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The fauna of Bronze Age ditched enclosures: evidence for collective consumption?

Faunal assemblages from Bronze Age enclosure sites in Calvados, Pas-de-Calais and the Somme (France)

La faune des enclos fossoyés de l'âge du Bronze : indices de consommations collectives ?

Les assemblages fauniques des sites à enclos de l'âge du Bronze dans le Calvados, le Pas-de-Calais et la Somme (France)

Ginette AUXIETTE

Abstract

Based on archaeozoological data from eight enclosure sites dated to the Bronze Age (Early, Middle and Late), located in the Calvados, Pas-de-Calais and Somme *départements* (France), this work uses the faunal evidence to explore possible functional differences with ordinary settlement sites. The hypothesis of collective consumption is discussed, although it is not yet possible to identify regularly recurring events such as seasonality. The main characteristics include the overwhelming proportion of cattle in the assemblages, the bone fragmentation that shows that the meat was divided into large pieces, the minimum number of individuals, as well as the slaughter pattern mainly focused on juveniles. All these criteria distinguish enclosed sites from unenclosed settlements. These results are compared with the evidence from sites in the south of England, in order to underline similarities or differences with the French sites.

Translation : Michael Ilett

À partir des études archéozoologiques de huit sites à enclos datés de l'âge du Bronze (Bronze ancien, moyen, final) situés dans les départements du Calvados, du Pas-de-Calais et de la Somme (France), cet article s'attache à confronter les données de corpus fauniques, afin de proposer une attribution fonctionnelle différente de celle de simples enclos d'habitat.

L'hypothèse de consommations collectives est posée, sans qu'il soit encore possible de proposer une scansion des événements (saisonnalité). Les principales caractéristiques réunissent plusieurs critères parmi lesquels la composition des assemblages, avec notamment l'écrasante part du bœuf, la conservation des os qui permet d'évaluer un traitement des pièces

de viande en gros morceaux car les os sont peu fragmentés, le nombre minimum d'individus et les âges d'abattage relativement concentrés sur des animaux juvéniles. Tous ces critères distinguent ces sites à enclos des sites d'habitat non enclos. Ces résultats ont par ailleurs été confrontés à ceux issus de plusieurs sites britanniques situés au sud de l'Angleterre, afin de proposer des ressemblances ou des dissemblances avec les sites français.

A partir de los estudios arqueozoológicos de ocho sitios con recintos datados en la Edad del Bronce (Bronce antiguo, medio y final) ubicados en los departamentos de Calvados, Pas-de-Calais y Somme (Francia), este artículo trata de comparar los datos del corpus faunístico, con el fin de proponer una atribución funcional diferente a la de simples recintos de hábitat. Se plantea la hipótesis del consumo colectivo, sin que sea posible proponer una escansión de los acontecimientos (estacionalidad). Las principales características reúnen varios criterios, entre los cuales la composición de los conjuntos, en particular la abrumadora proporción de carne de res, la conservación de los huesos, que permite evaluar el tratamiento de las piezas de carne en trozos grandes porque los huesos están poco fragmentados, el número mínimo de individuos y las edades de matanza relativamente concentradas en los animales jóvenes. Todos estos criterios distinguen estos sitios cerrados de los sitios de hábitat no cerrados. Además, estos resultados se compararon con los de varios sitios británicos ubicados en el sur de Inglaterra, con el fin de proponer similitudes o disimilitudes con los sitios franceses.

Traducción : Léna Girard

Dieser Artikel befasst sich mit acht früh-, mittel- und spätbronzezeitlichen Einfriedungen in den französischen Departements Calvados, Pas-de-Calais und Somme. Er konfrontiert deren Faunadaten miteinander, um eine andere funktionale Zuordnung vorzuschlagen als die einfacher Siedlungseinfriedungen. Die Hypothese von kollektiven Mahlzeiten wird vorgelegt, ohne dass es zurzeit möglich wäre, diese saisonal näher einzuordnen. Zu den signifikantesten Kriterien gehören die Komposition der Inventare, bei denen Rinderknochen bei weitem den höchsten Anteil ausmachen, zudem die Erhaltung der Knochen, die erkennen lässt, dass das Fleisch in großen Stücken abgetrennt wurde, denn die Knochen sind kaum fragmentiert, schließlich die Mindestindividuenzahl und die relative Konzentration des Schlachalters auf Jungtiere. Alle diese Kriterien unterscheiden diese Einfriedungen von den nicht umfriedeten Siedlungsplätzen. Die Ergebnisse wurden darüber hinaus mit denen mehrerer Fundplätze im

Süden Englands konfrontiert, um Ähnlichkeiten oder Unterschiede mit den französischen Fundplätzen aufzuzeigen.

Übersetzung : Isa Odenhardt

Key words: Bronze Age, France, North-West, ditches, cattle remains, specific consumption;

Introduction

During the last twenty years, several ditched enclosures dating to the Bronze Age (tabl. 1) have yielded faunal assemblages, of varying sizes, whose specific compositions have prompted questions regarding their nature. In this discussion, we focus on eight sites: five in Calvados, two in Pas-de-Calais and one in the Somme. In Normandy, the sites are located on the coastal strip at Mondeville “MIR” (Site 1) dating to Early Bronze Age 1, “l’Étoile” (Site 2) attributed to the end of the Middle Bronze Age/Late Bronze Age 1, “ZI Sud” (Site 3; a pair of conjoined enclosures) dating to the Middle Bronze Age/Late Bronze Age 1, Blainville-sur-Orne “Zac Terres d’Avenir” dating to the Early Bronze Age and Mondeville “Rue Nicéphore Niépce” dating to the Late Bronze Age (for the first three sites see Arbogast, 2005; for the other two, see Auxiette, 2019, 2021). We have also included the enclosure sites of Étapes-sur-Mer “Zac du Domaine du Chemin des Prés”, dated to the Early/Middle Bronze Age, and Guînes “Jardins du Couvent 2” dated to the Late Bronze Age/Early Hallstatt (Auxiette, 2017; Auxiette 2006), both of which are in Pas-de-Calais, and the site of “Mont à Cailloux-Sud” at Abbeville dated to the Early/Middle Bronze Age (Auxiette, 2013) in the Somme (fig. 1).

