which are charred, as well as rabbits and other small animals, including mandibular fragments of two porcupines (*Hystrix brachyura*: Rhodes *et al.*, 2013*)*. Tortoise seems to have played a part in the diet (Morales-Pérez and Sanchis-Serra, 2009). Characteristically Mousterian flint artifacts are present. Several smooth rounded cobbles were undoubtedly brought by Neanderthals to the site from stream gravels in the plain below. Being larger than some hammer-stones from the site they might have been used to pound or grind minerals (perhaps haematite; the Cabezo Gordo marble contains veins of magnetite and other iron ores) or foodstuff. Vegetable food at La Sima de las Palomas is suggested both by phytoliths discovered in calculus on some Neanderthal teeth (Salazar-García *et al.*, 2013) and two examples of dental caries (Walker *et al.*, 2010b).

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La Cova de Dalt del Tossal de la Font

Geographical location

The cave of Tossal de la Font is situated in a complex structural karstic formation located on one slope close to the town of Vilafamés, 25 km north of Castelló de la Plana. Its dimensions reach more than 2 km of interior paths (Castelló, 2003), and it is developed in Jurassic brecciated dolomites.

The site of Cova de Dat del Tossal de la Font is on the upper section of this karstic system. Its UTM coordinates are (ETRS89) 30N X=751380, Y=4444419, at 357 metres a.s.l.

Background research

Archaeological fieldwork conducted on the site between 1982 and 1987 uncover an important karstic filling from the Upper Pleistocene (Gusi *et al.*, 1983; 1987), as well as a set of Holocene occupations (Gusi and Aguilella, 1998). The Pleistocene evidences retrieved, whose date was estimated around 90,000 years old, included a full faunal list and a restricted lithic assemblage, besides two human fossils assigned to Neanderthals (Arsuaga and Bermúdez de Castro, 1987; Arsuaga *et al.*, 2001), and a tooth frag-

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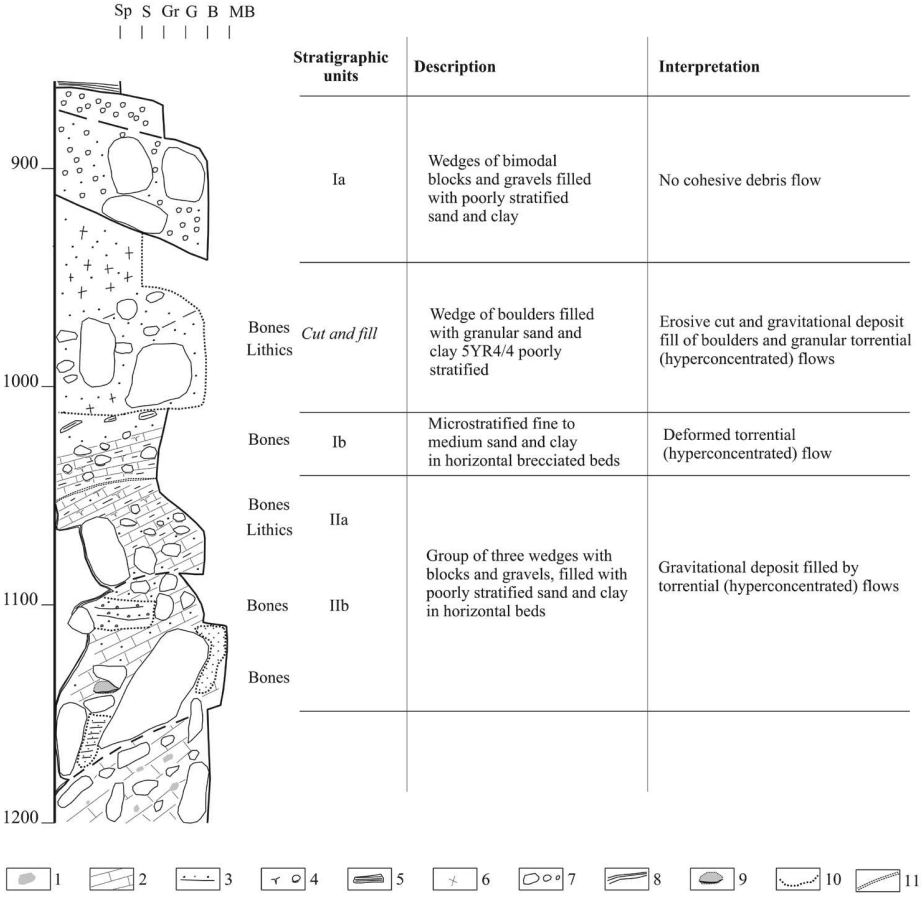

