

# Life and death of the first groups of farmers on the Catalan coast. Historical essay on the settlement of the Catalan coast between 5500 and 4000 BCE

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## ABSTRACT

Historical analyses of the appearance of the earliest crop and livestock farming societies on the Catalan coast have always been the focus of debate within the overarching topic of the arrival of new settlers who came by sea and/or land to bring knowledge associated with the production economy based on the adoption of crop and livestock farming. In order to examine this topic, we consider the archaeological documents that make it possible to identify the places these groups lived and frequented, along with the records from their funerary practices. All of this data, coupled with the associated materials, are considered essential in analysing the evolution and diversity of the different types of settlements of these crop or livestock farmers within the timeframe of the sixth to fourth millennia BCE in the stretch of land running along the extensive Catalan coastline.

**KEYWORDS:** Early Neolithic, coast, Catalonia, archaeology.

## INTRODUCTION: CHRONOLOGICAL AND SPATIAL FRAMEWORK AND OBJECTIVES

The historical transformation of hunting-gathering societies into crop and livestock farming societies is one of the most fascinating yet complex phenomena in recent prehistory. It is common knowledge that the development of the interdisciplinary methodology of analysing data and archaeological documents has fostered a global vision, with contributions from the fields of 'classic' archaeology, along with bioarchaeology (populations, relationship with the environment, etc.) and geoarchaeology, coupled with the study of the evolution of techniques and examinations of the symbolic world. This diversity and complementarity has prompted many innovations in and contributions to our knowledge, leading to the emergence of new hypotheses and elements to update our study of the existing data.

Current studies of the Neolithic in Catalonia share these general features, although it is difficult to offer a general summary of the entire period that encompasses all the available data. Gatherings, colloquia and international symposia attempt to, although they often, unsurprisingly, highlight the most innovative data. On the

other hand, it is common in archaeology for the analyses to be compartmentalised into brief time periods to make them easier to describe. Thus, Catalan prehistory, more specifically in the Neolithic period, has traditionally established the existence of time periods identified by precise cultural, social and economic features which often correspond to sets of archaeological evidence (tangible elements) that help to identify and describe them. These methodological practices have very positive aspects, as they facilitate the analysis of the tangible evidence found at the site, yet they also lead to some degree of immobility and often a failure to analyse (and debate) the transformations and evolution in the historical sense of the term.

Based on comparisons with trans-Pyrenean models since the 1980s, a broad chronological period lasting almost 1500 years has been established for the early Neolithic in the northeast Iberian Peninsula, divided into three successive phases: the Early Cardial Neolithic (ECN), the Early Epicardial Neolithic (EEN) and the Early Postcardial or Evolved Neolithic (PEN). The subsequent stages or periods, named the Middle and Recent Neolithic, represent more evolved phases. Of the two, the Middle Neolithic stands out for its culture of 'pit burials', with more or less clear regional variations, although they all signalled the consolidation of the new crop and livestock farming economies and left extensive archaeological evidence which facilitates historical analyses. The last

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stage, the Recent Neolithic, reveals profound transformations which linked up with the new economic, cultural and social mores of the complex societies in the Chalcolithic and Early Bronze Age. These periods have constantly been adjusted and improved with further details through the addition of new data, but the basic scheme remains quite similar to the original one proposed and overall has barely been questioned. The revisions in recent years, once again thanks to synchronisation with nearby models (Region of Valencia, France's Midi region, etc.), and especially a considerable increase in absolute datings and more detailed analyses using Bayesian models, have enabled a time sequence to be proposed in different phases, some of them new. Thus, an early phase or Phase 0 has been proposed prior to 5500 BCE, associated with the presence of *impressa* pottery, which is scarcely documented in Catalonia but is clearly present elsewhere on the Iberian Peninsula, such as the coast of Region of Valencia (Pardo et al. 2020). Phase 1 is called the Early Cardial Neolithic (c. 5500—5000 cal BC), although some evidence may reveal a more archaic subperiod up until 5200 cal BC. Phase 2 encompasses the documentation from the sites dating from the first quarter of the fifth millennium, which have been called Epicardial based on pottery morphologies (5000—4560 cal BC). Once again, we find variations in around 4800—4700 which may lead to a new subdivision in the near future. Phase 3 encompasses the documentation and evidence from the Early Postcardial Neolithic, which has now been defined as the Middle Neolithic by its Molinot and Montboló pottery styles (c. 4690—4000—3800 cal BC), which come from the Middle Neolithic II or the Full Neolithic (c. 4150—3680 cal BC). This last period is not covered in this article.<sup>1</sup>

The goal of this text is to provide a summary of the historical evolution of the earliest crop and livestock farming societies on the coastal region of Catalonia. We shall do so by organising, presenting and analysing the historically most significant aspects of the archaeological data from the sites located and extensively studied in these areas. More specifically, the emphasis will be on the evidence of settlement and funerary practices, including the latest discoveries from research currently underway in different geographical areas, such as the Plain of Barcelona, the lower stretch of the Ebro River and the region near the mouths of the Ter and Fluvià Rivers. We shall seek to analyse them with a global vision; therefore, we will include other coastal regions and provide an overview of the origin and development of the first stable settlements in this geographic and ecological context.

The study of the most significant changes documented in that millennium and a half (c. 5600-4000 cal BC) is highly significant and becoming crucial in learning about the development of the founding sedentary, stable population as we attempt to ascertain their main economic and cultural features and overall evolution during this period. The priority of this historical analysis will be to study the settlement and funerary data, both of which are highly

significant in understanding the evolution of farming groups.

We should note that in their syntheses, both P. Bosch-Gimpera and later especially M. Tarradell had posited the 'cave-dwelling' nature of settlers in this period, naming them after 'the cave-dwelling shepherds and farmers; the cave civilisation with decorated pottery'.<sup>2</sup> Yet the outlook is totally different since the development of preventive archaeology in Catalonia 40 years ago drastically revamped our knowledge. The convergence of research projects with preventive campaigns at heritage sites and areas prompted by construction or landscape actions has led to the discovery and study of hundreds of outdoor prehistorical archaeological sites. This evidence is plentiful in areas or zones where there has been a major upswing in economic activity in recent years, like the Vallès and the Alt Penedès, as well as the Plain of Barcelona and the coastal areas of the Maresme.