Table 1: chronological correspondences after Marcigny *et al.* 2015.

Tabl. 1: correspondances chronologiques d’après Marcigny *et al.* 2015.

The principal question surrounding these enclosures is their exact function. The recurrent presence of everyday objects such as millstones, pottery and lithic tools pleads in favour of domestic contexts, probably farms. However, the presence of particular deposits and large amounts of refuse raise questions. Zooarchaeological analyses have contributed greatly to this discussion and have contributed to the hypotheses formulated over recent decades.

Fig. 1: selected sites in France and Southern Britain © Frédéric Audouit, Inrap, ©OpenStreetMap (SRTM <https://srtm.csi.cgiar.org/>).

Fig. 1: selection des sites français et du sud de la Grande Bretagne © Frédéric Audouit, Inrap, ©OpenStreetMap (SRTM <https://srtm.csi.cgiar.org/>).

The enclosures: characteristics and chrono-cultural dating

The sites in our study are enclosed by ditches with entrances: the latter may be positioned at the east or west, or slightly off these cardinal points, but are never at the north or south. The shapes of the enclosures vary from sub-oval to curvilinear, elliptical or circular. The enclosed areas are generally devoid of contemporary features (tabl. 2) with the exception of a few pits or combustion pits for which it is still difficult to propose a reliable dating. The heavy erosion of the soil on most of the sites has destroyed any evidence of Bronze Age features that would have been present in the enclosed areas and part of the general organisation of the settlement. The enclosures measure between 1000 m² and 4000 m², with a typical value of around 2500 m². Hearths, burials, and isolated human bones have been found in the fill of some ditches. Finds most often occur on either side of the entrances or sometimes facing them, but scattered waste material is also found. The finds, apart from the faunal remains, are mainly waste material similar to the detritus found on settlement sites (sherds, lithics, weights, grinding tools, etc.); sometimes more remarkable finds are uncovered such as pins, a spear head and a palstave, all of bronze, often found in a significant location (for example near to the entrances).

Table 2 : summary of the principal characteristics of the enclosures.

Mondeville “MIR”, “l’Étoile” et “ZI Sud” (Arbogast, 2005) ; Mondeville “Rue Nicéphore Niépce” (Auxiette, 2021) ; Blainville-sur-Orne “Zac Terres d’Avenir” (Auxiette, 2019) ; Étapes-sur-Mer “Zac du Domaine du Chemin des Prés” (Auxiette, 2017) ; Guînes “Jardins du Couvent 2” (Auxiette, 2006) ; Abbeville “Mont à Cailloux-Sud” (Auxiette, 2013).

Tabl. 2 : synthèse des caractéristiques principales des enclos.

The faunal spectra are characterised by variable numbers of remains (NR from ±150 to 801) and a fairly high proportion of determined bones, exceeding 70% in six out of eight cases (tabl. 3). The average weights from all the sites are equivalent in the cases where this information is available (tabl. 4).

For Sites 2 and 3 at Mondeville, cattle bones represent 80% of the total mass of bones for Site 2 and 63.5% for Site 3 (this information is not available for site 1). It reaches 88% at

Mondeville “Rue Nièpce”, and 95 % at Blainville. For the sites in the north of France, cattle represent 90% of the total mass at Étaples and 94 % at Abbeville (this information is not available for Guînes).

At present, we can distinguish three main development of the enclosures. A first phase dating to the Early Bronze 1 and 2 transition, from the 21st to the 18th century (which would cover period 3 of Needham's chronology ; Needham 1996). A second phase between the end of the 15th and the beginning of the 13th century, with objects very similar to the Deverel Rimbury of southern Britain (period 5 of S. Needham). A last phase between the 12th and 9th centuries BC, where the enclosures take the form of a ring fort; known mainly in Normandy, pottery from these sites is very similar to the plain ware style (period 6).

Table 3: the number of remains per site and per species (dét = determined, indét = undetermined).

Tabl. 3 : nombre de restes par site et par espèce (dét = déterminés, indét = indéterminés).

We note the pervading presence of cattle, with frequencies of over 65% for six of the eight sites. Age estimations reveal the preferential slaughter of juvenile animals in significant proportions, apart from at Blainville where the majority of cattle are adults. As regards to the anatomical parts, cranial elements are very numerous and skulls were evidently exposed prior to burial (altered surfaces, dislodged teeth); long bones and shoulder girdles are well preserved and show little fragmentation (with the exception of Guînes). Where data is available, estimation of the Minimum Number of Individuals (MNI) highlights the large number of cranial elements relative to the overall number of remains (tabl. 4).

Table 4 : comparison of data from Bronze Age ditched enclosures.

NB: The presence of cetacean remains and of cockles on the sites of Blainville and Étaples (juv. = juvénile, ad. = adulte).

Tabl. 4 : confrontation des données issues des sites à enclos fossoyés de l'âge du Bronze.

NB : Présence de cétacé et de coques sur les sites de Blainville et Étaples (juv. = juvénile, ad. = adulte).

Among the most remarkable items, we note numerous, highly symbolic cattle skulls, but also the presence of dog skulls at Mondeville-Site 3 and Blainville, as well as a dog burial at the latter site. The skeleton of a goat was discovered at Mondeville-Site 2. It is impossible not to wonder about the significance of these finds, in particular the skulls. It is not beyond the bounds of possibility that these burials were part of sacrificial rites linked to ritual practices.

