

## RESEARCH UPDATE

# Neanderthal Subsistence in Portugal: What Evidence?

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A total of 270 Middle Palaeolithic sites are recorded in the Portuguese Archaeology Archive. Of these, only a few have been systematically excavated and shown to present valuable archaeological information or reliable absolute dating evidence. Just 13 sites yielded animal remains. Most of these assemblages, however, are of indeterminate origin or are the result of natural or carnivore accumulations. Only three sites yielded faunal assemblages produced by hominin activity: Gruta Nova da Columbeira, Gruta da Figueira Brava and Gruta da Oliveira. The following research update summarises and contextualises findings from the last two of these caves, which are presently being investigated as part of a funded doctoral research project based at the UCL Institute of Archaeology. As discussed below, the project has already yielded substantial information on Neanderthal subsistence and palaeoenvironment in Portugal.

## Paper

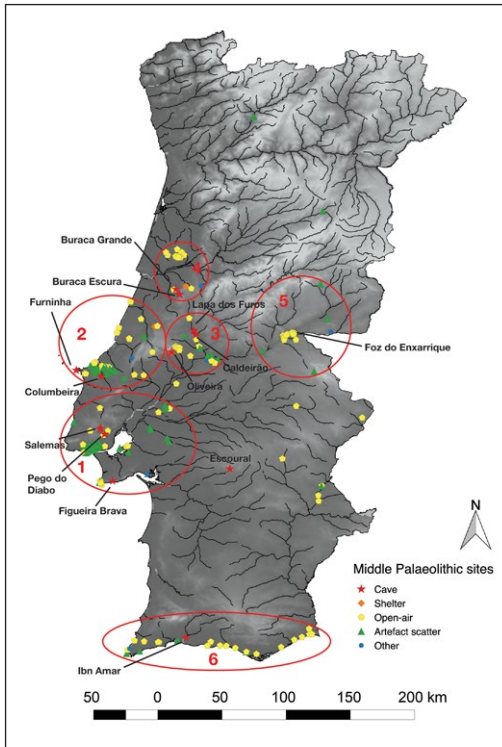
Recent research has demonstrated that Neanderthal genes are included in the DNA of a significant proportion of present-day world population (e.g. Sankararaman et al. 2014: 354), proving that we are the living representatives of their legacy. Neanderthal research has thus gained a new boost, and findings of their modern behaviour have been systematically emerging, with one of the most recent discoveries associated with the authorship of cave art (Hoffmann et al. 2018b: 912), and the symbolic use of marine shells and mineral pigments (Hoffmann et al. 2018a). Modern behaviour can also be investigated in terms of subsistence strategies and palaeodiets. The research project “Neanderthal Subsistence in

Portugal: small and large prey consumption during the Marine Isotope Stage 5 (MIS-5)”, funded by the London Arts and Humanities Partnership, aims to demonstrate the flexibility of Neanderthal behaviour resulting in the ability to respond to different environments and resource availability, by adopting new subsistence strategies and by rearranging social roles. The final goal will be to design a new evidence-based subsistence model based on the latest discoveries in two Middle Palaeolithic key-sites in Central Portugal: Gruta da Figueira Brava and Gruta da Oliveira.

A total of 270 sites are listed as Middle Palaeolithic in the Portuguese Archaeology Archive, and six rough clusters can be defined when plotting all those sites (**Figure 1**). Despite the number of sites recorded, nearly half of them are listed as “surface findings”, “artefact scatter”, or incorrectly described as “settlement” or “artificial cave”. Excluding

these vague and/or dubious references, only 136 sites remain, of which most ( $n = 97$ ) are open-air.

