The Elephants of Terra Amata open air site (Lower Paleolithic, France)

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SUMMARY: The site of Terra Amata has yielded several remains of *Elephas antiquus* in the different anthropic occupation levels. The preservation is not good and doesn't allow to do a morphological study of the remains. The population of *Elephas* is presented in its archaeological context and the principal taphonomic observations are discussed.

1. Introduction

The Terra Amata open air site is located in the city of Nice (SE of France) in the western slope of Mount Boron, at the altitude of 30 m above modern sea-level. Six months of excavation organised in 1966 by H. de Lumley on about 120 m^2, have uncovered a succession of paleosurfaces with a high concentration of artefacts attributed to acheulean culture (Lumley *et al.* 1976; Villa 1978, Coombs 1997), large mammals bone remains and evidence of structure (fire structure, huts, etc).

The stratigraphic sequence contains about 10 m of deposits. It consists in four principal units, A, B, C1 which contain each other a beach ridge (marine transgression period) covered by a dune (regression period), and on the top of the sequence, the C2 unit, which is only continental. The archaeological levels belong to the C1 unit which is divided in C1a : calcareous clay and marine beach, and C1b : dune (de Lumley *et al.* 1976). The age of these formations is essentially based on the succession of the fossil marine beaches deposited on the Mount Boron. H. de Lumley *et al.* (1976) attributed the marine deposits of Terra Amata to the isotopic stage 11. In 1977, a preliminary thermoluminescence dating realized on two burnt flints from the beach (C1a) have given an age of 214,000 and 244,000 years respectively (Wintle & Aitken 1977). Recently, the ESR dating on quartz sediment from the beach C1a indicates an age of 380,000 ± 80,000 years (Falguères *et al.* 1991).

The mammalian fauna from C1 units consists in *Elephas antiquus, Bos primigenius, Hemitragus bonali, Sus scrofa, Cervus elaphus, Stephanorhinus hemitoechus, Ursus* sp., *Oryctolagus cuniculus* (Mourer-Chauviré & Renault-Miskovsky 1980; Serre 1991; El Guennouni 2001). The size of the rhinoceros of Terra Amata and the degree of hypsodonty is close to the population of Orgnac 3 (stage 9) studied by Aouraghe (1992) (Lacombat pers. comm.). This association is relatively similar in both levels C1a and C1b. The rodents are represented by very few remains, attributed by J. Chaline to *Apodemus sylvaticus, Microtus brecciensis, Arvicola cantianus, Pliomys* sp. The study of amphibians and reptiles shows a large representation of *Malpolon monspessulanus* in all the levels associated to *Testudo hermanni* in the dune C1b; these species are characteristic of a Mediterranean climate and indicate the presence of an open Mediterranean forest (Bailon, pers. comm.). In general, this faunal assemblage corresponds to a warm stage of the Middle Pleistocene. These results are confirmed by the palynological analysis (Mourer-Chauviré & Renault-Miskovsky 1980).