On the subject of deposits, the mass of cattle bones found at the interruption of the ditch surrounding the Mondeville “Rue Nièpce” settlement is remarkable. The deposit contains various anatomical parts from at least four cattle; skull, jaw bones, long bones, pelvises ribs and vertebrae, all of which are complete (fig. 2).

Fig. 2 : Deposits of cattle bone from the interruption in Ditch 9 at Mondeville “Rue Nicéphore Nièpce”, general view (photo by C.-C. Besnard-Vauterin).

Fig. 2 : dépôt d'ossements de bœuf au niveau de l'interruption dans le fossé 9 sur le site de Mondeville “Rue Nicéphore Nièpce”, vue générale (cliché C.-C. Besnard-Vauterin).

Among the wild mammals, red deer deserves particular mention: it is mainly represented by cranial elements, including parts of antlers – both worked and unworked at Mondeville-Site 1, Étapes, Abbeville and Blainville. Other anatomical parts have been recorded at Mondeville-Sites 1 (girdles and long bones), 2 and 3 (unspecified anatomical parts).

We might also consider the role of the horse, which is generally poorly represented in these contexts. The species has been recorded, in very variable proportions, on six of the eight sites: 5.1% at Mondeville -Site 2; 1.9% and 6.2% in the northern and southern enclosures respectively at Mondeville-Site 3; 2.3% at Mondeville “Rue Nièpce”; and, in the North, 0.6% at Étapes and 6.1% at Guînes. Some of these frequencies are quite high while others are very low. As a comparison, the species represents 3.5% of the corpus on the more recent Hallstatt C/D1 settlement site of Ifs “Object’Ifs-dernière tranche” (Calvados).

These remarkable faunal deposits are repeatedly found in association with human remains, for example at Étapes (a fragment of a skullcap and two femur fragments), at Mondeville Site 2 (a femur and two *calvaria*), at Mondeville Site 3, (a *calvarium*) and at Mondeville « Rue Nièpce » (four long bones and a *calvarium*). On this last site, three burials located very close to one another and containing the remains of four individuals, were revealed in the fill of one of the segments of the outer ditch while another two were uncovered in one of the inner segments; the majority of the remains were incomplete.

Characteristic sites in the Channel area

These enclosed sites, characteristic of Bronze Age Normandy and more broadly of the Channel coastal areas, are also widely recorded in Great Britain where they are interpreted as settlements (Cunliffe, 2005). The archaeological remains are comprised of both domestic waste and deposits of fauna and/or bronze objects. There is considerable data available regarding the fauna thanks to several decades of research.

A remarkable on line data base of zooarchaeological data from sites in the south of England (Hampshire and the Isle of Wight, Dorset, Wiltshire and the Upper and Middle Thames) has recently been compiled under the direction of Dale Serjeantson (2011) for the Neolithic to the Early Bronze Age and under the direction of Ellen Hambleton for the Middle/Late Bronze Age and the Iron Age (2011 ; see fig. 1).

For the Late Neolithic /Early Bronze Age, five sites (out of 166 recorded) are considered relevant. The corpora are small to medium in size, ranging from \pm 100 bones to a little over 500. In three out of four cases, cattle predominate (the Devil's Quoits site has yielded a very limited corpus). However, smaller animals also occupy an important position: pig at Gorsey Bigbury, pig and caprines at Arreton Down (Isle of Wight; limited corpus). Twyford Down has a majority of caprines. At the site of Drayton cursus OGS, which is not an enclosure but an occupation level, cattle dominate the faunal spectrum (tabl. 5).

Table 5: late Neolithic/early Bronze Age, summary of data for the main species (NR4 = cattle, pig, sheep and goat combined).

Tabl. 5 : Néolithique final/début de l'âge du Bronze, synthèse des données pour les espèces principales (NR4 = bœuf, porc, mouton et chèvre réunis).

The compilation of data for the main domestic species allows us at most to observe certain similarities between sites on the western fringes of France and those in the south of England. With the exception of Twyford Down, cattle are one of the cornerstones of domestic herds and of consumption.

For the Middle and Late Bronze Age, the corpora are more substantial. Three ditched enclosures, with fairly precise dating, stand out among the 100 or so recorded (tabl. 6). Five open sites are also considered to highlight potential differences between the types of sites. Two sites, Rockley Down and Black Patch, have yielded relatively small corpora.

Table 6: MBA and LBA, summary of data for the principal species (NR4 = cattle, pig, sheep and goat combined).

Tabl. 6 : âges du Bronze moyen et final, synthèse des données pour les espèces principales (NR4 = bœuf, porc, mouton et chèvre réunis).

At Dean Bottom, data on slaughter ages reveal a fairly significant number of juvenile animals in the case of cattle; the slaughter ages for caprines are not provided. On the site of Runnymede Bridge, the cattle are principally sub-adult individuals while the caprines and pigs tend to be juveniles.

The overall image of the fauna differs from that provided by the corpora from the earlier sites, with a higher proportion of caprines on the two enclosure sites (Middle Farm and Dean Bottom; fig. 3). Does this reflect an evolution of herd composition, a change in dietary preferences or, perhaps, a different kind of consumption? It is also worth noting that the faunal remains from certain unenclosed sites emphasise the importance of cattle (Bishops Cann, Runnymede Bridge), also observed at Drayton cursus OGS.

The comparison between fauna from sites on the western margins of France and in the South of England reveal few similarities. This could be due to specificities of French and British sites or perhaps even a biased interpretation. There seems for the moment no clear answer.