In the Lisbon cluster, skeletal remains of the Neanderthals themselves were recovered



**Figure 1:** Middle Palaeolithic sites recorded in the Portuguese Archaeology Archive with clusters mentioned in the text: 1) Lisbon; 2) Peniche; 3) Serra d'Aire e Candeeiros; 4) Coimbra; 5) Castelo Branco; and 6) Algarve. Image produced by the author.

from Gruta de Salemas (Loures), where a deciduous left molar 2 was found. This cave, together with Pedreira de Salemas (Loures) and Conceição (Alcochete), have a scarcity of Mousterian stone tools and almost no faunal remains (Cardoso 2002: 92; Zilhão 2001: 598, 2006: 59). Gruta do Pego do Diabo (Loures), however, has a faunal assemblage associated with a few stone tools, but its accumulation seems to have been due to carnivores (Zilhão et al. 2010: 6).

More substantial collections have been recovered from the Peniche cluster. In Gruta Nova da Columbeira (Bombarral), a vast Mousterian lithic assemblage was recovered, associated with faunal remains, charcoal, hearth features and a Neanderthal tooth (Cardoso 2002: 82; Zilhão et al. 2011: 97). Recent chronometric investigation revealed that the cave was formed and occupied between MIS-5 and early MIS-3 (Zilhão et al. 2011: 93), ranging roughly between 25 to 125 ka BP. Gruta da Furninha (Peniche) has also provided large Middle Palaeolithic faunal assemblages, but evidence of a clear Neanderthal occupation is sparse, and the animal bones reflect typical carnivore accumulation (Brugal et al. 2012: 417). Two other sites were recently found nearby: Mira Nascente (Alcobaça) and Praia do Rei Cortiço (Óbidos) (Haws et al. 2010: 1). They are dated from the Middle Palaeolithic and yielded Levallois flakes but no fauna. From the nearby cluster of the Estremadura Limestone Massif, there is Gruta do Caldeirão (Tomar), whose Middle Palaeolithic levels contained a faunal assemblage accumulated by carnivores (Davis 2002: 29; Lloveras et al. 2011: 2434).

In the Coimbra region, Uranium-Thorium (U-Th) dating conducted at Buraca Escura (Pombal) showed that the site's oldest occupation dated to within the 80,000–65,000 years BP interval. However, animal bones from these levels were accumulated by carnivores (Aubry et al. 2001: 21, 2011: 67). The faunal remains from Buraca Grande, on the opposite slope, show scarce Mousterian artefacts and the agent of accumulation of the few *Capra ibex* bones is yet to be determined (Aubry et al. 2011: 69).

One of the most important open-air sites in Portugal is Foz do Enxarrique (Ródão). It has been U-Th dated to MIS-3 and a large Mousterian assemblage was recovered, but the faunal collection seems to be naturally accumulated, with a possible exception of red deer (Brugal and Raposo 1999: 367). Vilas Ruivas (Ródão) is another open-air site identified nearby, dating from MIS-4. No faunal remains were recovered and the lithics are

scarce but described as Mousterian (Raposo 1995: 64).

More open-air sites were found in the Algarve. They rarely show good stratigraphic sequences with *in situ* findings (Cardoso 2002: 81), and most of them are partially destroyed. The exception is Gruta de Ibn Amar (Lagoa) with evidence of Levallois and discoidal core debitage. Faunal remains consist of marine molluscs, tortoises, rabbits, deer and horse, but the agent of accumulation is unknown (Bicho 2004: 363). Finally, Gruta do Escoural (Montemor-o-Novo), in Alentejo, presents a small Mousterian assemblage and its faunal collection results from carnivore activity (Cardoso 1995: 223; Zilhão 2001: 602).