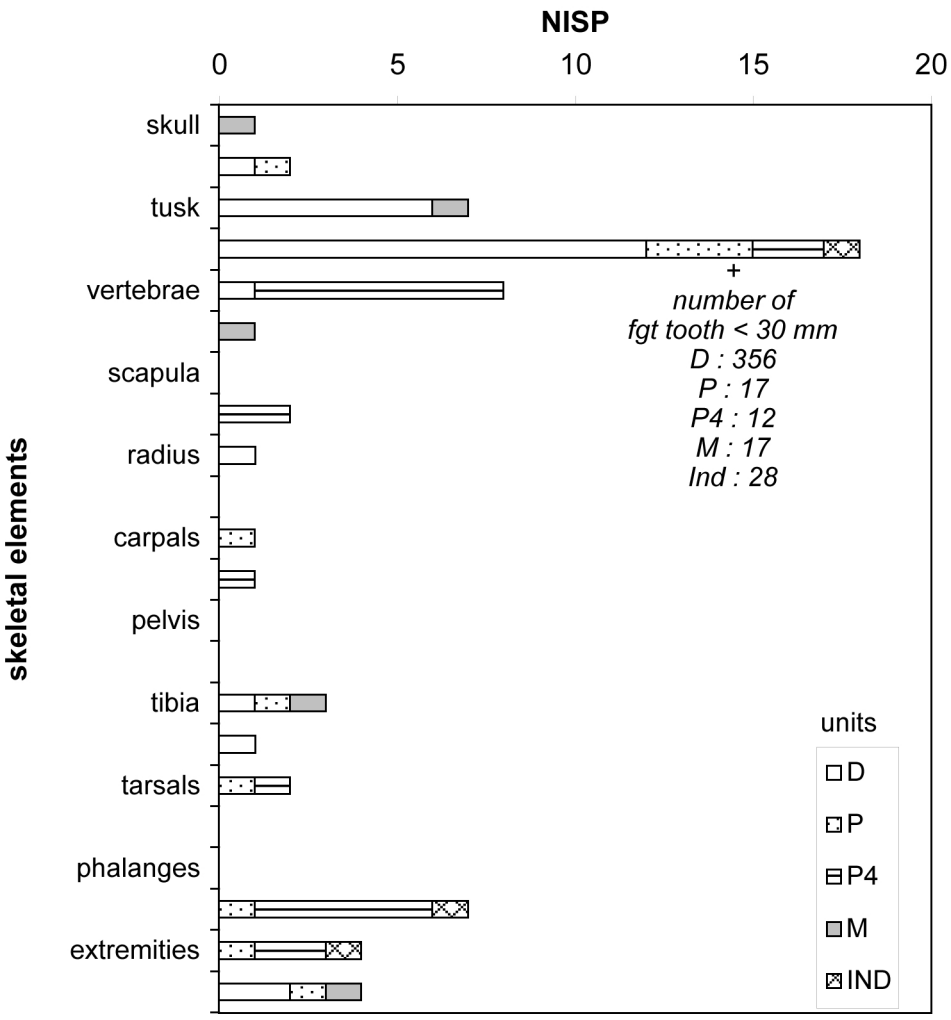

Fig.1 - Elephant skeletal element frequencies per archaeostratigraphic units.

2. Material and Methods

Over 12,000 remains of large mammals have been discovered. The determination ratio is about 20%. Nevertheless, in the dune, there is a particularly large number of very small fragments of Elephant teeth measuring less than 3 cm and which overestimates this ratio and the frequency of this species.

In general, the bone preservation of all the species is not good, and particularly in the beach levels (P unit). The bones show different degrees of alteration on their cortical surfaces and important degree of fragmentation due to anthropic and/or climato-edaphic factors. The revision of all the faunal remains is still in progress and the taphonomic approach is conducted using the principal archaeostratigraphic units (order 1) (Tab. 1) which were established by Pollet (1990). These units are used for the MNI values. The utilisation of the smallest units (order 2 or 3, see table 1) seems to be incorrect because of the interdependence of the levels which has been revealed by the study of the lithic refittings (Villa 1978, 1982). The influence of the choice of the quantifying unit

on the MNI values has already been described in the case of Lazaret cave (Valensi 2000). A data base containing all the palaeontological information allow us to carry out the space distribution analysis.

3. Preliminary Results

At Terra Amata, *Elephas antiquus* is one of the best represented species in terms of NISP (25%) and MNI (17%). The distribution of the remains is given per level in table 1. About 30, 32 and 22 remains come respectively from the beach, the P4 unit and the M unit, and 381 remains (specially small molar fragments) from the dune. At least 8 individuals have been counted in using the principal archaeostratigraphic units. We have determined 1 young individual in the M unit, 1 young and 1 adult in the P4 continental unit, 1 very young and 1 adult in the beach (P unit) and 1 very young, 1 young (2-3 years) and 1 adult in the dune (D unit). The population is represented by a majority of juvenile animals. This abundance of non-adults may characterise archaeological sites with a selective capture of juvenile individuals (see Fosse 1998). The representation of the different skeletal elements (Fig. 1) and the very poor representation of polished or rounded bones suggest that water is not responsable of the accumulation or large dispersion of the material (see Voorhies 1969; Behrensmeyer, 1988; Fosse 1994). This observation is confirmed by the study of the spatial analysis (El Guennouni 2001). The frequency of the skeletal elements seems to indicate an early access (hunting or early scavenging) to the elephants and transport to the camp by humans, especially in the marine deposit where the elephants are represented by fragments of skull, mandibles, teeth and some vertebrae, ribs and limb bones.

Only few milk teeth are complete. Cranium, limb bones and teeth of adults are all fragmented. The fragmentation of the bones is due to climato-edaphic conditions (presence of different stages of *weathering*) and in some cases to human activity. Evidence of carcass exploitation by man for food or other activities is difficult to underline. Nevertheless some bones show the presence of percussion pits and green bone fractures. Finally, a non-identifed bone fragment presents one rounded and very polished edge, possibly as a result of a use-wear.

The spatial analysis is still in progress. It seems to indicate that the different archaeological levels correspond to a succession of short occupations. In each archaeological layer, the elephant remains are strongly associated to the others species and the lithic artefacts.

Datations	Stratigraphic units (Lumley, 1976)		Description	Archaeostratigraphic units (Pollet, 1990) order 1	order 2	order 3	Archaeological material	Fauna
	C	C1 b	Dune	D	DA	DA1, DA2, DA3, DA4	hutts, fire structure and very abundant artefacts	very abundant
					DB / SA, SB	DB1, DB2, DB3 / SA, SB		
					DC	DC1, DC2, DC3, DC4		
isotopic stage 11 (Lumley, 1976)		C1a	Beach	P sup.	P1		abundant	present
214 -244 Ky (Wintle & al.,1977)					P2			
					P3			
380+- 80 Ky (Falguères & al., 1991)			Continental deposit	P4	P4	P4a, b, c	hutts, fire structure and artefacts	present
			Calcareous clay Alternance of marine and continental deposits	M	M	M1, M3 (clay) M2, M4, M5,M7 (sand) M4G, M6 (pebbles)	present	present

Tab.1 - Description of the archaeostratigraphic levels of the site.

