discipline's gaze. This has led to the major change in the record that has taken place over these decades: documentation on sites in the Axial Pyrenees, usually at altitudes higher than 1,200 and in some cases even over 2,300. The increase in archaeological evidence from the location and excavation of new sites has been joined by new campaigns at sites known since the mid-twentieth century, such as Cova Colomera and Cova del Tabac in Sant Esteve de la Sarga. South of Montsec, virtually at the outer edge of the Pyrenees, excavations have been resumed at some sites, and other studies have been initiated at Cova Gran in Santa Linya (Les Avellanes and Santa Linya), Cova del Parco in Alòs de Balaguer, etc. (Bosch *et al.* 2022, in this volume).

In recent years, archaeology in the northeast Iberian Peninsula has clearly shown a concern with solidly establishing the archaeological sequences with absolute chronologies. In the sites in the central and western Pyrenees of Catalonia, including those at the top of the Valira (Andorra) and Segre (eastern Cerdanya) River basins, there are currently almost 30 absolute datings which have yielded a chronology from between the second third of the sixth millennium cal BC and the mid-fifth millennium cal BC. They come from 9 sites, and among them the ones that stand out for the sheer number of datings are the series from Balma Margineda, Cova del Sardo (Boí) and Cova Colomera (Sant Esteve de la Sarga), which reflect the researchers' effort to robustly delimit the chronology of the



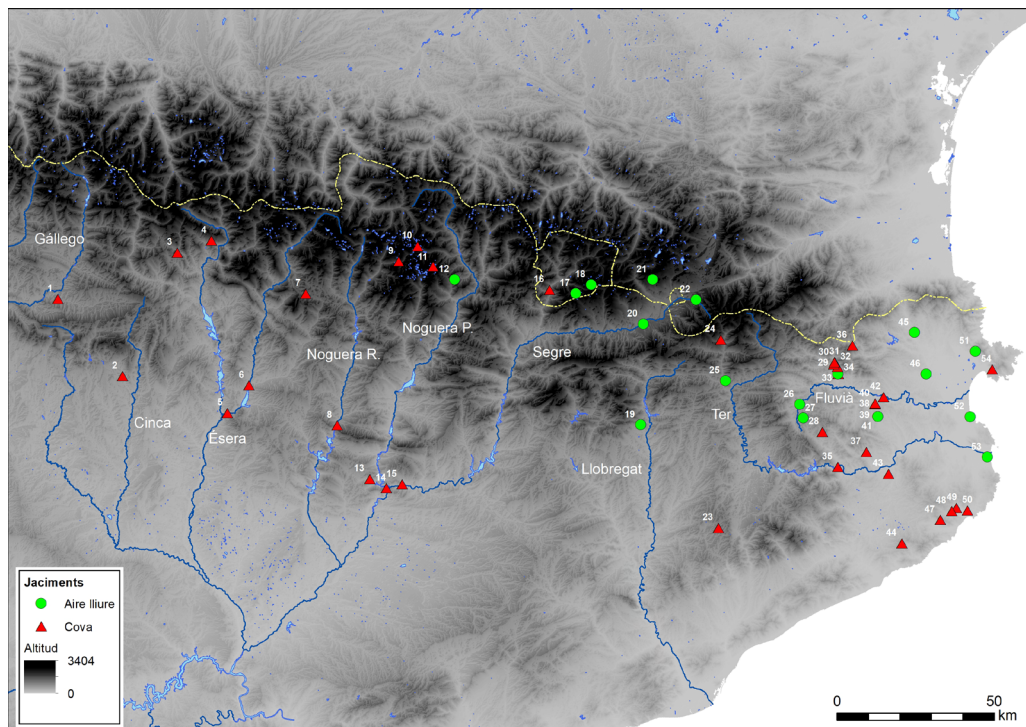


Fig. 1. Sites mentioned: 1. El Esplugón; 2. Cueva Chaves; 3. Cueva Lobrica; 4. Coro Trasito; 5. Cueva del Moro de Olvena; 6. Forcas II; 7. Els Trocs; 8. Cova Colomera; 9. Cova Colomera; 10. Abric de les Obagues de Ratera; 11. Abric de l'Estany de la Coveta I; 12. Dolmen Font dels Coms; 13. Cova Gran de Santa Linya; 14. Cova del Tabac; 15. Cova del Parco; 16. Balma Margineda; 17. Orris de la Torbera de Perafita I; 18. Pleta de les Bacives; 19. Font del Ros; 20. Sanavastre; 21. Pla de l'Orri; 22. Llo; 23. Cova del Toll; 24. Bauma dels Fadrins; 25. Sota Palou; 26. Codella; 27. La Dou; 28. Cova Avellaner; 29. Cova de s'Espasa; 30. Cova del Bisbe; 31. Cova dels Ermitons; 32. Cova 120; 33. Plansallosa; 34. Balma Serrat del Pont; 35. Cova del Pastoral; 36. Cova de la Pólvara; 37. Bora Tuna; 38. Cova de l'Arbreda; 39. Cova de Mollet; 40. Cova d'en Pau; 41. La Draga; 42. Cova de Mariver; 43. Torre Vedruna; 44. Pi de la Lliura; 45. Banyes de la Mercè; 46. Serra del Mas Bonet; 47. Roca de Malvet; 48. Cova d'en Sardineta; 49. Cova de l'Avellana; 50. Barraca de n'Oller; 51. Ca n'Isach; 52. Turó de les Corts; 53. Puig Mascaró; 54. Cau de les Guilles.