The increase in the number of sites has come with an in-depth update in the methodology, which has led to advances in dating, such that the use of absolute dating tools is no longer one of the goals of the campaigns, as well as in the study of the record found, be it mineral (abiotic) or organic (biotic), knowledge of group activities, techniques to determine plant and/or animal species and population studies.

Catalonia's geographic diversity hinders the establishment of general analyses; instead, the mosaic of ecosystems imprints specific variations on the interrelations between human groups and the environment that are quite interesting, given their specific implications in each geographic region. In this article, we shall study the coastal region and the land near it. Catalonia has extensive, diverse coasts and coastal areas in terms of both the orography of the landscape upon contact with the coastline, with gentle coasts (Maresme, Costa Daurada) and more rugged ones (Costa Brava), and their relationship with river courses and particularly with river mouths (wetlands, brackish water and diverse ecology), which foster the appearance of ecosystems rich in resources.

One prime example is the Plain of Barcelona, an area located in the central coastal area which is essentially delimited by the mouths of the Llobregat and Besòs Rivers. They are joined on the coast by dense hydrography: in addition to the lower stretches of these two rivers, an extensive series of seasonal water resources descending from near Montjuïc and the Collserola mountains has been documented. Plus, the existence of a significant settlement on the coastline during this period is currently being studied and described spatially (geomorphology), palaeobotanically and geomorphologically.

But the Plain of Barcelona is not the only example. Other coastal areas of keen interest in the establishment of human occupations include the lower stretch of the Ebro River and the area near Cap de Creus and Cap de Begur, with the lower stretches and the mouths of two important rivers, the Ter and the Fluvià, along with the Cap

de Salou area as far as the mouth of the Gaià River. The existence of the Marina mountains on the northern part creates a coastline that is scarcely articulated and narrow, which is not particularly attractive as a dwelling place, as we shall see in the archaic periods. The delta or alluvial plains in this zone are often marshy, such as along the Ter River. In the southernmost part of the Pre-coastal Mountain Range, the coastline is at a lower altitude. There are some proposed reconstructions of the coastline and its variations throughout recent prehistory which include changes in the coastline and the morphology of nearby areas, one of the most significant being the decrease in lakes and wetlands and changes in the shape of river deltas. On the other hand, we have no proof of prehistoric settlements flooded by the current seashore, even though they most likely exist.<sup>3</sup> However, we should consider the possibility of islands and other formations where a means of sailing would be necessary.

### COASTAL SETTLEMENT, A CONTINUOUS EVOLUTION TOWARDS STABLE SETTLEMENTS

#### Settlement prior to 5500 BCE

The arrival by sea of crop and livestock farming practices in Catalonia prior to 5500 before the common era (henceforth, BCE) is increasingly well documented. This is a well-documented sea-based arrival, which does not, however, preclude the continental route inland over the Pyrenees, although right now information on the latter is much less precise. Given the current data, the point of origin would have been the central Mediterranean zone, in southern Italy, although the initial point should be considered the Near East.

This new archaic possibility of a maritime arrival has been facilitated by the discovery and analysis of pottery vessels decorated with a particular decorative technique that has been called *impressa*, which has been found in different settlements spanning from the Gulf of Lyon to the region of Alicante. They include a handful of outdoor settlements located in Provence, Languedoc and Mas d'Is near Alicante, all of them in the coastal area with an absolute chronology of earlier than 5500 BCE. They have enabled us to retrieve pottery imprinted with dentate microfauna that create simple motifs with discontinuous vertical pressure.

Several archaeological sites in the Catalan coastal regions have yielded evidence that could be associated with *impressa* pottery, but at this point the evidence is not conclusive and may be associated with a later period. However, the sites of Caserna de Sant Pau del Camp (Barcelonès), Guixeres de Vilobí (Alt Penedès), Cova de Sant Llorenç (Sitges) and El Cavet (Cambrils) may be the first farming settlements in the Mediterranean.<sup>4</sup> If we expand the area of analysis of this early evidence to the entire western Mediterranean, we find highly homogeneous morphologies: anthropic settlements very near the coastline, dwellings in the guise of cabins built with perishable

materials, and most notably pits dug out to be used for household activities, especially storage, the origin of buried silos. In fact, the carbonised fragments of coal and grain seeds conserved and the remains of animals that had been consumed enable us to determine that crop and livestock farming was a widespread, consolidated practice, with very little exploitation of the resources near the settlements. The hypothesis of the arrival of small groups of people/settlers to ecologically rich zones that were suitable for farming is now dominant.

#### Settlement between 5500 and 5000 BCE

There is an increase in the record of sites and occupations after 5500 BCE and during the second half of the sixth millennium, which has been interpreted as demographic growth that led to the gradual colonisation of the territory. The Catalan coast and the nearby pre-coastal areas played a crucial role in this as the sites of entry and expansion. With the current documentation, several areas contain evidence of these groups from the Early Cardial Neolithic, including the Plain of Barcelona and the lower stretch of the Llobregat River; the Garraf coast, with the wealth of evidence in the Alt Penedès; and the area of the Costa Daurada near the Francolí River and the Riudoms stream.

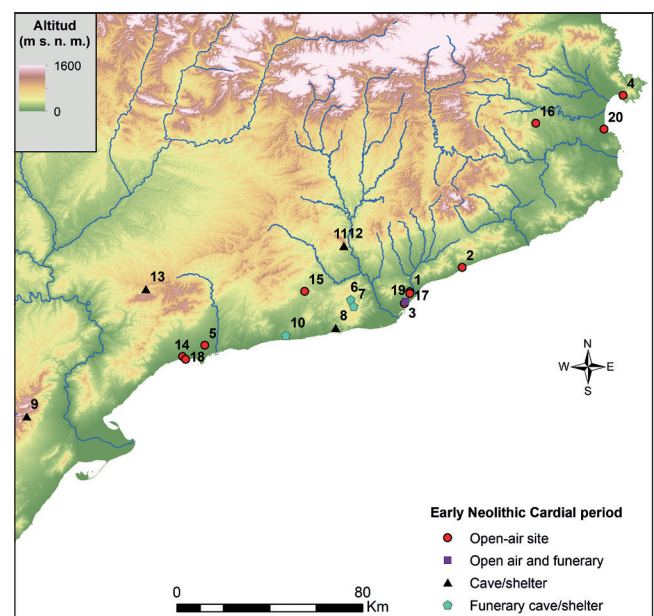


FIG. 1. Map showing the dispersion of sites from the Early Cardial Neolithic period (Source: I. Gironès, GRAMPO-SAPPO, UAB).