Fig. 3: Summary of the frequencies of the principal species (cattle, pig and caprines) from enclosures and settlement sites in North-West France and from a number of sites and settlements in the South of England.

Fig. 3 : synthèse sur les fréquences des espèces principales (bœuf, porc, caprinés) dans les enclos et les habitats du Nord et de l'Ouest de la France, et sur quelques sites et habitats du Sud de l'Angleterre.

Despite these differences, a general observation can be made: bovids (cattle and caprines) form the backbone of livestock herds, relegating pig to a lesser role. Among the bovids, we can distinguish sites with large quantities of cattle remains, including all of the French enclosure sites (lower left of the graphic), from those where caprines predominate (upper left), which are generally British sites.

Interpretation

Based on these parameters that point to similarities between assemblages on many levels, we can put forward the hypothesis of “extraordinary” consumptions involving cattle, that would have taken place at particular times (seasons) within the context of specific events (festivities).

Cattle dominate this type of consumption, although we should be aware that certain taphonomic factors have probably modified the proportions of large and small mammals between the time that they were originally buried and their excavation. As the dominant species, cattle remains dominate the fauna of several settlement sites dating to Late Prehistory on the Plaine de Caen (Auxiette *et al.*, 2011, Auxiette, 2000-2002, Auxiette, 2009). The consumption of juvenile animals together with mature individuals is not unusual.

Elsewhere, the faunal spectrum from the Late Bronze Age settlement site of Ifs “Object’Ifs-Sud”, differs greatly from the ditched enclosure sites of Mondeville, with a greater proportion of caprines in the meat diet (54.5 % of 561 bones, Auxiette, 2000-2002). In the Pas-de-Calais, the fauna from several pits on the Middle Bronze Age site of Rœux (Desfossés *et al.*, 1992, p. 385-386) reveals a predominance of bovids (40 % cattle and \pm 35 % caprines out of a total of 1177 bones). On the Hallstatt C/D1 settlement site at Ifs “Zac Object’Ifs Sud – dernière tranche” the faunal spectrum is dominated by caprines and cattle that account for 40.6 and 38 % of the assemblage (491 bones) respectively (Besnard-Vauterin *et al.*, 2020 ; fig. 3).

The fundamental differences between Bronze Age enclosure sites and most other Middle/Late Bronze Age settlements lie in the predominance of cattle, whose remains are in the high MNI values relative to the NR values and in the dividing up of carcasses into large pieces of meat (little bone fragmentation; the latter is another major distinctive criterion). In fact, on most settlement sites the consumption of the meat, the extraction of marrow and the use of the raw material for various preparations (glue, gelatine, etc.) often means that the bones are almost completely consumed and reduced to small fragments. This is different to the higher level of preservation observed on enclosure sites where large bone fragments are common.

These particularities probably reflect collective feasting. These practices are well documented for Late La Tène settlements, but are discrete and therefore difficult to perceive for the Bronze Age. It should be noted that all Early and Middle Bronze Age settlements in the west

and in particular in the north-west of France are enclosed by ditches. Their study highlights the dominance of cattle in the fauna and the non-standard treatment of their carcasses. As early as the 1990s, Rose-Marie Arbogast drew attention to these particularities: the significant number of cattle remains, the preservation of complete anatomical parts limbs and cranial elements, very little butchering (Arbogast, 2005, chapter 7).

In this new light, comparing the excavated sites at Mondeville has substantiated the singularity of their faunal assemblages.

Beyond the raw data, the MNI help us to understand the assemblages in terms of the volumes of meat consumed from several tens to several hundreds of kilos. The pieces of meat selected for these meals had a high economic value: chuck or shoulder, marrow bones, shank, round, centre leg, shin, etc. Of course, missing from this range of cuts are the fillets without bones. The frequency of these feasts remains to be determined. Unfortunately, the slaughter age data are not sufficiently clustered to show a precise calendar for the events. An exception is the site of Abbeville where peaks of consumption occur in spring.

The hypothesis of temporary assembly places, where community gatherings took place, appears to be plausible. These gatherings would have generated waste from the meat eaten during collective meals, where cuts of meat may have been specially selected (recurrence of anatomical parts). The meat would have perhaps come from several herds and brought to these dedicated sites for consumption. The events would have been staged for different reasons: maintaining alliances, seasonal gatherings (for example after the harvest), founding a settlement, solstices, marriages and/or commemorations or as part of an ancestor cult. Faunal analysis undoubtedly contributes greatly to the discussion but numerous questions remain unanswered.

Evidence from elsewhere for the same period

In the Late Bronze Age/Early Hallstatt, other sites notably in Picardie and Ile-de-France have high proportions of pig, rather than cattle in their faunal deposits that suggest large scale consumption of meat, typical of community gatherings. For example, at Villiers-sur-Seine “le

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Gros Buisson” (Auxiette *et al.*, 2015, Auxiette *et al.*, 2019, Auxiette & Peake, 2020), Boulancourt “le Châtelet” (Bălăşescu *et al.*, 2008) in Seine-et-Marne, and perhaps Choisy-au-Bac “le Confluent” and “la Bouche d’Oise” (Méniel, 1984, Auxiette & Bedault, 2015). Such practices were therefore common throughout the country (at least in the northern half of France) and the choice of one species over another appears to depend on documented cultural traditions that were well-rooted in the Bronze Age (Méniel *et al.*, 2009 and Auxiette *et al.*, 2011).