occupations. This point is also very important, because some of these sites, specifically the ones located at higher altitudes, often have very few diagnostic elements that enable us to situate them chronoculturally. Figure 2 shows the datings published ordered by basins, and within them from north to south.

In addition to the sites' geographic expansion inland from the mountains, the research in last 40 years has modified the map of the early Neolithic in this area of the Pyrenees in another way, too. Until 1980, all the sites in this timeframe known in the zone were located in cavities located in calcareous zones. Currently, outdoor settlements have been found in Andorra (Orris de la Torbera de Perafita I and Pleta de Bacives I), in the Cerdanya (Pla de l'Orri, Sanavastre and Llo-2) and in the Berguedà region (Font del Ros), which yield

chronologies spanning from 5600 to 4400 cal BC. This breaks the image held for most of the twentieth century of Neolithic settlement in the Pyrenees based on the occupation of caves by primarily livestock-holding populations. The aforementioned sites also point to the existence of outdoor encampments or settlements in the different zones and different high-altitude levels in the mountains.

Basin	Site	Level/ Context	Dating type	Material	Lab. code	Date bp	(±)	calBC (2σ)	Bibliographic reference
Noguera Ribagorçana	Cova del Sardo	A-9A2	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA-37689	6525	45	5613-5377	Gassiot <i>et al.</i> 2015
	Cova del Sardo	A-8B1	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA-37690	5850	40	4834-4556	Gassiot <i>et al.</i> 2015
	Cova del Sardo	A-8A2	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA-40878	5715	35	4678-4456	Gassiot <i>et al.</i> 2015
	Cova del Sardo	A-8A2	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA-36935	5695	35	4672-4448	Gassiot <i>et al.</i> 2015
	Cova del Sardo	A-8B2	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA- 40817	5685	35	4652-4407	Gassiot <i>et al.</i> 2015
	Cova del Sardo	A-8A6	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA-41134	5645	25	4542-4371	Gassiot <i>et al.</i> 2015
	Cova del Sardo	A-8A4	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	KIA-40815	5635	35	4542-4363	Gassiot <i>et al.</i> 2015
	Cova Colomera	EC-1 CV10	AMS	<i>Buxus</i> sp.	Beta-279478	6180	40	5286-5003	Oms <i>et al.</i> 2016
	Cova Colomera	CE1 4	AMS	<i>Triticum a/d</i>	OxA-23634	6170	30	5214-5015	Oms <i>et al.</i> 2016
	Cova Colomera	CE1 3-14	AMS	<i>Triticum a/d</i>	Beta-240551	6150	40	5215-4960	Oms <i>et al.</i> 2016
	Cova Colomera	CE1 2	AMS	<i>Buxus</i> sp.	Beta-248523	6020	30	4999-4803	Oms <i>et al.</i> 2016
Noguera Pallaresa	Abric de les Obagues de Ratera	11B2	AMS	<i>Pinus tipus syl-vestris/ uncinata</i>	CNA-4630.1.1	6800	35	5735-5631	Gassiot <i>et al.</i> 2019