In the Plain of Barcelona, the most archaic sites within this period are the ones in the Caserna de Sant Pau del Camp, 52-62 Berenguer de Palou, Sagrera – high-speed railway station and the grave in Barcelona's Plaça Vila de Madrid.<sup>5</sup> Studies of the habitat sites reveal that they were located in zones with plentiful water resources, which were also quite close to the coast. They are outdoor locations which could be described as settlements, even though most of what has been documented is clusters of





FIG. 2. Image of silos 3 and 4 at the Caserna de Sant Pau del Camp site (Barcelona) (Source: Fons MUHBA).

pits and other structures dug out of the ground, primarily used to prepare, store and conserve foodstuffs (especially grains and legumes).

These settlements may show broader local exploitation or use areas, which could include settlements in caves on the massif of Montserrat (Cova Gran and Cova Freda) and/or in the mountainous foothills in the Baix Llobregat region, like Cova de Can Sadurní and Cova Bonica, all of them contemporary with each other and with more specific functions like stabling or hunting grounds. We should note that even though the technology and technique used to make pottery are very similar, the diverse range of motifs differs significantly among sites and geographic areas.

One of the areas which also housed these archaic settlements with crop and livestock farming are the coasts of Garraf and Baix Penedès, but a different situation has been documented there, as we are aware of only two occupied caves at coast level: Cova Sant Llorenç (Sitges) and Cova Foradada (Calafell). In contrast, there is dense outdoor settlement on the inland plains, primarily in the Alt Penedès. The partial information on the settlements in the coastal cave contrasts significantly with the information available from the outdoor settlements/sites, which has enabled us to posit the restitution of cabins in Les Guixeres de Vilobí and a generic settlement model for the zone.

Three outdoor settlements which also have these archaic occupations have been documented in the third zone, the Costa Daurada near the Francolí River: Cavet and Mas de l'Isidre (Cambrils) and Coll Blanc (Reus). Their complementarity with the cave or shelter settlements in the mountainous areas, such as Cova de la Font Major (Espluga de Francolí) and Cova de la Fem (Ulldemolins), as posited for other areas mentioned above, is

not very clear given the current data. A small outdoor establishment in Can Xammar (Mataró) on the gentle Maresme coast has provided clear documentation of a circular habitation structure.

With the current documentation, the most archaic and well-documented occupations on the lower stretch of the Ebro River are in the Els Ports massif, such as the spacious, spectacular Cova del Vidre (Roquetes). Similarly, a small cave called Cau de les Guilles (Roses) in the coastal area of the Alt Empordà shows occupation, with very partial remains from this period as well.

In the latter two cases, this lack of dwellings, which are better documented in flatter areas nearer the sea or along the Ebro or Ter Rivers, is surprising given their geographic and environmental features, which are optimal for agricultural settlements. However, we believe that this can be attributed to the lack of more systematic research. For example, the scant evidence in Turó de les Corts in L'Escala and the extensive surveying done in the terraces on the lower stretch of the Ebro River provide glimpses of the existence of these settlements. Nor should we forget the settlement of La Draga (Banyoles), an exceptional site near Banyoles Lake, which is contemporary with them but has not been included in this study because it is located further inland. Nonetheless, it is a wonderful example of an agricultural settlement located near rivers and plentiful water resources.

In short, the coastal and/or pre-coastal areas were highly prized geographic zones for the earliest farmers to build small settlements or villages. They are outdoor settlements with just a few domestic structures, like a cabin, and especially domestic structures featuring pits used for storage and hearths or ovens used to cook food. Complementarity between outdoor establishments and occupations of caves and/or shelters nearby has been posited at

different points along the coast since the archaic periods. The archaeological record discovered in the caves is the most solid documentation to support this hypothesis, as it often yields elements with specific functions, such as graves, hunting grounds or watchpoints.

### Settlement between 5000 and 4500 BCE

Pottery remains have enabled us to distinguish morphological and decorative variations from the late fifth millennium which have traditionally served as tangible guides for this period. In this new era, the settlements retained the same general features as in the previous phase, while evidence of constructions and/or spatial organisation becomes more common. Simultaneously, there are more sites, which indicates the continuity and gradual consolidation of the earliest farmers' habitats and economic forms.

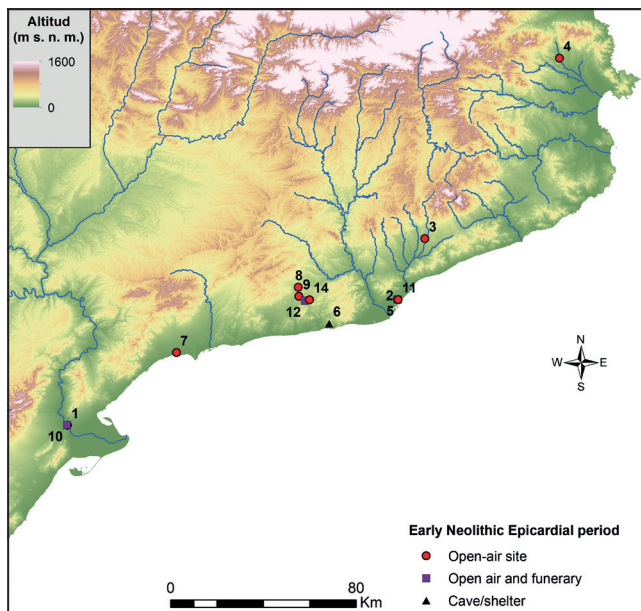


FIG. 3. Map showing the dispersion of sites from the Early Epicardial Neolithic (Source: I. Gironès, GRAMPO-SAPPO, UAB).