Stratigraphic units	Description	Interpretation
Ia	Wedges of bimodal blocks and gravels filled with poorly stratified sand and clay	No cohesive debris flow
Cut and fill	Wedge of boulders filled with granular sand and clay 5YR4/4 poorly stratified	Erosive cut and gravitational deposit fill of boulders and granular torrential (hyperconcentrated) flows
Ib	Microstratified fine to medium sand and clay in horizontal brecciated beds	Deformed torrential (hyperconcentrated) flow
IIa	Group of three wedges with blocks and gravels, filled with poorly stratified sand and clay in horizontal beds	Gravitational deposit filled by torrential (hyperconcentrated) flows
IIb		

Figure 1. Synthetic log of the Pleistocene talus cone deposits from Tossal de la Font. Legend: 1, fenestral porosity; 2, cemented zone; 3, horizontal stratification; 4, cracking with decarbonation and load structures under clasts; 5, fragments of stalagmites; 6, massive to crudely stratified deposit; 7, blockss and gravels; 8, micro laminated stalagmite layer; 9, microlaminated stalagmite empty; 10, secondary unconfromity; 11, listric fissure.

ment (Olària *et al.*, 2007). Between 2004 and 2012, in a collaborative research initiative among UJI, SIAP and IPHES, a second period of archaeological fieldwork was carried out on the site. The main aims were: (I) to review the Pleistocene deposit stratigraphy; (II) to date it; and (III) to extend the excavation area, increasing the available data in order to enhance the paleoenvironmental context, the taphonomic processes, and the contextualization of zooarchaeological and technological remains found in the first period of excavations (Saladié *et al.*, 2010).

The ultimate depletion of the fertile deposit, the big effort required to reach it, the increasing cementation of the same deposit, and the reiteration of the fossils appearing, led to the end of this second period of fieldwork in 2012 (Gusi *et al.*, 2013).

The stratigraphic sequence

The fossiliferous deposit that presents a major tilt and limited lateral continuity is situated on the cave entrance, just a few metres from the access, and fills a narrow fringe between the cave wall and a talus cone originated by large endokarstic boulders.

The archaeopaleontological units have been established considering the different deposits accumulated through fissures and marked by decarbonation. Two big sets have been identified. In each of them gravitational sedimentation on high slopes has been produced. The entrance deposits have limestone boulders mixed with sandy clay, probably coming from the breccia cemented with large boulders and speleothems that indicate the

closing of the point of entry. Each unit has this chemical deposit on its top (Fig. 1).

The most abundant paleontological record is on unit IIa. This unit presents a truncated stalagmitic crust that appears transformed in clasts at unit IIb. These sedimentations and emptying processes characterize the filling of that cave-fissure, where a steep slope and mass wasting movements played a key role in the opening of new points of entry and in the creation of the space to collect breccia deposits with embedded macrovertebrates and lithic remains from the Upper Pleistocene.

Although no new human remains have been recovered, the section of the old level E. where they appear in, located in the original publication (Gusi *et al.*, 1983: 17) clearly corresponds with unit IIa.

Pending on new results, U/Th dates are available for two breccia sealed by stalagmitic crusts and situated on top of unit IIa: 61,846 ±585 years BP and 56,014 ±484 years BP. The beginning of the isotopic stage 3 can be quite an accurate chronological assignation for this unit, since both dates are allegedly from the same stalagmitic crust.

The archaeological record

On the first campaigns, the identification of several rodent species allowed the site to be placed in a chronological framework between the late interglacial Riss-Würm and the beginning of Würm glacial stage (Gusi *et al.*, 1987). At the most recent campaigns, in unit IIa, *Iberomys brecciensis* has been identified,a characteristic species of the Middle Pleistocene that existed until the Upper Pleistocene.

Apart from micromammals, and unit IIa always being the richest and most diverse regarding bone assemblages, the faunal list includes: *Lynx spelaea*, *Felis sylvestris*, *Crocuta crocuta*, *Equushydruntinus*, Rhinocerotidae, *Sus scrofa*, *Cervus elaphus*, *Capra/Hemitragus* sp., Bovinae indet., Chelonia and *Oryctolagus cunniculus*. *Cervus elaphus* is by far the best represented taxa, and is also the species that shows more variability in the representation of skeletal parts. Distal parts of limbs predominate in faunal assemblages. They are segments that often appear anatomically connected, or located at a few centimetres. Both the rest of the appendicular bones and the axial skeleton are under-represented, and display a more scattered spatial distribution.

Anthropogenic activity over faunal remains is very scarce. Some red deer bones with cutmarks, relating with defleshing activities and intentional bone breakage have been identified (unit IIa).