Basin	Site	Level/ Context	Dating type	Material	Lab. code	Date bp	(±)	calBC (2σ)	Bibliographic reference
Valira	Orris de la Torbera de Perafita I		AMS	Charcoal	Beta-285100	6570	40	5617-5475	Orengo <i>et al.</i> 2014
	Pleta de Bacives I	Dwe-llingM152	AMS	Charcoal	Poz-18807	5660	40	4603-4366	Orengo <i>et al.</i> 2014
	Balma Margineda	C3f	AMS	<i>Capra pyrenaica</i>	CNA-2682.1.1	7401	37	6395-6092	Oms <i>et al.</i> 2016
	Balma Margineda	C3/C4	Con-ven-cional	Charcoal	LY 3290	6870	170	6061-5482	Guilaine <i>et al.</i> 1995
	Balma Margineda	C3b-F3	Con-ven-cional	Charcoal	LY 3289	6850	150	6016-5483	Guilaine <i>et al.</i> 1995
	Balma Margineda	C3b base -F3 (base)	Con-ven-cional	Charcoal	LY 2839	6670	120	5801-5374	Guilaine <i>et al.</i> 1995
	Balma Margineda	C3a-F1	Con-ven-cional	Charcoal	LY 3288	6640	160	5885-5226	Guilaine <i>et al.</i> 1995
	Balma Margineda	C3b	AMS	<i>Hordeum</i>	Beta-398960	6690	30	5666-5537	Manen <i>et al.</i> 2019
	Balma Margineda	C3a	AMS	<i>Corylus</i>	Beta-325681	6630	40	5625-5485	Manen <i>et al.</i> 2019
	Balma Margineda	C3a-F1	AMS	<i>Corylus avellana</i>	Beta-325681	6630	30	5624-5483	Oms <i>et al.</i> 2016
	Balma Margineda	C3b	AMS	<i>Corylus avellana</i>	Beta-325682	6410	40	5475-5314	Oms <i>et al.</i> 2016
	Balma Margineda	C3F	AMS	<i>Ovis/Capra</i>	CNA-2681.1.1	6083	38	5207-4847	Oms <i>et al.</i> 2016
	Balma Margineda	C3a	AMS	<i>Ovis/Capra</i>	CNA-2679.1.1	5850	35	4798-4608	Oms <i>et al.</i> 2016
	Balma Margineda	C3a	AMS	<i>Triticum</i>	Beta-398959	2520	30	789-544	Manen <i>et al.</i> 2019
Segre	Pla de l'Orri	Cab 128	AMS	Charcoal	Poz 10902	6550	40	5617-5390	Mercadal <i>et al.</i> 2018
	Llo-2	C5 N10	Conventional		Gif 6749	5700	80	4715-4362	Mercadal <i>et al.</i> 2018
	Sanavastre	Level 2, Estr. 4	Conventi-onal	Charcoal	UBAR-574	5780	60	4785-4462	Aliaga, Campillo, s.d.
	Cova Gran	CG-3N-E9	AMS	Acorn	Beta-265982	6020	50	5197-4788	Mora <i>et al.</i> 2011
	Cova Gran	CG ANA-LIT 57	AMS	Charcoal	Beta 305465	5850	40	4834-4556	Polo <i>et al.</i> 2014
	Cova del Parco	Estratum III	Conventi-onal	Bone	CSIC-280	6450	230	5830-4847	Petit, 1996
	Cova del Parco	Estratum III	Conventi-onal	Charcoal	CSIC-281	6170	70	5306-4938	Petit, 1996
	Cova del Parco	Estratum III	Conventi-onal	Charcoal	GrN-20058	6120	90	5301-4801	Petit, 1996
	Cova del Parco	Estratum III	Con-ven-cional	Charcoal	CSIC-403	5970	60	5001-4716	Petit, 1996
	Cova del Parco	Estratum III	Conventi-onal	Bone	CSIC-279	5790	170	5203-4275	Petit, 1996

Basin	Site	Level/ Context	Dating type	Material	Lab. code	Date bp	(±)	calBC (2σ)	Bibliographic reference
Llobregat	Font del Ros	E.15	AMS	Seed	AA16499	6443	56	5517-5308	Pallarés <i>et al.</i> 1997
	Font del Ros	E.36	AMS	Seed	AA16502	6370	57	5474-5218	Pallarés <i>et al.</i> 1997
	Font del Ros	E.33	AMS	Seed	AA16501	6307	68	5471-5065	Pallarés <i>et al.</i> 1997
	Font del Ros	E.21	AMS	Seed	AA16500	6058	79	5211-4788	Pallarés <i>et al.</i> 1997

Fig. 2. Dating by C14 in sites of the basins of Noguera Ribagorçana, Noguera Pallaresa, Valira, Segre and Llobregat.

4.2 The first Neolithic settlement

The sites in Font del Ros and Balma Margineda show the presence of Neolithic communities in the central and western Pyrenees early in the second half of the sixth millennium cal BC. In Balma Margineda, the new absolute datings seem to confirm the existence of a Neolithic occupation late in the first half of the sixth millennium cal BC (Manen *et al.* 2019). Thus, there seems to be no doubt that in around 5600-5550 cal BC, the small cavern on the side of Valira was occupied as a habitat space by groups that had domesticated herds of ovicaprids, who cultivated or at least stored and ate grains, and whose goods included pottery vessels.

In addition to hearths and some storage pits, the excavation also yielded mills, carpological remains of barley (*Hordeum* sp.), wheat (*Triticum aestivum* and *durum*) and peas (*Pisum sativum*), as well as the remains of domesticated sheep (*Ovis aries*) and goats (*Capra hircus*) (Antolín *et al.* 2018). Fully Neolithic activities have also been found in Font del Ros. Next to an occupation level measuring more than 100 m<sup>2</sup>, at the Neolithic level the excavations revealed 45 storage pits over an area measuring 1.300 m<sup>2</sup>, which provided a considerable volume of carpological materials made up of barley seeds (*Hordeum vulgare* L.), wheat (mostly *Triticum dicoccum*) and weeds. They also revealed the specialisation of the pits, in that barley and wheat were seldom mixed (Pallarés *et al.* 1997). Despite the poor conservation of the fauna remains in Font del Ros, both sites seem to reveal the spread of crop farming and livestock practices in the Pyrenees at a relatively early date quite far from the oldest Neolithic sites on the Catalan coast.