One geographic location where this transformation can be seen is the Plain of Barcelona, where a total of six settlements in two distinct geographic zones have been documented. Three of them are located in what is today the Raval neighbourhood: the sites at 31-33 Reina Amàlia, Caserna de Sant Pau del Camp and 82 Nou de la Rambla. The others are located in the zones of Sant Andreu and La Sagrera.<sup>6</sup> Although they are separate, these two areas share ecological characteristics, such as the presence of streams, wetlands and plenty of freshwater with ancient lakes and the nearby coastline.

A similar situation can be found in the northern part of the Alt Empordà, the site of two outdoor settlements: one in Camí dels Banys de la Mercè (Capmany) and another in Vilafant called Serra del Mas Bonet. They both have occupations from different periods and buried structures

(pits, the foundations of cabins with stake holes, etc.).<sup>7</sup> The record from Garraf and the Alt Penedès shows strong continuity with new reoccupations of Cova de Sant Llorenç (Sitges) and Guixeres de Vilobí, while many new sites have been discovered in this region, like Mas d'en Boixos (Pacs del Penedès), Pujolet de Moja and Vinya d'en Pau (Vilafranca del Penedès). A similar situation has been documented in the southern part of Catalonia, where the Cavet site (Cambrils) is still occupied, and the settlements of Barranc del Fabra and Molló de la Torre (Amposta) stand out along the lower stretch of the Ebro River.

This large body of evidence has enabled us to better grasp the form of the settlements and habitation structures, given that in the previous period there is not just one construction tradition but instead differences in both the materials and the construction elements used. Stone, dirt in the form of adobe or mud walls and plant elements, primarily branches and/or trunks, were the main materials used. The other clearly differentiating feature of the dwellings is the way they were built with regard to the ground; they are semi-buried, and therefore part of the cabin is a large pit or an excavated part, or alternatively the structure was built directly on the surface of the ground. Semi-buried dwellings, or more accurately dwellings partly built slightly beneath the former soil level, are a tendency in this period that continued to be used throughout the entire millennium. The wide variety of dwelling forms and dimensions has sparked a debate on the building techniques used and the purpose of the 'excavated' part, the evidence that has been conserved, facilitated by the fact that it is buried. Although the purpose of the cabin floor can easily be guessed in some cases, in others it is less clear, such as pits where clay for cladding was extracted or an open area with small complementary structures like indoor hearths or stake holes, which indicate that they were used as sites for productive activities.

One well-documented example of this type of dwelling can once again be seen in the evidence from the Raval district of what is today Barcelona. They are always large settlements, with only the negative structures still conserved, which enable us to propose a major labour investment. The dwelling at 31-33 Reina Amàlia stands out in that it enables us to better observe and describe the domestic space of a residential unit. It is a large, oval-shaped semi-excavated pit around 20 m<sup>2</sup> large, inside of which a central hearth, an oven and two stake holes have been documented, which enable us to posit a roof that likely had a conical or gabled morphology.<sup>8</sup> This is among the oldest evidence of a cabin built in the north-east Iberian Peninsula, which is also associated with five pits or silos around it and different combustion structures that indicate a stable domestic installation. The chronological and stratigraphic analysis of the structure has enabled us to determine that it was initially used as a dwelling, and the documentation indicates a complex subsequent process in which it was filled with natural sedimentation and other anthropic phenomena, includ-





FIG. 4. Image of the Reina Amàlia 31-33 site (Barcelona) under excavation. (Source: Javier González, GRAMPO-SAPPO, UAB).

ing its use as a burial site. Studying it has also enabled us to fine-tune its chronology, indicating that it began to be used between 4670 and 4460 BCE; that is, the house's life and death occurred within a timeframe of approximately 150 years.

These data are very interesting because they enable us to further our chronological approximation of the farming occupation model, which indicates fully sedentary settlements but a middle-term cycle of occupation/abandonment, given primitive farming practices' need to renew croplands and practise fallow cropping.

Settlements placed directly on the ground, with a higher variability of materials and building techniques, are well illustrated in Barranc del Fabra (Amposta). Archaeological surveys and image analyses have documented nine circular or slightly oval-shaped cabins in this settlement with walls made of clay and stone mortar, and with hearths, stake holes and a wall made of regular stones that must have surrounded the entire settlement.<sup>9</sup> Although it is slightly further inland, we also wanted to highlight the settlement of Ca l'Estrada-2 in Canovelles, where two cabins have recently been discovered with floors made of carefully arranged calcareous rocks laid out to create a baseboard and a set of seven hearths and ovens.<sup>10</sup>

### Settlement between 4500 and 4000 BCE

A set of tangible evidence from the second half of the fifth millennium or slightly earlier has made it possible to distinguish and describe a new period. Although it is clearly a continuation of the previous periods, a series of major transformations are in evidence.

The evidence from the settlements is similar to the previous period; that is, most of them were outdoors, with complementary occupations in nearby caves and shelters. Likewise, there is also evidence of several isolated groups or groups clustered together with other domestic structures, which also help to define the settlements as essentially domestic. They include combustion structures, pits primarily used for storage, irregular pits whose purpose is unknown and others whose morphological features ena-

ble us to associate them with different purposes, like stake holes, supports for vessels, etc.

In the northern area, there is a series of settlements on hilltops or slightly elevated spots perched near the coastline. Noteworthy among them is the settlement of Ca n'Isach (Palau-saverdera), which was occupied for the first time in this period and would go on to have many subsequent occupations over a long period.<sup>11</sup> The only element documented from the initial stage is a rectangular cabin, defined by grooves dug out from the rock with medium-diameter (15 cm) stake holes inside, which must have been for the trunks holding up the walls. Inside, only a brazier-style hearth has been identified, while outside there are other domestic elements. Likewise, a series of settlements from around the same period but located slightly further south may also be dwellings, although they are more partially documented. They include Puig Mascaró in Torroella de Montgrí, with archaeological materials attributed to the epicardial, and La Bassa (Fonteta, Forallac) and Saus II near the ancient lake of Camallera.

