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Plio-Pleistocene Carnivora of northwestern Africa: A short review

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Abstract

The fossil record of northwestern African carnivores is very patchy. The richest assemblage is that of the Late Pliocene of Ahl al Oughlam, with more than 20 species belonging to the main modern families. Some additions to its study are made here. The rather poor Early Pleistocene faunas are mainly marked by the arrival of a large *Canis*. A fauna of modern type, with example, the duo *Hyaena–Crocuta*, settles in the Earliest Pleistocene site of Tighenif, where some older elements linger on (*Homotherium*), beside some taxa of doubtful affinities, like a large *Panthera*, and a strange canid close to *Nyctereutes*, dominant at this site as well as at the slightly younger ones of Thomas and Oulad Hamida Quarries in Casablanca. All these faunas consist mostly of African taxa, together with a Palaearctic component whose importance increases towards the end of the Pleistocene. ***To cite this article: D. Geraads, C. R. Palevol 7 (2008).***

Résumé

Carnivora du Plio-Pléistocène d'Afrique du Nord-Ouest : une courte revue. La documentation concernant les carnivores du Plio-Pléistocène du Maghreb est très discontinue. L'assemblage le plus riche est celui du Pliocène supérieur d'Ahl al Oughlam, avec plus de 20 espèces appartenant aux principales familles modernes; quelques compléments à son étude sont apportés ici. Les faunes du Pléistocène inférieur, assez pauvres, sont surtout marquées par l'arrivée des grands *Canis*. Tighenif, au tout début du Pléistocène moyen, voit se mettre en place des éléments d'une faune de type moderne, avec en particulier le duo *Hyaena–Crocuta*, tout en conservant des survivants anciens (*Homotherium*). S'y ajoutent quelques taxons mystérieux, comme un grand *Panthera* et un étrange canidé voisin de *Nyctereutes*, dominant dans ce site comme dans ceux un peu plus récents des carrières Thomas et Oulad Hamida à Casablanca. Toutes ces faunes comportent toujours une majorité de taxons africains, avec néanmoins une composante paléarctique qui s'accroît à la fin du Pléistocène. ***Pour citer cet article : D. Geraads, C. R. Palevol 7 (2008).***

Keywords: Northwestern Africa; Carnivora; Mammalia; Pliocene; Pleistocene

Mots clés : Afrique du Nord-Ouest ; Carnivora ; Mammalia ; Pliocène ; Pléistocène

1. Introduction

Our knowledge of northwestern African Plio-Pleistocene mammal localities owes much to Camille Arambourg, who conducted numerous excavations in what was, then, France or French dependencies. The

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main ones are Lake Ichkeul and Aïn Brimba in Tunisia, of Early/Middle Pliocene age, and Aïn Boucherit and the overlying Aïn Hanech layers in Algeria, of Early Pleistocene age. His study of the "Villafranchian" carnivores was published after his death [2]. His richest collection, from the Early/Middle Pleistocene of Tighenif (= Ternifine) in Algeria, remains unpublished but, thanks to the kind help of C. Sagne, I was able to study it in Paris.

During the last 20 years, important new sites have been excavated in Morocco under a Franco-Moroccan program. Ahl al Oughlam, dated to about 2.5 Ma. [11,13] is the richest, with more than 100 species of vertebrates, of which more than 20 are carnivores. The fossiliferous level consists of loose sands or breccias, filling gaps and fissures between collapsed blocks of calcareous sandstone, providing shelter for carnivores which certainly used them as dens, hence their high abundance and diversity. Unfortunately, excavations are no longer possible because of the present use of this former quarry as a garbage dump. Thomas Quarry (formerly Thomas Quarry 1) and "Grotte des Rhinocéros" in Oulad Hamida 1 Quarry (formerly Thomas Quarry 3), also near Casablanca, which probably date from the beginning of the Middle Pleistocene [37,39,40] have also yielded large carnivore collections, mostly unpublished [4]. Good collections have also been made in the Late Middle and Late Pleistocene, but many of them, especially the older ones, suffer from a lack of stratigraphic control. I shall below review the carnivores of these sites in taxonomic order.

2. Systematic overview

Small carnivores are rare in the Plio-Pleistocene of North Africa, because the sediment has seldom been screened. The best sample is from Ahl al Oughlam, but no significant new discovery has been made recently.

Among the Herpestidae, *Herpestes abdelalii* is a rather common form at Ahl al Oughlam. It is about the same size as *H. paleoserengetensis* from Laetoli [31], but p2 is narrow, without a posterior cuspid, and with an anteriorly placed main cuspid, P3 is longer, the parastyle of P4 is smaller. It is slightly smaller than *Galerella primitivus* from Olduvai [30], which is mostly known from milk-teeth. *H. ichneumon* has been reported from the Middle Pleistocene onwards. Its earliest occurrence is at Thomas Quarry [4].

A single lower carnassial from Ahl al Oughlam has been referred to *Ichneumia* [11], a genus which is very rare as a fossil, as it has been reported only from Olduvai [30] and more recently from Lemudong'o [18]. The large talonid with a high hypoconid, and high, almost equilateral trigonid with sub-equal cuspids better match the carnassial of this genus than that of any other modern form, but the cuspids are more isolated than in modern *I. albicauda*, and the talonid is broader, so that the inclusion in *Ichneumia* now appears questionable, and this tooth might in fact belong to a new genus.

The Viverridae have a very sparse record in North-West Africa. From Ahl al Oughlam [11], a single m1 of large size has a rather open trigonid, with low cuspids, a large metaconid, and a broad talonid with a large central basin circled by a ridge consisting of several cuspids with the entoconid rather posterior. This tooth is almost identical to a specimen of "*Viverra*" *leakeyi* from Omo Shungura E3, and there is no doubt about its specific identity, although it is a bit larger. This species is known from Olduvai bed I [29], Omo Shungura member C to member G [32], and Laetoli [31]; it is clearly distinct from both *Megaviverra* and from earlier large African *Viverra*. The occurrence of "*Viverra*" (or *Civettictis*) *leakeyi* at Ahl al Oughlam is clear evidence of a biogeographic connection between Morocco and East Africa.

In northwestern Africa, the earliest occurrence of *Genetta*, a genus which is rather rare in the fossil record, is from the Middle Miocene of Beni Mellal [15], but there is no carnassial. A single m1 from Ahl al Oughlam [11], belongs to a *Genetta* sp. that is slightly different from the Kanapoi form [48] in that the talonid is larger, the notch between the metaconid and protoconid is deeper, and the tooth as a whole is slightly smaller. It is more different from the Lothagam [49] and Lukeino specimens [27], which have a lower protoconid and larger metaconid.

The genus has also been reported from the late Middle Pleistocene [24].

There are four species of Hyaenidae at Ahl al Oughlam. The smallest was referred with some doubts [11] to *Hyaenictitherium*, which is mostly a Late Miocene genus, of which it would be the latest representative ([46], Fig. 3). Its main primitive features are the relatively small size, a very large M1, and the presence of an m2, known only by its alveolus. The anterior accessory cusps of the premolars are quite small, as in *H. minimum* from the Late Miocene of Chad [5]. However, it differs from Upper Miocene forms by the loss of M2 and p1, and by some broadening of the premolars (more so than in the Mio-Pliocene *Hyaenictitherium*). These are similarities with more derived forms, like *Hyaena* and especially *Ikelohyaena* and it is indeed close to this form in a cladogram based upon the matrix published by Werdelin and Solounias [52].

Crocuta is the most common hyaenid in northwestern Africa. The earliest is the species from Ahl