During this same period, a second phenomenon has only been documented in recent years: the presence of occupations sites from between 5,700 and 5,400 cal BC at high altitudes. To date, the sites in Cova del Sardo, Abric de les Obagues de Ratera and Orris de la Torbera de Perafita I have not been documented (Gassiot *et al.* 2021.). The former is a small glacial cavern excavated out of the granite base in Aigüestortes valley at an altitude of around 1,800 m, which was repeatedly occupied throughout the Neolithic and later during the historical period (Gassiot *et al.* 2015). The second is a small shelter located under an erratic granite block in the stony valley of Obagues de Ratera above Sant Maurici lake. Located at an altitude of 2,320 m, the shelter has an extensive sequence of occupations from the Mesolithic, Neolithic and later periods (Gassiot *et al.* 2020; Gassiot *et al.* 2021).

A mediaeval dwelling is documented in Torbera de Perafita I, and under it the surveying found a level with charcoal and stone remains which can be attributed to the Mesolithic, as well as another level from the mid-sixth millennium (Orengo *et al.* 2014). In all three cases, they are generally small occupations which yield few archaeological remains, apart from the existence of hearths. They are all located in acidic soils in which the fauna materials are very poorly conserved, which may explain their absence. Pottery materials associated with the dated hearths have not been found in any of them.

The lithic ensemble found in Abric de les Obagues de Ratera do yield interesting information. In this phase, we find a major presence of geometric materials: trapezoids and triangles with abrupt knapping and triangles and segments with bifacial retouching, a mix of Mesolithic and Neolithic features (Mazzucco *et al.* 2019) which may reveal transfers from one type of population to the other. What stand out in this context are two triangles with bifacial retouching on rock crystal, a local material which was possibly knapped at the site. From a technological standpoint, they resemble the goods found in other sites in Aragon, such as Esplugón and Forcas II (layers IV and V). Many of the geometric materials show traces of impact, and remains of their repair have been found in the shelter.

The existence of this second type of site opens up interesting questions on the settlement and mobility patterns in the mid-sixth millennium cal BC, dovetailing with the regional introduction of crop farming and livestock practices. First, we see a twofold pattern. First, we find sites with a fully Neolithic material culture in zones located under an altitude of 1,500 m in both Catalonia and Aragon. The examples of Balma Margineda and Font del Ros in Aragon are joined by Cueva Lóbrica (Clemente *et al.* 2020), along with Cueva de Chaves and Forcas II on the southern foothills of the mountains. After 5,300 cal BC, Trocs and Coro Trasito caves joined this set of sites. Secondly, there are high-altitude occupations, with chronologies that virtually span those of the sites in the first group.

In fact, Andorra is a paradigmatic case because the distance between Balma Margineda and Torbera de Perafita can be travelled in one day. This makes it unfeasible to posit that they were isolated groups and opens the door to understanding this dichotomy as the specialisation of settlements. The specialisation of the stone record in Abric de les Obagues de Ratera shows that in this phase the shelter was used as a hunting camp. Conversely, the settlements in the lower zones show more stability, with a centrality of storage practices and consolidated crop and livestock farming.

## 5. The early Neolithic in the eastern Pyrenees and Pre-Pyrenees

The territory of northeast Catalonia has never been considered pioneering in the Neolithisation process of Catalonia because very few remains have been found there. There are some elements which hinder this, such as the predominance of mountains with granite rocks, which have left few karstic cavities except in Alta Garrotxa, and plains occupied by wetlands in both the Empordà and in the Selva depression, where major sedimentations can accumulate. Despite this, there are signs that enable us to posit that Neolithic settlement dated from the early second half of the sixth millennium, dovetailing with the establishment of the first communities with Cardial ware in the western Mediterranean.

This scarcity of data on the early Neolithic contrasts with the fact that there is such an important, well-documented site as La Draga in Banyoles (Bosch, Chinchilla, Tarrús 2000, 2006, 2011), located in a unique landscape, a lacustrine basin, where 40 absolute datings have been analysed. The analysis of the radiocarbon datings of the site in Banyoles (Andreaki *et al.* 2020) covers most of the development of the early Neolithic, which enables us to organise the development of the early phases of Neolithic development in this territory based on its chronostratigraphic sequence (Fig. 3).

Basin	Site	Level/context		References
Lacustrine of Banyoles	La Draga	Phase I in La Draga	[-5292; -5216] [-5213; -5085]	Andreaki <i>et al.</i> 2020
		Phase II in La Draga	[-5093; -4907] [-4943; -4713]	

Fig. 3. The two construction phases of the Draga, in relation to the C14 dating obtained.