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Tables/Tableaux

German Chronology		French Chronology		English Chronology		Dutch Chronology	
2300							
	Bronze A1		Early Bronze Age I	Period 1			
				Period 2		Late Neolithic	
2000		Frühe Bronzezeit					3650 BP
	Bronze A2		Early Bronze Age II	Period 3		Wikkeldraad	Vroege Bronstijd
					Early Bronze Age		3450 BP
1600				Period 4		Early Hilversum	Midden - Bronstijd A
	Bronze B1		Middle Bronze Age I				
	Bronze B2	Mittlere Bronzezeit					
	Bronze C1		Middle Bronze Age II				
	Bronze C2						
1350				Period 5	Middle Bronze Age		3300 BP
	Bronze D		Late Bronze Age I			Later Hilversum Drakenstein Laren	Midden - Bronstijd B
	Hallstatt A1		Late Bronze Age IIa		Deverel Rimbury		
1150							2900 BP
	Hallstatt A2	Urnfelderzeit	Late Bronze Age IIb		Post-Deverel Rimbury		
	Hallstatt B1		Late Bronze Age IIIa	Period 6	Later Bronze Age Plain Ware	Urnfields	Late Bronstijd
	Hallstatt B2/3		Late Bronze Age IIIb				
800					Decorated Ware		2600 BP
	Hallstatt C	Frühen Eisenzeit	Gündlingen	Period 7			
			Early Hallstatt		Early Iron Age		Vroege IJzertijd
650							
	Hallstatt D1		Middle Hallstatt				

Table 1 : chronological correspondences after Marcigny *et al.* 2015.

Tabl. 1 : correspondances chronologiques d'après Marcigny *et al.* 2015.

Site	Feature	Shape	Surface in m ²	Interruption(s)	Distribution of the bones	Presence of features inside the enclosure	Features in the ditch	Isolated human bones (H = present)	Materials	Other materials	Specificities of bone assemblages	Presence of funerary features	Others
Mondeville MIR	Enclosure with single ditch	Sub-oval	1575	east and west	None present	Absent			Detritus	Tools of red deer antler			
Mondeville L'Étoile	Enclosure with single ditch	Curvilinear	4000	South-west	At the entrance	Absent		H	Detritus		Goat skeleton		
Mondeville ZI Sud-enceinte N	Enclosure with single ditch, conjoined	Elliptical	2500	South-east	At the entrance	Absent	Hearths		Detritus	Bronze pin			
Mondeville ZI Sud-enceinte S	Enclosure with single ditch, conjoined	Sub-rectangular	2550	North-east	At the entrance and in front of the entrance	Absent	Hearths	H	Detritus	Palstave axe and spear head			
Mondeville Nièpce	Inner and outer double ditch, incomplete	Probably circular	inc.	South-east and south-west	Concentrated at the entrance in the case of the outer ditch; dispersed in the case of the inner ditch	Absent	Burials	H	Detritus	Bronze pin (fragment)	Faunal deposit near one entrance	2 graves and scattered bones of 5 individuals	
Blainville-sur-Orne	Single ditch	Elliptical	2750	East	At the entrance and in front of the entrance	Possible pits	Hearths		Detritus		Dog skeleton		Cockle
Étaples-sur-Mer	Single ditch	Sub-circular	2460	None visible	Concentrations at the east and south	Absent	Hearth?	H	Detritus	Bronze pin and lignite bracelet	Dog skeleton		Cockle
Abbeville	Single ditch	Circular	1000	East	None	Absent			Detritus				
Guînes	Single ditch	Circular	2400	None visible		Absent			Detritus				

Table 2 : summary of the principal characteristics of the enclosures.

Mondeville “MIR”, “l'Étoile” et “ZI Sud” (Arbogast, 2005) ; Mondeville “Rue Nicéphore Nièpce” (Auxiette, 2021) ; Blainville-sur-Orne “Zac Terres d'Avenir” (Auxiette, 2019) ; Étaples-sur-Mer “Zac du Domaine du Chemin des Prés” (Auxiette, 2017) ; Guînes “Jardins du Couvent 2” (Auxiette, 2006) ; Abbeville “Mont à Cailloux-Sud” (Auxiette, 2013).

Tabl. 2 : synthèse des caractéristiques principales des enclos.

	Cattle	Pig	Caprines	Horse	Dog	Aurochs ?	Red deer	Roe deer	Wild boar	Hare	Cetaceans	Birds	Total det.	Indet.	Total	% det.
Blainville-sur-Orne – Early Bronze Age	116	16	19		2	4	4				1		162	60	222	73
Mondeville «MIR» (1) – Late Neolithic/Early Bronze Age	60	7	20	6			8	1					102	699	801	12,7
Mondeville «L'Etoile» (2) - Early/Middle Bronze Age	249	59	26	19	6		7	3	4				373	147	520	71,7
Mondeville-Grentheville «ZI Sud» northern enclosure (3) - Middle Bronze Age	107	11	30	3	3		2			1			157	91	248	63,3
Mondeville-Grentheville «ZI Sud» southern enclosure (3) - Middle Bronze Age	100	16	28	10			3	4					161	612	773	20,8
Mondeville «Rue Nièpce» – Late Bronze Age	347	49	55	11	19							1	482	154	636	75,8
Abbeville – Early/Middle Bronze Age	332	31	30		1		1						395	58	453	87,2
Etaples-sur-Mer - Early/Middle Bronze Age	119	7	32	1	1		1				1		162	38	200	81
Guînes – Late Bronze Age/ Early Hallstatt	79	21	14	7	29								150	7	157	95,5

Table 3 : the number of remains per site and per species (dét = determined, indét = undetermined).

Tabl. 3 : nombre de restes par site et par espèce (dét = déterminés, indét = indéterminés).