Carnivore activity, on the contrary, is well represented, and can be traced through different marks such as punctures, pits, scores, crenulated and jagged edges, digested bones. Gnawed marks primarily appear over red deer bones indicating the action of a big predator, such as a hyena, lion, or bear. Some leporid remains also show punctures and scores pointing out chewing activities of carnivores such as lynx or fox (Fig.2, k-n).

Human remains

The three human fossils recovered (Fig. 2, o-p) are a distal fragment from a left humerus, a fragment of right coxal and a fragment of tooth. The part that has been preserved in the humerus (CTF-1) corresponds to a third distal that has the whole joint and displays several characteristics that makes it alike to the European Middle Pleistocene populations represented at Sima de los Huesos and also to the Neanderthals (Arsuaga *et al.*, 2001). From the coxal fragment (CTF-2) only the upper part of the femoral joint remains and part of the ischial spine. Although their fragmentary conditions do not allow the distinction of taxonomic traits, the presence of a very pronounced supra-acetabular groove and the thickening of the greater sciatic notch edges should be stressed. The tooth fragment (CTF-3) corresponds to a maxilar molar from a child.

Lithic industry

The available lithic assemblage is very scarce. In total, there are 8 small flint artefacts, 2 from unit Ic and f and 6 from unit IIa (Fig.2, a-j). Half of these tools are simple flakes. Among retouched flakes there are two points, one sidescraper and one denticulate sidescraper. Half of the artefacts have developed patinas, but they surfaces do not display other postdepositional modifications visible (such as erosion or false retouch). One of the flakes shows fine cracks from heat damage. Finally, an single artefact of quartzite, a broken pebble with evident marks of being used as hammerstone has been recovered.

Little can be said about the tecnhnotypological characterization of the lithic assemblage, beyond to roughly assigning it to a Mousterian context. Neither is there enough data to infer occupational interpretations based on lithic assemblage. Nevertheless, the collection has a great taphonomic value, since it ap-