We should note that the stratigraphic dynamic of the outdoor site at La Draga is related to the distinct preservation of organic matter in the different sectors excavated, which is conditioned by the height of the phreatic levels. Thus, sectors B and C (subaquatic) preserve horizontal levels with plenty of organic matter, while only the tips of wooden pillars beaten deeply into the carbonated sands are conserved in sector A (Palomo *et al.* 2014). Based on stratigraphic, sedimentological and radiometric studies, we can glean that there were two main phases of occupation. The initial phase was characterised by the construction, use and repair of wooden platforms, and by the amortisation of these spaces through the construction of large travertine floors and different structures, including hearths, dwelling foundations and pits.

5.1 Phase prior to La Draga. The earliest evidence

Approximately 100 years before the construction of the first wooden structure in La Draga in around 5,400 BC, the oak groves around Banyoles lake already show signs of forest management. The oaks used to build the platforms reveal the use of regrowth specimens after the mature oak stand had been felled. This reveals the activities of possibly Neolithic groups that we have not yet located in the archaeological record of La Draga and its closest environs (Piqué *et al.* 2021). We are aware of two settlements contemporary to this forest activity prior to the construction of the platforms in La Draga, which indicates that the territory was not entirely depopulated. Likewise, in a relatively nearby geographic setting, we find the occupation of Bauma del Serrat del Pont in Tortellà (5480-5380 cal BC) (Alcalde, Molist, Saña 2002; Alcalde *et al.* 2009). This is a rocky shelter located on the banks of the Llierca River, a tributary of the Fluvià, which was most likely used briefly by a small group of people who were probably heading towards the steeper mountainous zones and primarily consumed forest resources. Finally, we have Cova del Toll (Moià), located in the Ter River basin, where a recent survey (Cebrià *et al.* 2014) yielded datings from the mid-

sixth millennium (level IIb: 5510-5310 cal BC; 5490-5290 cal BC) which are located among the oldest in Catalonia and show the speed with which the earliest Neolithic communities reached the inland regions (Fig. 4).



Fig. 4. Ideal reconstruction of the construction of huts in the Neolithic village of La Draga (Banyoles). Museu Arqueològic Regional de Madrid. Conception: MACB/CSIC/UAB/ MAC. Designs: Albert Álvarez Marsal (Palomo *et al.* 2018).



## 5.2 Phase I in La Draga. The last third of the sixth millennium

The first constructive phase documented in La Draga is defined by the construction and use of wooden platforms which could be situated at -5292-5216 cal BC (68% interval) and -5213-5085 cal BC (68% interval) (Andreaki *et al.* 2020). The length of this first phase is grounded on the 25-year difference between the felling of the first pole used to build the platforms and the last one used for repairs, which dovetails with the arithmetic mean of 34 years within their likely duration of between 13 and 55 years.

This first phase corresponds to a dry phase (Andreaki *et al.* 2020), which facilitated the use of the lakeside to build the platforms on which dwellings measuring around 12-15 m<sup>2</sup> were built, with two-pitched roofs and probably no side walls, within a brief time interval. La Draga is an extensive settlement that reveals a great deal of planning in its construction and organisation, as well as deep familiarity with the territory, as expressed in the variety of biotic and abiotic resources consumed and their range of provenances, which in some cases extend beyond the strictly regional (Terradas *et al.* 2012). The abundance of food remains reveals a fully consolidated crop farming and livestock economy with contributions from hunting and forest gathering (Fig. 5).

Basin	Site	Level/Context	Dating type	Material	Lab.code	Data bp	(±)	calBC (2σ)	References
Fluvià	Balma del Serrat del Pont	Level III.4	AMS	Bone	BETA-172521	6470	40	5509-5344	Alcalde <i>et al.</i> 2002
Fluvià	Plansallosa I	Base of pit number I	AMS	Charcoal	BETA-74311	6180	60	5250-4940	Bosch <i>et al.</i> 1998
Fluvià	Plansallosa I	Top of pit number I	AMS	Charcoal	BETA-74313	6130	60	5230-4910	Bosch <i>et al.</i> 1998
Fluvià	Plansallosa II	Coal concentration	AMS	Charcoal	OXA-2592	5890	80	5000-4545	Bosch <i>et al.</i> 1998
Fluvià	Plansallosa II	Perimeter pit II	AMS	Charcoal	BETA-74312	5890	60	4900-4580	Bosch <i>et al.</i> 1998
Fluvià	Plansallosa II	Western sector structure	AMS	Charcoal	BETA-87965	5720	70	4725-4425	Bosch <i>et al.</i> 1998
Fluvià	Codella	Dwelling	AMS	Bone	Beta-221900	5720	60	4780-4490	Alcalde <i>et al.</i> 2008
Fluvià	La Dou	Dwelling	AMS	Charcoal	Beta-221903	5660	50	4690-4450	Alcalde <i>et al.</i> 2008
Fluvià	La Dou	Combustion structure	AMS	Charcoal	Beta-221904	5520	50	4560-4360	Alcalde <i>et al.</i> 2008
Fluvià	La Dou	Combustion structure	AMS	Charcoal	Beta-221905	5450	50	4450-4205	Alcalde <i>et al.</i> 2008
Fluvià	Serra del Mas Bonet	Silo E22	AMS	Bone	Beta-280361	5930	40	4909-4862	Unpublished
Fluvià	Ca n'Isach	Combustion structure E20/21	Conventional	Charcoal	UBAR-317	5840	230	5008-4481	Tarrús <i>et al.</i> 2017
Fluvià	Ca n'Isach	Combustion structure E22	Conventional	Charcoal	UBAR-318	5770	170	4837-4463	Tarrús <i>et al.</i> 2017
Ter	Avellaner	Burial cavity 1	Conventional	Charcoal	GAK-12933	5920	180	5281-4373	Bosch, Tarrús 1990