An upswing in population and settlements is found in all the coastal zones and the pre-coastal region. For example, a large group of settlements has been documented in the zone slightly inland from the central coast on the Vallès plain, including Mallols (Cerdanyola del Vallès), Can Roqueta II (Sabadell), La Vinya del Regalat (Castellar del Vallès) and, slightly further away, the interesting cabin in Vilars de Tous (Igualada). A similar situation can be found on the Alt Penedès plain, with the proposal of the last occupation of Guixerres de Vilobí and the occupations of Mas d'en Boixos (Pacs), Hort d'en Grimau (Castellví), La Serreta, Pujolet de Moja and Els Cirerers (Vilafranca), Pou Nou (Olèrdola), Camí de Cal Piques (Olèrdola) and Turó de la Font del Roure (Fontrubí). That is, there are many sites, an estimated total of more than 200 in this region, all of them outdoor and with a variable number of buried structures interpreted as silos.<sup>12</sup> A detailed analysis of this type of settlement with only silos has enabled them to be interpreted as specific establishments used ex-

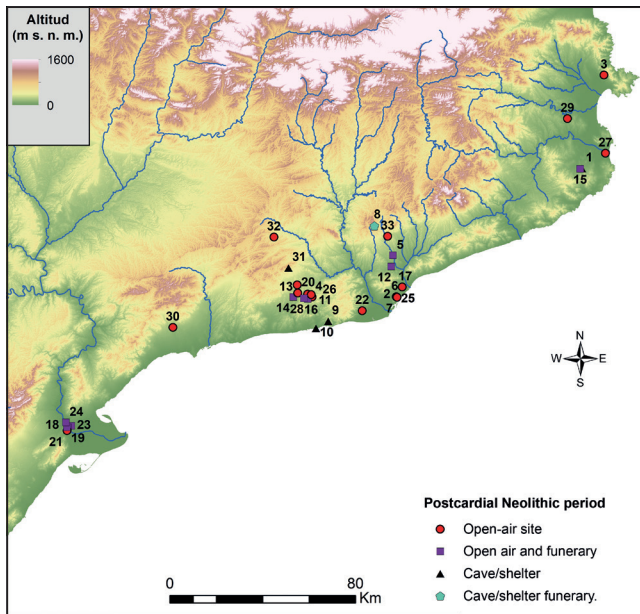


FIG. 5. Map showing the dispersion of sites from the Postcardial Neolithic period (Source: I. Gironès, GRAMPO-SAPPO, UAB).

clusively for farmwork, especially storage, located near crop fields. They may be yet further proof of the intensification of farming. There are also many cave occupations both on the coastline, where Cova Sant Llorenç and Cova del Gegant (Sitges) continued to be occupied, and slightly inland, like Cova de Can Sadurní in Begues, which was used as a burial space and later a livestock stable. One very significant new development is associated with the settlement of the Gavà zone, as this is when mining of variscite in the prehistoric mines of Gavà got underway (see below).

The occupations of the Plain of Barcelona continue to yield a very rich archaeological record which not only documents its settlement but also allows us to study domestic activities. One example is combustion structures shaped like basins or buried pits. This is a type of hearth/oven is not exclusive to the Catalan coastal region, although many of them have been found here. Most noteworthy are the ones in the current Raval district, with around 30 hearths in the Caserna de Sant Pau del Camp site, along with the well-conserved one at 14B Carrer Aurora. A detailed, expert analysis has enabled several types to be documented, all of them with an excavated basin filled with burned blocks of stone or other elements. An analysis of them, particularly of the refittings, has shed light on their purpose. It is interesting to note that they are not associated with enclosed habitation spaces but instead with spacious outdoor areas. They show middle- to long-term thermal properties, like the stone fillers that seem to indicate the addition of heat and rapid illumination. In all cases, their use to transform products has been set forth repeatedly, although the multifunctionality and reuse of these structures hinder any general interpretation.<sup>13</sup>

Within this same category of structures we should note the existence of large hearths like the ones discovered in the sites at 82 Nou de la Rambla and 38 Riereta. These are large structures (some of them more than 2.4 metres in diameter) with a regular morphology which are filled with blocks with irregular signs of burning over oak, pine and tamarind trunks and branches, which formed the lower bed at the bottom of the basin. Both the structural and functional characteristics have made it plausible to propose that they were used for collective activities, with authors suggesting ritualistic or symbolic uses associated with festive activities and community gatherings for the purpose of group cohesion.

Finally, we should highlight the habitat complex in the Sagrera zone, where the existence of a large number of stake holes, that is, simple excavated structures used to insert the stakes that held up the roof or walls, has led to the proposal that they were for fences or lightweight constructions meant for work areas and/or a range of activities to treat surplus products (drying grains, etc.). This thus provides further proof of the theory that the extensive, albeit intermittent, settlement was located in a site with very favourable features near the Estadella stream and on the edge of the 'graó barceloni' (a change in topographical level), with visual control over the lower plain, and near the floodplain of the Besòs River due to its proximity to the marshy area on Via Trajana. Regarding this information gap, and in order to propose a more comprehensive settlement model, further research is needed into the nature and variability of the types of settlements and their functional and domestic use. The current documentation enables us to posit different communities which may have consumed similar products but nonetheless show significant variations. There was greater diversification of the resources exploited, both lithic materials like jasper and marine resources, primarily malacofauna, to both consume and create ornaments, and of the forms and decorations of the ceramic vessels, with an expanded repertoire of shapes, although the decorations are mainly smooth with arched cords, polished and burnished finishes, comb marks and a few incisions. Likewise, major differences can be seen in the types of settlements, as proven by the variability in the stake holes and combustion structures, as well as the existence of platforms where biotic and abiotic products were prepared and transformed.

The hypothesis that this variability is related to the ecological areas in the settlements' precise locations is worth considering. But it likely has more to do with the increasingly diverse groups' economic and social practices. In fact, studying the occupations in Sagrera from the fifth millennium reveals an important and somewhat rare feature in Catalan prehistory: an enclosure with a farmyard made of perishable material. We also find other differences, such as in funerary practices, in which the two concentrations in the necropolis of Caserna de Sant Pau del Camp stand out for their uniqueness.