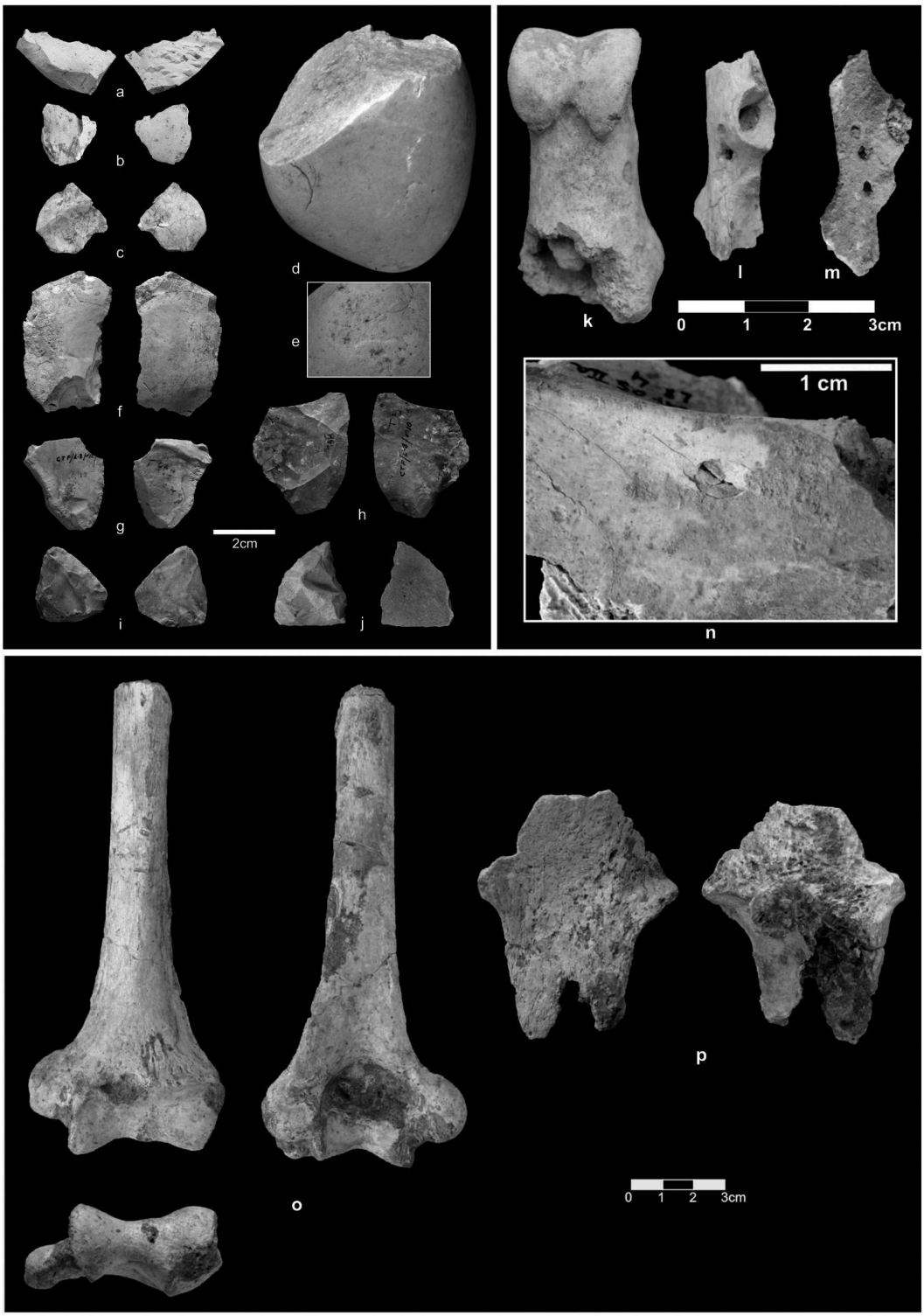

Figure 2. Flint flakes from unit Ic and f (a,b) and from unit IIa (c,e); Retouched flint flakes from unit IIa; denticulate side-scraper (f), sidescraper with marginal retouch (g) and points (i, j); quartzite pebble broken (d), and with percussion marks (e), unit Ic and f; red deer phalanx with a vacuum in its proximal part, unit Ib (k); punctures over coxal bones produced by a small size carnivore (l and m: units Ic and f, and IIc and f, respectively); puncture provoked by a big size carnivore over a vertebra from a medium size animal, unit IIa (n); fragment of human humerus CTF-1 (o); and fragment of human coxal bone CTF-2 (p).

pears closely related with fossils, and demonstrates the development of human activities in the cave itself or in the immediate surroundings of the cave entrance.

Concluding remarks

The information gathered led us to interpret that fossils in Tossal de la Font are in secondary position. This location was the result of short distance transportation, since there is low occurrence of modifications that could indicate friction over the substrate such as trampling, rounding and abrasion marks on bone surfaces. The fossil association responds to the addition of different events, each of them could include in turn several causes of death and taphonomic processes. In the case of Tossal de la Font, the result is that fossils present a twofold history, one biostratinomic due to exokarstic factors and another fossildiagenetic one caused by endokarstic agents. The first one is characterized mainly by carnivore action and, to a lesser extent by hominid action over some carcasses. The second one can be observed by the presence of dissolution, chemical corrosion produced by the sediment, and also generalized processes of cementation and formation of breccia deposits.

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El Tossal de la Roca

The archaeological site of Tossal de la Roca is situated in Vall d'Alcalá (Alicante), at 640 m.a.s.l. and 20-25 km away from the present coastline. This west oriented rockshelteris situated in a mountainous area in a foothill on the left bank of the Penegrí creek, one of the small tributaries that configures the short current network of the Serpis River fluvial system.

The archaeological sequence, excavated by our team between 1981 and 1999, ranges from the Late Upper Pleistocene (end of OIS 2) to the first third of the Holocene (beginning of OIS 1). It has a discontinuous sequence that spans from Upper Magdalenian to the Mesolithic with trapezes documented in two different areas of the rockshelter. The interior sector (Fig.1) contains several Upper Magdalenian levels (III and II int), and Final Magdalenian (I int), whereas the exterior sector includes diverse occupations from the Notched and Denticulates Mesolithic (II b and II a ext.) and Geometric Mesolithic (I ext.). Radiocarbon dates have provided, the following chronological span for the stratigraphic units, from bottom to top: 17200-16310 cal BP (level III int.), 15550-14040 cal BP (level II int.), 13780-13580 cal. BP (level I int.), 10550-9410 cal. BP (level IIb ext.), 9510-8640 cal BP (level IIa ext.), 8560-8230 cal BP (level I ext.) (Cacho and Jordá 2009: 222-227; Jordá and Cacho, 2008).

Palynological and antracological analysis as well as micromammal studies from Tossal de la Roca indicate that level III (int.) developed in temperate and moist climate conditions, conversely, cold and arid conditions are documented for level II (int.); vegetation cover is reduced to conifer at both levels. In the upper part of level II and especially at level I (int.), a significant climate change is reflected, pointing at milder and moister climatic conditions that contribute to an open environment vegetation development and to a large variety of species, where *Quercus* gain importance at the expenses of conifers; other thermophilic taxa as *Juglans*, *Ulmus*, *Betula* are documented. From level IIb (ext.) there is a great advance of the Mediterranean forest (oak forest) with a remarkable presence of *Quercus*, which becomes the prevailing species in the subsequent periods (levels IIa and I ext.), together with the increase of other taxa indicative of some humidity.

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