Basin	Site	Level/Context	Dating type	Material	Lab.code	Data bp	(±)	calBC (2σ)	References
Ter	Avellaner	Burial cavity 3	Conventional	Human bone	UBAR-109	5830	100	4930-4461	Bosch, Tarrús 1990
Ter	Avellaner	Burial cavity 2	AMS	Human bone	CNA-3305.1	6204	34	5290-5055	Gibaja <i>et al.</i> 2018
Ter	Avellaner	Burial cavity 3	AMS	Human bone	CNA-3306.1	6094	34	5210-4860	Gibaja <i>et al.</i> 2018
Ter	Torre Vedruna/ Sector Transport	Silo E34	Conventional	Charcoal	UBAR-1071	6470	220	5805-4900	Unpublished
Ter	Cova del Toll	Level IIb	AMS	Bone	OXA-26070	6425	35	5510-5310	Cebrià <i>et al.</i> 2014
Ter	Cova del Toll	Level IIIb	AMS	Bone	OXA-26071	6390	40	5390-5190	Cebrià <i>et al.</i> 2014

Fig. 5. Dating by C14 in sites in the Ter and Fluvià basins.

The pottery at La Draga, which were an identitarian element in this area during the early Neolithic, are characterised by impressions and incisions (often dragged) which create simple or complex motifs usually organised into horizontal bands. Depending on the shape of the vessel, the bands could be by themselves under the edge, or there could be multiple bands together, especially when attached with holding elements. In this latter case, new vertical bands appear on the holding elements which reach the edge and join the two horizontal bands. They could also be used to support other decorative elements hanging from them (triangles, garlands, other bands) which could cover up to two-thirds of the upper part of the vessel. None of the decorative elements seems to depict a natural element, and they are vaguely reminiscent of the cordages with which the vessels were suspended. The rest of the material culture is very interesting in terms of both the conservation of organic remains (wooden objects, baskets), the abundant bone and stone industry and the vast number of ornamental objects.

We have further evidence from this phase, which we should chronologically and culturally situate in the second half of the Cardial period.

Near La Draga, there is a series of travertine shelters in the Reclau-Viver (Serinyà) site, namely Arbreda, Mollet, Pau and Reclau-Viver itself (Tarrús 2000), which are important in Palaeolithic population, although by the Holocene were already teeming with sediments and were partly sunken, which led to small cavities which were most likely used as refuges, or the first two as funerary spaces. Unfortunately, this burial use was kept up in subsequent periods, and these cavities were also repeatedly used as burrows by many animals. The outcome is that we have only been able to retrieve some pottery remains with characteristics similar to those in La Draga, and some human remains which are difficult to chronologically pinpoint. These cavities were most likely used as graves during the early stages of the Neolithic, especially bearing in mind that there is a similar example, also in a travertine shelter, namely Cova de l'Avellaner (Cogolls, Planes d'Hostoles), which we shall discuss below.

On the Empordà coast, the only site that has yielded archaeological materials from this period is Cau de les Guilles in Roses (Soler, Serangeli 2010), a small shelter most likely used for brief stays. A pottery fragment of a handle and edge decorated with a dragged band and Cardial impressions shows clear similarities with the goods in La Draga. Turó de les Corts (L'Escala), a famous necropolis from the early Iron Age, is also located on the coast; Josep Tarrús (1980) identified some Neolithic pottery among its remains, one piece coming from a vessel decorated with combed bands clearly affiliated with the Cardial. Inland in the Empordà, we have signs of a settlement in Banys de la Mercè in Campany (Rosillo *et al.* 2021), although most of the occupation dates from later. Ten pottery fragments with impressed linear decorations, some of them Cardial, were retrieved, though they are not associated with any structure.

Inland, in the valley of the Llémena River, a tributary of the Ter River, scant remains have been retrieved from Cova Bora Tuna in Sant Martí de Llémena (Bosch 1991). A vessel decorated with bands of comb impressions edged with impressions from a spatula was found, which displays a clearly Cardial theme.