On the southern part of the Catalan coast, Timba d'en Barenys and especially the rich documentation in the terraced area on the lower stretch of the Ebro River show some evidence of dwellings, although primarily of necropolises. Sites in Masdenvergenc, El Molló de la Torre and Mas Benita make it possible to maintain the proposal of a habitat model with semi-permanent outdoor settlements located primarily near the fluvial terraces of the Ebro River, complementary to the caves/shelters located in the foothills of El Ports.

### FUNERARY EXPRESSIONS: INNOVATION AND DIVERSITY

Funerary records are one kind of evidence of past peoples that shed light on many of the social, economic and symbolic features of living populations. They are studies of the 'dead' to examine the living, always bearing in mind certain basic caveats regarding the limits of the archaeological record (nature of the sample studied, limitations on the conservation of organic matter, etc.).

Generally speaking, the first farming populations are believed to have 'normalised' funerary practices, primarily for sociological reasons, such as changes in the social structure and the importance of ancestors in the new forms of production, especially agriculture, like land value and ownership. Burial was not a new phenomenon, nor was it exclusive to crop and livestock farming groups, given that examples of graves and even necropolises—albeit not many—can be found among hunter-gatherer populations. Nearby examples on the Valencian coast are the necropolis in El Collado (Oliva),<sup>14</sup> which has 14 graves, and the use of Cingle del Mas Nou cave (Castelló), which has the remains of seven individuals in a burial space. It is assumed that the treatment and burial of community members became normalised with the new economic forms in the Neolithic period.

When studying farming societies in Western Europe and the Mediterranean region, we find an evolution marked by the close spatial relationship between the worlds of the living and the dead in the early phases, alongside a vast diversity of grave shapes and funerary gestures. The phenomenon of the necropolis located away from dwellings only appeared gradually, and later the monumentality of funerary structures came with the emergence of megalithism and the increasing number of objects associated with graves. These developments enable us to document gradual social and economic distinctions within the population.

Focusing on the topic of this article, we can document and debate these general features by analysing the earliest Neolithic manifestations documented on the northeast coast of the Iberian Peninsula.

During the oldest period in the second half of the sixth millennium, the Early Cardial Neolithic, the most common funerary evidence shows the use of caves and shelters

as burial sites. We find evidence of this in Cova de Can Sadurní, Cova Bonica and Cova Foradada, just to cite the ones near the central coast, although similar sites can also be found further inland. Cova de Can Sadurní is paradigmatic because it houses successive primary burials, which thus far have enabled us to acknowledge the existence of ten individuals with food offerings, as well as other items such as the remains of clothing, ceramic vessels and the lithic parts of tools. It is also paradigmatic because it was used for multiple purposes which varied over time, with the space alternately used as a grave, as mentioned above, and for other purposes, such as to stable animals.<sup>15</sup>

With regard to outdoor burials, the funerary record from the Early Neolithic is rarer and more difficult to document, but the evidence found in the Plain of Barcelona is innovative and enables us to raise a series of historical questions which affect the overall discussion of this record on the northeast Peninsula. Essentially, it involves noting the presence of individual outdoor graves associated with the earliest settlements in the sixth millennium, as well as describing the variability of the funerary practices in the fifth millennium and debating their influence on the initial standardisation of graves in the fourth millennium, with evidence from what are known as 'pit burials'.

Very briefly, the funerary units located in the subsoil of Barcelona include three graves from the oldest phases of the Neolithic period. One located in Plaça de Vila de Madrid dates from around the Cardial period, and two graves located in the remains of the habitation structure at number 31-33 Reina Amàlia date from the mid-fifth millennium. In all three cases, the burials use very simple graves as receptacles, and virtually no objects accompany the skeletons.

The largest body of evidence is unquestionably the necropolis of Caserna de Sant Pau del Camp, which has a total of 25 graves dating from around 4600-4400 BCE. The new information comes from the discovery of an outdoor necropolis, that is, the deliberate grouping of a cluster of graves, in this case individual graves in the primary position, each in a pit. They are structurally very simple, and some variability in the funerary gestures has been found. The documentation on the associated objects deposited as grave goods is more important, and they have become the foundation of pioneering interpretations of the socioeconomic features of the society, as well as hypotheses on the sexual division of labour. This same record of objects may also enable us to detect trade networks. The objects documented at the funerary sites in the Plain of Barcelona and the nearby areas like the Alt Penedès show how finished goods linking the settlers of this region with other zones in the Iberian Peninsula or Central Europe had been circulating since the mid-fifth millennium. One of the most important documents is the lithic part of polished tools made with jadeite, a material from the Alps that indicates the existence of these middle- and long-distance trade networks.





FIG. 6. Burial E-19 from Caserna de Sant Pau del Camp (Barcelona) (Source: MUHBA Collection).

The continuity of the funerary record in the coastal region between the Llobregat and Besós Rivers in the fourth millennium is shown by the existence of six graves associated with what is known as the ‘pit burial’ culture distributed irregularly in sites scattered about the entire Plain of Barcelona.

The discovery of this necropolis on the coast of what is today Barcelona and its association with the origin of the structural normalisation of ‘pit burial’ graves may be debatable. In fact, even though the wide variability in the arrangement of the skeletons departs from the rigid rules of the fourth millennium, the morphology and the very creation of the necropolis do prefigure it. In fact, this may be similar to the conclusions that could be reached about the funerary world in the Alt Penedès. This rich, thoroughly studied area has also yielded the concept of small necropolises, like Hort d’en Grimau, La Serreta and Pujolet de Moja, all of them dating from around 4300-4000 BCE. The morphology of the graves enables us to distinguish two main forms: first, hypogea built in wells and a lateral funerary chamber sealed with vertical slabs, and secondly, a pit with a bench, that is, a structure made of a circular depression with an oval pit that serves as the burial chamber in the centre. Analyses of both the structures themselves and the associated archaeological materials enable us to suggest a slightly more recent date. The sites in the Vallès, including Can Roqueta and Cova de les Ànimes, likely reflect similar features. In short, as stated above in the interpretation of the necropolis in Caserna de Sant Pau del Camp, we can propose that in the coastal and pre-coastal regions both the morphology and the generic features of the associated materials in the middle and last quarter of the fifth millennium prefigured the elements that would become the defining features of ‘pit burials’ in the first half of the fourth millennium. In our view, this proposal is associated with the need to link both the phenomenon of the mid-Neolithic funerary normalisation in

the northeast with the cultural evidence from the Chas-sense (France) or Cortaillod groups on the other side of the Pyrenees. This was unquestionably based on broad networks of exchange and information that enable us to document some degree of uniformity in individual funerary practices which are directly associated with the consolidation of the economic and especially social structures of the early crop and livestock farming societies.