4. Conclusions

The Lower Palaeolithic site of Terra Amata corresponds to a succession of open air habitats wich have yielded an abundant acheulean industry associated with a middle pleistocene fauna.

Among the large mammals, *Elephas antiquus* is one of the well represented species. The bad preservation of the remains, due to climato-edaphic patterns, doesn't allow to describe the morphological characteristics of the population. The interest of the study is based on the taphonomic approach, knowing the archaeological context of the site. Elephant remains are present in all the levels attributed to anthropic occupations. The preliminary taphonomic results seem to underline a selective capture (by hunting or early scavenging) of young individuals.

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6. References

Aouraghe, H., 1992. *Les faunes de grands mammifères du site Pléistocène moyen d'Orgnac 3 (Ardèche, France). Etude paléontologique et palethnographique. Implications paléoécologiques et biostratigraphiques*. Thèse de Doctorat du Museum National d'Histoire Naturelle. Paris.

Behrensmeyer, A.K. 1988. Vertebrate preservation in fluvial channels. *Palaeogeography, Palaeoclimatology, Palaeoecology*, 63: 183-199.

Coombs, R. 1997. *Les industries lithiques du Paléolithique inférieur du site de Terra Amata, Nice, Alpes-Maritimes.* Thèse de Doctorat du Muséum National d'Histoire Naturelle. Paris.

El Guennouni, K. 2001. *Les lapins du Pléistocène moyen et supérieur de quelques sites préhistoriques de l'Europe méditerranéenne: Terra Amata, Orgnac 3, Baume Bonne, Grotte du Lazaret, Grotte du Boquete de Zafarraya, Arma delle Manie. Etude paléontologique, taphonomique et archéozoologique*. Thèse de Doctorat du Muséum National d'Histoire Naturelle. Paris.

Falguères, C., Yokoyama, Y. & Quaegebeur, J.-P. 1991. Datation par la résonance de spin électronique (E.S.R.) de sédiments quaternaires. In: Datation et caractérisation des Milieux Pléistocènes, Actes des symposiums 11 et 17 de la 11ème R.S.T., Clermont-Ferrand, 1986, *Cahiers du Quaternaire* 16: 39-52.

Fosse, P. 1994. *Taphonomie paléolithique: Les grands mammifères de Soleilhac (Haute-Loire) et de Lunel-Viel 1 (Hérault)*. Thèse de Doctorat. Université de Provence – Aix-Marseille I.

Fosse, P. 1998. Les Proboscidiens au Paléolithique inférieur: une origine anthropique? In *Economie préhistorique: les comportements de subsistance au Paléolithique*, *XVIII° Rencontres Internationales d'Archéologie et d'Histoire d'Antibes*: 105-119. Editions APDCA, Sophia Antipolis.

Lumley, H. de, Lumley, M.-A. de, Miskovsky, J.-C. & Renault-Miskovsky, J. 1976. Le site de Terra Amata. In H. de Lumley (ed.), *Sites paléolithiques de la région de Nice et Grotte de Grimaldi*, *Livret-guide de l'excursion B1, IX° Congrès U.I.S.P.P.*: 53-54. Nice.

Mourer-Chauviré, C. & Renault-Miskovsky, J. 1980. Le paléoenvironnement des chasseurs de Terra Amata (Nice, Alpes-Maritimes) au Pléistocène moyen. La flore et la faune de grands mammifères. *Géobios* 13: 279-287.

Pollet, G. 1990. *Contribution à l'individualisation des sols d'habitat de Terra Amata. Elaboration de lexiques de correspondance, sols d'habitat-couches-objets coordonnés*. Diplôme d'Etudes Doctorales, Museum National d'Histoire Naturelle. Paris.

Serre, F. 1991. Etude taphonomique des restes fossiles du gisement pléistocène moyen ancien de Terra Amata (Nice, Alpes-Maritimes). *L'Anthropologie* 95: 779-796.

Valensi, P. 2000. The archaeozoology of Lazaret cave (Nice, France). *International Journal of Osteoarchaeology* 10: 357-367.

Villa, P. 1978. *Terra Amata and the Middle Pleistocene archaeological record of southern France*. Ph.D. dissertation, University of California. Berkeley.

Villa, P. 1982. Conjoinable pieces and site formation processes. *American Antiquity* 47: 276-290.

Voorhies, M.R. 1969. *Taphonomy and population dynamics of an early Pliocene vertebrate fauna, Knox County, Nebraska* 1.

Wintle, A.G. & Aitken, M.J. 1977. Thermoluminescence dating of burnt flint: application to a Lower Paleolithic site, Terra Amata. *Archaeometry* 19: 111-130.