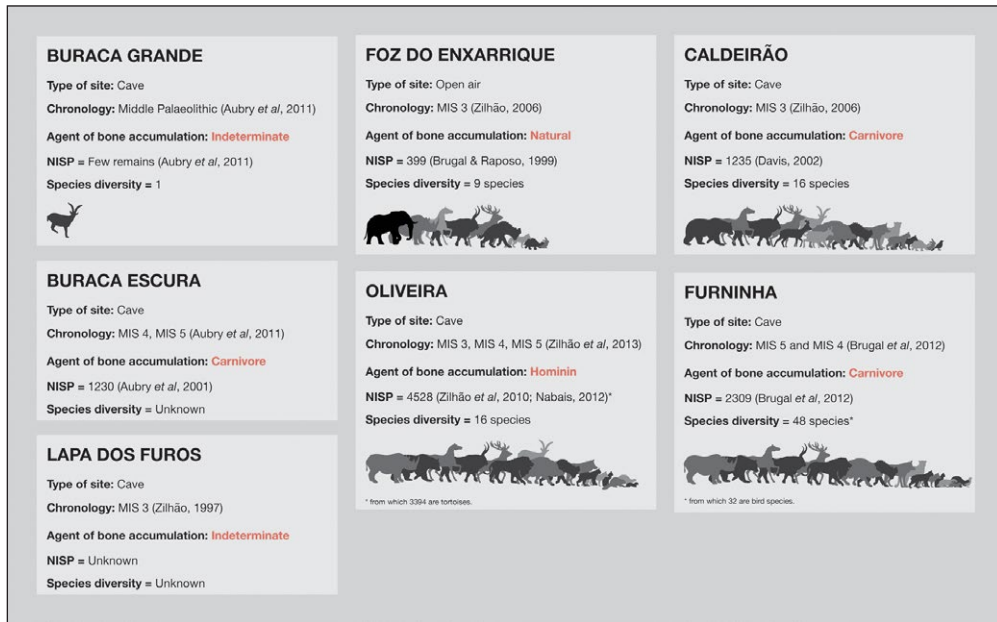
There are abundant Middle Palaeolithic sites in Portugal, but only few have been systematically excavated, or present valuable archaeological material and absolute dates. Most sites date from MIS-3 and MIS-4 but recent chronometric work has pushed chronologies back. Very few sites have provided faunal assemblages (**Figures 2 and 3**). For most, the accumulations seem to result from carnivore activity whilst, in other cases, it is not yet clear which agent was responsible for the accumulation, or whether they have been deposited naturally. Others (like Lapa dos Furos) have not yet been studied. Hence, only Gruta Nova da Columbeira, Gruta da Figueira Brava and Gruta da Oliveira show unequivocal evidence of animal bone accumulations relating to hominin activity. The two latter caves are part of the current PhD research and some preliminary results are revealing meaningful information.

Gruta da Figueira Brava (Setúbal), in the Lisbon cluster, was first excavated in the 1980s and a rich faunal assemblage was recovered associated with Mousterian stone tools and a Neanderthal tooth dated from MIS-3 (Antunes 2000). Recent archaeological work (2010–2013) re-dated the previously excavated deposits, considering the MIS-3 dates as minimum ages, and pushing back the chronology to MIS-5 (Zilhão et al. in prep.). A total of 10,417 faunal remains were