In the southernmost region of Catalonia, the abundant funerary practices in the region near Amposta fall fully within this debate. There is an extensive funerary record with more than 80 graves which are widely distributed throughout 16 sites, including Mas Seros II, Molló de la Torre and El Molinàs, some of which are veritable necropolises which may have had up to 25 graves. The timeline is quite extensive, given that it is posited as spanning from the second half of the fifth to the first half of the fourth millennia. Therefore, just like the examples on the central coast, these may also be the earliest necropolises. However, the morphology of the graves and the associated materials show particularities which are thus far specific to this territory. Regarding the shape of the graves, two that are identical to the ones in the northern coastal zones have been identified: first, hypogea with wells and a chamber, here forming small lateral closed caves with vertical slabs, and secondly rectangular pits, here with walls clad with stone slabs. The difference lies in the discovery of a type of grave or grave structure defined as a cist or slab box with a small stone mound around it, the clearest example being the grave in El Molinàs. We do not believe that the morphology and especially the size of these latter graves can be classified as megalithic, even though they do share certain structural similarities.<sup>16</sup>

The burials are primary and individual and represent the entire population, both men and women, and more adults than youths or children. Many of the graves have accompanying objects, including pottery vessels, stone

industry and polished tools, but objects made with shells and valves are particularly prominent, especially long necklaces wrapped around the upper part of the bodies. These elements are not exclusive to this region, given that they are found—albeit in lower numbers—in other zones, yet they are local to this area. They are made of beads crafted with carved and perforated shells, and some unique stone pieces arranged in the central part indicate planned design and production. Some of them are longer than one metre, which would have made them quite heavy and difficult to wear during festive or everyday activities. Some bracelets made with *Glycimeris* valves carved inside to create a ring or circular element have also been found there.

The last aspect worth highlighting is the appearance of megalithism in the course of the fifth millennium, that is, the specific aim of making monumental funerary structures. The current documentation for Catalonia and the neighbouring areas indicates that this phenomenon also occurred in the mid-fifth millennium and first arose primarily in the zone of Cabreres and the middle Ter River valley, and perhaps in other pre-Pyrenean and Pyrenean regions. The coast studied in this article has yielded no evidence of such archaic monumental graves; however, the work underway in Vilanera - Empúries near the wetlands and the former mouth of the Ter River may yield new information that would change this.

## DISCUSSION

The geographic areas near the northeast coast of the Iberian Peninsula show extensive documentation of settlements dating from the Neolithic period. The preferred occupation near the country's most important water resources is particularly significant around the mouths of the main rivers, which enables us to posit some control over river navigation, as well as a swift, planned occupation of the territory and an intensification of the use of resources, especially towards the end of the period. The analysis has documented settlements covering the entire geographic region, although in some areas our knowledge is more detailed and the continuation of the settlements is better documented due to both more research and better preservation. The main structures found are cabins, pits used as silos or graves, combustion structures and stake holes, which also indicate the presence of walls and other structures to delimit the perimeters. This is the main evidence from the earliest settlements, most likely comprised of a few habitation units that housed a small population. We also find diversity in the types of dwellings according to the different materials used, including dirt in the guise of adobe or wattle, low dry-stone walls and branches. Even though there are only a few of them, the houses are circular, oval-shaped or rectangular and share a generic common model, although their materialisation adapts to the geographic and ecological context where they were

built. The hypothesis of a duality and complementarity between cave and shelter establishments and those located outdoors gains credibility in areas like the Penedès and Alta Garrotxa, although this would not preclude the possibility that some caves or shelters were used as homes. The record also indicates an increasing number of settlements throughout the 1500 years studied, which should be interpreted as the gradual consolidation of the settlements and the new economic and social system associated with better use of and control over the crop and livestock farming cycle. Everything seems to indicate that the growth was not constant but accelerated in certain periods, such as in the second half of the fifth millennium, when the record indicates heavy demographic and population growth in general, although this is also clearly shown along the entire coastline.

Productive practices aimed at securing the means of subsistence are closely associated with this population dynamic. We should note that the early Neolithic populations in Catalonia were crop and livestock farmers, which is common in all the populations of the Western Mediterranean if not all of Western Europe. In recent decades, it has been accepted that the economic transformation brought about by the shift from the hunter-gatherer economy to subsistence production was prompted by the arrival of new products and animals, as well as techniques and systems to manage and exploit them. Setting aside dogs, which may have archaic domesticated forerunners in different geographic areas, the other products used in crop and livestock farming arrived already showing domesticated morphology. That was the earliest time of grain cultivation, primarily naked wheat (*Triticum aestivum/durum/turgidum*), emmer wheat (*Triticum dicoccum*) and einkorn wheat (*Triticum monococcum*), along with barley, probably hulled (*Hordeum vulgare var. vulgare*). Slightly later, spanning the sixth to the fifth millennia, naked barley (*Hordeum vulgare var. nudum*) and durum wheat (*Triticum tipus durum/turgidum*) were more common, along with possible evidence of cultivation of the opium poppy (*Papaver somniferum*). There is continued proof of the cultivation and consumption of barley and naked wheat in the first half of the fifth millennium, along with a significant presence of peas (*Pisum sativum*) and the opium poppy.<sup>17</sup>

There is also ample proof of livestock from the early period, with the breeding and consumption of sheep (*Ovis aries*), goats (*Capra hircus*), pigs (*Sus domesticus*) and cattle (*Bos taurus*), species that were subject to reproductive control, livestock husbandry and widespread consumption. They were all new species, and just like with the plants no autochthonous domestication process has been discovered. In the early stages, ovicaprids were quite prominent, but the documentation shows gradually more diversified livestock, with some slight regional variations. Pigs were prized and bred primarily for meat; the selective slaughter of males at the end of the growth stage, when their meat is optimal, has been documented in the

sites of Caserna de Sant Pau del Camp and Reina Amàlia (Barcelona). The importance of bovines varies greatly; they were quite rare in the majority of settlements but occasionally found in larger quantities, such as in the cabin in Reina Amàlia (Barcelona).