Site	Department	NR	% dét.	% Main species	Average weight of cattle bones (in grams)	Preferential slaughter age.	Anatomy/ complete pieces	Heads	Observations	NMI cattle	NMI pig	NMI capr.	Author of study	Bibliographic ref.	Human bones
Blainville-sur-Orne – Early Bronze Age	Calvados	222	73	Cattle 71 %	54	Juv./Culled ad.	Skulls/ long bones/ girdles	Complete skulls/skull fragments	Complete long bones	9	3	2	Auxiette	Ghesquière dir. 2019	
Mondeville «MIR» (1) – Late Neolithic/Early Bronze Age	Calvados	801	15,6	Cattle (59 %)	Unknown	Not specified	Not specified	Not specified	Very fragmentary bones (cf. taphonomic processes)	Not specified	Not specified	Not specified	Arbogast	Chancerel dir. 2006, Chapter 5	
Mondeville «L'Etoile» (2) - Early/Middle Bronze Age	Calvados	520	71,7	Cattle 66,7 %	Unknown	Older Juv./ Culled adults	Skulls/long bones	Complete skulls	Complete long bones	Not specified	Not specified	Not specified	Arbogast	Chancerel dir. 2006, Chapter 6	H
Mondeville-Grentheville «ZI Sud» enceintes S et N (3) - Middle Bronze Age	Calvados	1021	31	Cattle 65 %	Unknown	Not specified	Skulls/long bones	Complete skulls	Complete long bones	Not specified	Not specified	Not specified	Arbogast	Chancerel dir. 2006, Chapter 7	H
Mondeville «Rue Nièpce» – Late Bronze Age	Calvados	636	76	Cattle 72 %	55	Juv./ adultes/ Culled ad.	Skulls/ long bones/ girdles	Complete skulls/skull fragments	Complete long bones	20	3	6	Auxiette	Besnard-Vauterin dir. 2019	H
Abbeville - Early/Middle Bronze Age	Somme	453	87	Cattle 84 %	65	Juv./young ad. = springtime	Skulls/ long bones/ girdles	Mandibles/ skull fragments	Complete long bones	17	2	2	Auxiette	Le Guen dir. 2013	
Etaples-sur-Mer - Early/Middle Bronze Age	Pas-de-Calais	200	81	Cattle 73 %	61	Juv./young ad.	Skulls/ long bones/ girdles	Mandibles/ skull fragments	Complete long bones	9	2	4	Auxiette	Lorin dir. 2017	H
Guînes – Late Bronze Age/Early Hallstatt	Pas-de-Calais	157	95,5	Cattle 53 %	Unknown	Juv./ad.	Skulls/ long bones/ girdles	Mandibles/ skull fragments		4	2	2	Auxiette	Henton dir. 2006	

Table 4 : comparison of data from Bronze Age ditched enclosures sites.

NB: The presence of cetacean remains and of cockles on the sites of Blainville and Étaples (juv. = juvénile, ad. = adulte).

Tabl. 4 : confrontation des données issues des sites à enclos fossoyés de l'âge du Bronze.

NB : Présence de cétacé et de coques sur les sites de Blainville et Étaples (juv. = juvénile, ad. = adulte).

Sites	Dating	Cattle	Pig	Caprines	Total NR4
Devil's Quoits (henge)	Late Neolithic/Bronze Age	103	4	6	113
Gorsey Bigbury (henge)	Late Neolithic/Bronze Age	160	127	26	313
Drayton cursus OGS (occupation layer)	Late Neolithic/Bronze Age	469	7	4	480
Arreton Down (round barrow)	Early Bronze Age	76	38	24	138
Twyford Down (round barrow)	Early Bronze Age	138	6	383	527

Table 5 : late Neolithic/early Bronze Age, summary of data for the principal species (NR4 = cattle, pig, sheep and goat combined).

Tabl. 5 : Néolithique final/début de l'âge du Bronze, synthèse des données pour les espèces principales (NR4 = bœuf, porc, mouton et chèvre réunis).

		Cattle	Pig	Caprines	Total NR4
Middle Farm (enclosure)	Middle/Late Bronze Age	181	3	219	403
Dean Bottom (enclosure)	Beaker-Late Bronze Age	1183	143	1897	3223
Rockley Down (enclosure)	Middle/Late Bronze Age	86	5	89	180
Downview (settlement)	Middle/Late Bronze Age	189	3	59	251
Bishops Cann (unenclosed)	Late Early Bronze Age/ Middle Bronze Age	1272	47	750	2069
Runnymede Bridge (settlement layers)	Late Bronze Age	1584	388	752	2724
Black Patch (settlement)	Late Bronze Age	155	2	30	187
Burderop Down (settlement)	(Middle) Late Bronze Age	1235	328	2604	4167

Table 6 : middle and late Bronze Age, summary of data for the principal species (NR4 = cattle, pig, sheep and goat combined).

Tabl. 6 : âges du Bronze moyen et final, synthèse des données pour les espèces principales (NR4 = bœuf, porc, mouton et chèvre réunis).