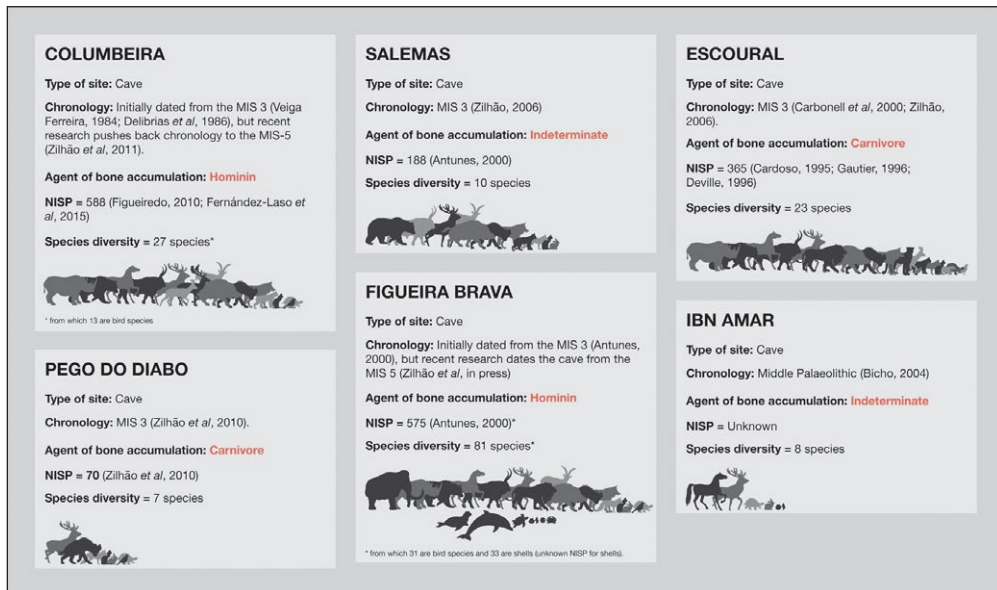
recorded, from which 8,536 (or 82%) correspond to MIS-5 levels and were accumulated by hominin activity. The remaining 18% refer to Holocene natural depositions. The MIS-5 fauna corresponds to a wide variety of terrestrial and marine species confirming a broad spectrum subsistence strategy profiting from a local ecotonal environment. Terrestrial mammals (48%) and marine molluscs (42%) were the most significant contributors to the diet, although crabs (8%), tortoises (1%), terrestrial and marine birds (0.3%) were also consumed. Barnacles are present (1%), but they integrated into the record accidentally since they are frequently attached to the dorsal shell of molluscs.

Gruta da Oliveira (Torres Novas), in the Estremadura Limestone Massif, presents a long Middle Palaeolithic sequence excavated between 1989 and 2012, referring to the MIS-3 to MIS-5 interval. Abundant Mousterian lithic material with Levallois flake production was recovered, as well as several hearths, animal bones and charcoal (Zilhão et al. 2010). This site provides the largest Neanderthal bone collection in Portugal, with a total of 9 remains (Zilhão et al. 2013: 259). All excavated levels (layers 7 to 27) present significant amounts of faunal remains, but the current PhD research refers only to layers 20 to 27. A total of 11,025 remains have been recorded: mammals (75%), tortoises (21%) and birds (4%). The former two were mainly accumulated by hominins, whereas birds are still under study, with a preliminary tendency for natural accumulation yet to be confirmed. Deer and ibex played a significant role in the diet, as well as tortoises. The heavy exploitation of the latter seemed to have had a strong impact on the local population, resulting in smaller and less frequent animals in the MIS-3 and MIS-4 levels (Nabais 2012: 251). A more detailed investigation on the accumulation of other small prey, such as rabbits and hares, is in progress.

Although preliminary, the faunal results from both Gruta da Figueira Brava and Gruta da Oliveira point to Neanderthals' adapting to a myriad of environments, demonstrating



**Figure 2:** Zoarchaeological evidence from Middle Palaeolithic sites in Portugal. Image produced by the author.



**Figure 3:** Zoarchaeological evidence from Middle Palaeolithic sites in Portugal (continuation). Image produced by the author.

the traits of modern behaviour often considered exclusive to Modern Humans. Neanderthals were able to profit from large animals with high-energy return rates, but

small prey—generally understood as a low rank resource in the eyes of optimal foraging models—also played a significant role in the diet. So far, it seems that small game was

exploited systematically, with molluscs as primary targets in coastal areas and tortoises in inland sites. These resources are ethnographically associated with gathering activities performed by women and less mobile individuals (e.g. Wadley 1998), which reinforces the primordial role of these elements for the survival of the group. Finally, such a diverse diet would also have implications for the amount of time a Neanderthal group was able to settle in the same place, as well as in the size of the group itself which, consequently, would imply more complex social relationships.

### Competing Interests

The author has no competing interests to declare.

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