What stands out in Tortellà (La Garrotxa) is the first occupation of Plansallosa (PSL I: 5250-4940 cal BC and 5230-4910 cal BC), a site which has been identified as late Cardial. This settlement is located on the right bank of the Llierca River on a flat area across from Balma del Serrat del Pont, in a site that connected the river plain with the more mountainous inland landscape. It is characterised by the base of a circular dwelling, two pits around the perimeter, two combustion structures, two support structures, two pits and a pit lined with stone that conserved a large pottery container (Bosch *et al.* 1998).

Together, they show a building technique that has been documented in other sites in Languedoc (Baratin, Courthézon) and the Ebro River valley (Barranc d'en Fabra, Riols), which differs from the earliest constructions at La Draga because they are differently adapted to the environment and they have a different cultural tradition. Among the pottery, we can still find Cardial impressed decorations and other elements, but incisions or grooves predominate, along with the artistic application of many impressed cordons. It had an economy based on crop and livestock farming, and unlike La Draga, a very local supply area, where they most likely used some caves in the mountains as refuges or stables, particularly Cova s'Espasa (Sales de Llierca), which has pottery decorated with impressed cordons similar to those from Plansallosa.

Finally, we should consider the Cova de l'Avellaner (Tarrús, Bosch 1990) in the Baixa Garrotxa. This is a small travertine shelter which was modified to make three funerary spaces where the remains of 15 individuals of all ages were apparently deposited, on whom an interesting genetic study has been conducted (Lacan *et al.* 2011). The small funerary spaces were reused several times with the deposit of human remains accompanied by pottery vessels, body ornaments and foods in the form of fauna remains. The pottery is decorated with plain cordons and very few (non-Cardial) impressions and grooves. The dates initially published, yielded from carbon from space 1 and human bone from space 3, correspond to the early fifth millennium. In a recent review of the human bone in cavities 2 and 3, the datings span from the late sixth millennium to the first quarter of the fifth millennium (5290-5055 cal BC and 5210-4860 cal BC) and show the start of their funerary use in the late Cardial period.

### 5.3 Phase II in La Draga. The first quarter of the fifth millennium

The second building phase in La Draga was characterised by a major change in the building strategy and management of the occupied space. The use of the platforms built in the first phase now contrasts with the massive use of travertine blocks mined nearby to build veritable occupation floors over the old wooden constructions, as well as structures like pits, hearths and perhaps the foundations of dwellings. This time dovetails with a wetter period, which, along with other factors, conditioned the inhabitability of the space occupied by the earlier inhabitants of La Draga. Perhaps the travertine was used as the insulation needed to prevent water from seeping in. The data analysis is not conclusive when asserting whether it is a reoccupation or a continuation of the previous settlement.

In any case, this phase that spans the first quarter of the fifth millennium cal BC is characterised by the use of stone as an important building element which happened at two different times without any chronological interruption: The first was between -5093 and -4907 cal BC and the second was between -4943 and -4713 cal BC, (Andreaki *et al.* 2020). In this case, what we call a phase should be considered a palimpsest which brings together evidence of diverse archaeological contexts. The proximity to the surface, the effects of farming and the fluctuations in the phreatic level have led to the poor conservation of the archaeological remains at this level, particularly the food or other plant fibre remains, which no longer exist, and pottery, which is highly fragmented and often damaged. The few pottery decorations are limited to some impressions and incisions or grooves, and especially plain cordons. This is a common feature of the sites in the coastal and pre-coastal regions in the northeast, which are usually classified as Epicardial, where plain cordons were the last decorative elements to disappear.

During this period, there is much more and varied evidence of occupations throughout the entire territory, which occupy virtually all of it. In relation to La Draga, we must once again consider the travertine shelters in Serinyà, especially Cova del Reclau-Viver and Cova del Pau, which continued to be used as shelters and have yielded pottery with a clear Epicardial affiliation. Also very close by is the burial cave of Mariver d'Esponellà (Tarrús 2000), which is a large cavity used repeatedly during the first half of the fifth millennium.

On the Empordà coast we have evidence of two settlements located at elevated points in wetlands near the coast. In Ca n'Isach (Palau-saverdera), a dwelling and hearths have been documented, associated with pottery materials characterised by carinated vessels, tubular handles and plain cordons (Tarrús 2017). Likewise, only archaeological materials attributed to the epi-Cardial have been found at Puig Mascaró in Torroella de Montgrí (Bosch 1991), as the later occupations destroyed the habitation floor. In Les Gavarres, there is a series of granite shelters, Avellana, la Sardineta, Barraca de n'Oller and Malvet caves (Calonge) (Bosch 1991), which have yielded some Epicardial pottery. The small size of these caves leads us to believe that they were used for burials more than as shelters, but the acidity of the soil has prevented us from retrieving human bone remains. Even further south in the Ardenya massif are the late Bronze Age necropolises of Pi de la Lliura in Vidreres (Pons, Solés 2008), in the centre of which are different structures, including a silo with Epicardial ware, the testimony of a settlement area.