This economic activity of livestock farming was supplemented by wild resources exploited at the different settlements. Hunting and gathering wild plants is well documented, although their contribution to food resources is considered minor. Different species near the settlements were hunted, most notably deer (*Cervus elaphus*), wild boar (*Sus scrofa*), roe deer (*Capreolus capreolus*) and Iberian ibex (*Capra pyrenaica*).

For our study, it is interesting to note the importance of practices that involved gathering wild resources from the sea. None of the sites analysed is located far from the coastline, and therefore the potential exploitation of these resources would be logical; furthermore, we assume the settlers had thorough knowledge of the maritime world, given that they had travelled by sea. The information comes from different sources, the first being tools and implements associated with fishing, and later the biotic remains of their consumption/gathering (fish or malacological remains) found at archaeological sites, and more recently the results of isotopic analyses aimed at establishing these groups' diets.

Blocks of polished stone with lateral incisions have been found in the Plain of Barcelona, which have been interpreted as fishing net weights, and several remains of fish spines have also been documented there, along with a quill from a sea urchin and teeth from porgies, most likely food waste. There are just a handful of these remains, but given the fact that they are difficult to both conserve and discover, they are good indicators that they were consumed in the fifth millennium.

Slightly more recently, more remains have been found in the mines of Gavà, including fish from the porgy family

like common dentex (*Dentex sp*), common pandora (*Pagellus erythrinus*) and red porgy (*Pagrus pagrus*), along with a vertebra from the Triakidae family, a cartilaginous species including the houndfish. Many more malacological remains are located in the settlements from this period, which would indicate that molluscs were collected. They have been found in the settlement of Cavet and most of the settlements on the central Catalan coast (Caserna de Sant Pau del Camp, Reina Amàlia 31, the prehistoric mines of Gavà). We should note that their large numbers are not a direct indicator that they were consumed, given that their presence in coastal settlements could be either natural (often indicated by a high degree of wear) or anthropic, but for non-dietary purposes, such as manufacturing ornaments. Recent studies indicate that even though the most plentiful taxon is always bivalves, primarily from the *Glycymeris* genus, the ones consumed the most were shells from the *Patella* genus called limpets.<sup>18</sup>

In short, the settlements got most of their food from crop and livestock farming, economic practices that were integrated into the groups' social and populational relations. The current data from both the record and more specialised analyses indicate little interrelation with and consumption of products from the sea, which starkly contrasts with their clear spatial distribution near the coast and the settlers' status as seafarers, bearing in mind that the sea was one of the means of mobility they used.

## CONCLUSIONS

As stated in the analysis of the archaeological evidence documented in the coastal area of Catalonia, the data enable us to reflect and historically interpret the cultural, technological and population transformations between the sixth and fourth millennia BCE.

The first evidence is the high degree of continuous settlement by the earliest farmers based on both the location of the settlements and the nature of the evidence from the habitat structures and the food conservation and production, that is, the very structure of the settlements. Regarding the geographic and territorial analysis, we find that primarily zones with plentiful water resources were occupied, taking advantage of freshwater lagoons near the areas where streams approach and flow into the sea. The current documents seem to indicate that the sedentary settlements were made up of small clusters of cabins and complementary domestic structures which show significant technological and structural diversity. As reported above, the record is incomplete at this level because we are only able to archaeologically document the negative structures and those that are only partially conserved likely due to effects and alterations at more upper levels.

From a more general perspective, the population model defined as a set of stable settlements in the coastal area near the mouths of rivers, taking advantage of the resources from the ecosystems around them, has not yet



FIG. 7. Fish bones from the old Epicardial Neolithic from the site of Reina Amàlia 31-33 (Barcelona) (Source: GRAMPO-SAPPO, UAB).



been well identified throughout the millennium and a half studied. However, other regions with research programmes underway, such as the lower stretch of the Ebro River and the Baix Empordà, where research of this type is currently ongoing, can now make population dynamics part of their working hypotheses.

Likewise, just like with the dwellings, the evidence from the funerary world found in the zone studied shows considerable continuity throughout the entire period. One of the most significant features is the appearance of necropolises, as they are considered innovative social signs, with the separation between the dwelling and grave spaces, along with the individualisation of the grave of the person buried there. Funerary practices also play a prominent role in the discussion of societies from the sixth millennium, with evidence of the phenomena of the normalisation of death and the value attached to ancestors, which are unusual in hunter-gatherer groups. With the current documentation, we should emphasise the hypothesis posited years ago on the existence of a vast variety of funerary forms during these periods: natural caves used as hypogea or pantheons, simple graves in pits, the occasional use of other pits that were initially not for funerary purposes as graves, and the advent of megalithic-type monumentalisation, even though there are no clear cases of the latter in the coastal sites. The diversity of ‘containers’ and structures with a heavy investment in labour and technical knowledge nonetheless reveals a very similar and common funerary practice centred around individual primary burials. Here we should wonder whether they are the forerunners and origins of the structural normalisation of the fourth-millennium ‘pit burials’. They unquestionably are by date, but we should not discard the possibility of outside cultural influences, especially from Europe, because, as found with the spread of goods, there was an early intensification of the circulation of crafted goods and raw materials after 4300 BCE, especially from beyond the Pyrenees.

The very uniqueness of these early crop and livestock farming groups currently enables us to identify and sequence a wide range of strategies revolving around their settlement patterns and relationship to the goods manufactured, consumed and circulated via redistribution networks that can be considered extensive, albeit intermittent, as well as the genetic and technological exchanges that were essential to the expansion and success of the Neolithic model. As evidenced, this was a crucial and extraordinarily interesting period because it was the seed of the formation and consolidation of the phenomenon of preindustrial peasant societies, which essentially form the foundation of our diet today.

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