Figures

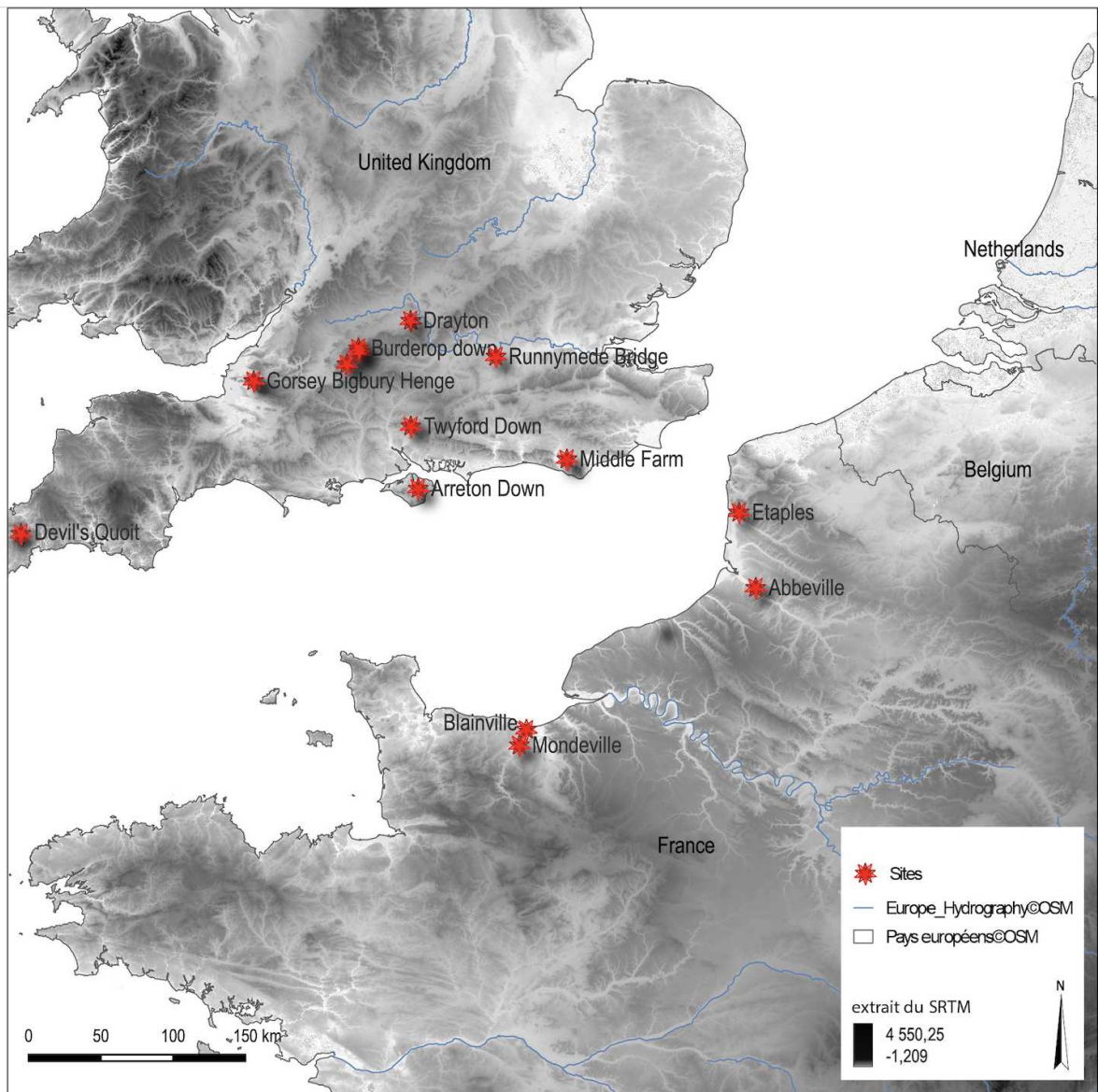


Fig. 1 : selected sites in France and Southern Britain © Frédéric Audouit, Inrap, ©OpenStreetMap (SRTM <https://srtm.csi.cgiar.org/>).

Fig. 1: sélection des sites français et du sud de la Grande Bretagne © Frédéric Audouit, Inrap, ©OpenStreetMap (SRTM <https://srtm.csi.cgiar.org/>).