Inland in the Empordà region, the signs of a new settlement from the Epicardial Neolithic have been documented in Serra del Mas Bonet in Vilafant (Rosillo *et al.* 2012) (4909-4862 cal BC), where four structures have been documented: two are medium-sized

and small pits-silos, and two are more indeterminate pits. The pottery materials are characterised by globular vessels with medium-sized or large cylindrical necks and always with convex bottoms, equipped with tubular or loop handles or conical applications. The decorations, which are never excessive, and bearing in mind that undecorated vessels predominated, are in the form of fingernail impressions on the edge, incised grooves with motifs in a ladder shape, plain cordons or impressions, sometimes orthogonal, with fingerprints or fingernail prints, and also with scraped or combed surfaces.

Further inland, in the calcareous massif in Alta Garrotxa, we find the second phase of occupation of Plansallosa (PSL II) (5000-4545 cal BC, 4900-4580 cal BC, 4725-4425 cal BC), which occupies a much larger area than what has been documented from the first phase. This phase is characterised by an elliptical structure which has been interpreted as the base of a habitat space, a large pit around the perimeter, a hearth, a workshop where polished tools were made and different support structures. Most of the pottery is undecorated, with plain cordons and few impressions. Resource exploitation was still quite local. Related to the exploitation of the mountainous region, most of the caves in the upper part of Llierca valley have remains that can be attributed to their use as refuges or stables, as in Cova dels Ermitons and Cova del Bisbe (Bosch 1991), or for storage, as in Cova 120 (Agustí *et al.* 1987). Similar to the latter, on the La Muga side of Alta Garrotxa is Cova de la Pólvora (Albanyà), which was also used for storage (Buch *et al.* 1996). In the midst of the volcanic zone in the same county of la Garrotxa, two outdoor settlements have been documented with habitat structures and a variety of functions. The first is the settlement of Codella (Les Preses) and the second is la Dou (Vall d'en Bas), a settlement organised with dwellings dispersed around an area that may exceed 800 m<sup>2</sup> (Alcalde *et al.* 2016).

Further south in Baixa Garrotxa, specifically in the valley of Brugent River, a tributary of the Ter River, Cova de l'Avellaner, mentioned above, was used as a funerary space, and in the Ter River valley we find another burial cave, Pasteral de la Celler de Ter (Bosch 1991), which was used over much of the fifth millennium.

This latter cave, whose morphology is complicated, has different galleries and rooms, some with mixed materials, but its remains are exclusively Epicardial. There were vessels decorated with grooves and applications, as well as some impressions and human remains from different individuals. Just like l'Avellaner, we should consider it a grave used repeatedly by a community that lived near it and deposited their dead there, accompanied by personal ornamentation, foods contained in pottery vessels and symbolic elements, like a tortoiseshell.

Following the Ter but now in the Girona plain, two mostly levelled pits were found in Torre Vedruna de Vilablareix (García 2009). Although it shows a notable deviation, the dating of one of these pits (5805-4900 cal BC) shows signs of Neolithic occupations in this zone.

## 6. Conclusions

If we compare the knowledge of the early Neolithic in the Pyrenees and Pre-Pyrenees shared at the Round Table held in Montserrat in 1980 with the data we currently have, we can see that major strides have been made from both the quantitative

standpoint—more sites—and the qualitative standpoint—more knowledge of these sites. In this sense, in recent years we have delved further into aspects like the chronology of their occupations, the natural environment around them and the way they exploited the resources, as well as their technical productions and funerary practices. All of this has been possible thanks to improvements in excavation and analysis techniques, as well as the participation of more research teams, who have turned this period into one of the main focal points in prehistoric research.

The lay of the land in this broad territory has meant that the easternmost part is more geared towards the coastal developments to take advantage of the connections provided by the Fluvià, Ter and Llobregat River valleys, while the central part is more focused on the development of the Ebro River valley, to take advantage of the valleys of the rivers that flow into the Ebro from the Pyrenees.

With regard to chronologies, we can see that the distances were never too great, and that after taking advantage of a territory that was sparsely or not at all settled, the first Neolithic expressions reach the highest levels in the mountains shortly after they reached the coastal areas. We also see how in the more recent early Neolithic, a kind of functional specialisation of the occupied sites took place, both outdoors and in cavities.

We still have many questions and gaps which future research should resolve, such as about the Mesolithic settlement in the first half of the sixth millennium, especially in the eastern zone, and the genesis of the Epicardial, regardless of whether it is viewed as an evolution of the Cardial or a unique entity. We also need more information on these Neolithic communities, which so far has been excessively grounded on the evidence retrieved from caves and shelters, especially in the central zone. We also have to ascertain how the distribution and/or exchange networks were organised at a time when the exploitation of certain resources and their production techniques started to become specialised. And there are many more issues which forthcoming research should help resolve.

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