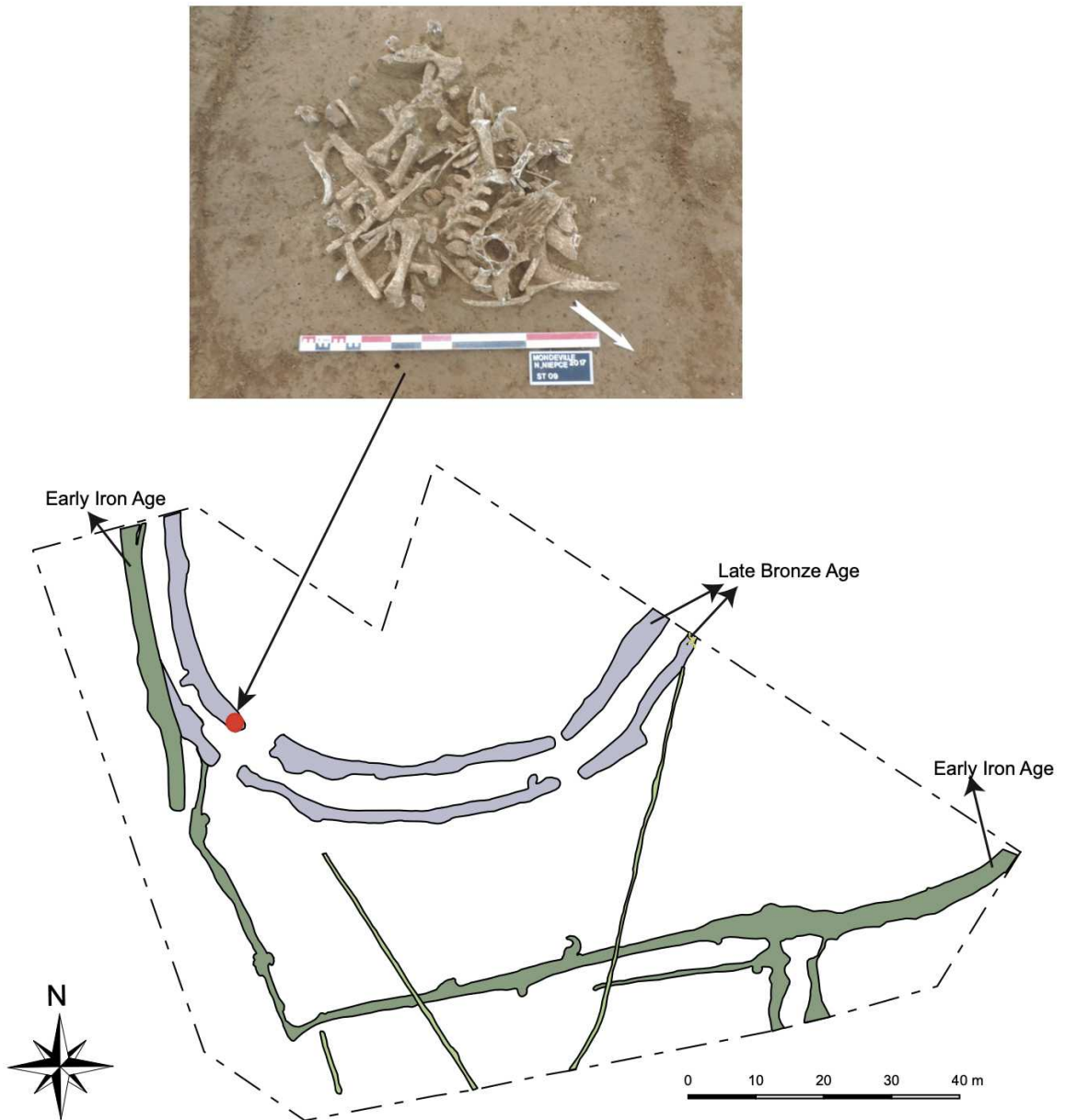


Fig. 2 : Deposits of cattle bone from the interruption in Ditch 9 at Mondeville “Rue Nicéphore Niépce”, general view (photo by C.-C. Besnard-Vauterin).

Fig. 2 : dépôt d’ossements de bœuf au niveau de l’interruption dans le fossé 9 sur le site de Mondeville “Rue Nicéphore Niépce”, vue générale (cliché C.-C. Besnard-Vauterin).

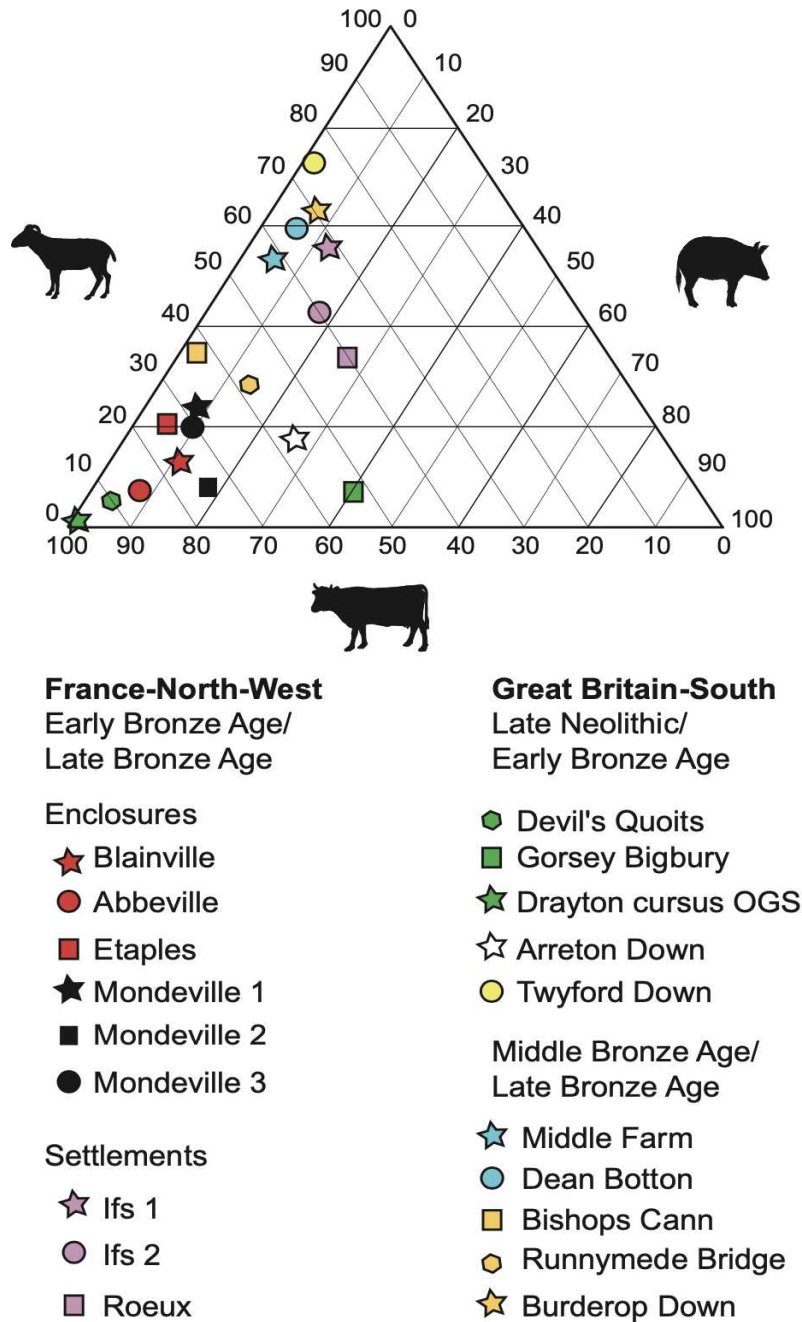


Fig. 3 : Summary of the frequencies of the principal species (cattle, pig and caprines) from enclosures and settlement sites in North-West France and from a number of sites and settlements in the South of England.

Fig. 3 : synthèse sur les fréquences des espèces principales (bœuf, porc, caprinés) dans les enclos et les habitats du Nord et de l'Ouest de la France, et sur quelques sites et habitats du Sud de l'Angleterre.

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