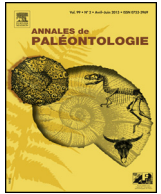




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Original article

Anthracotheres from the Oligocene of Aubenas-les-Alpes, France

Anthracothères de l'Oligocène d'Aubenas-les-Alpes, France

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ABSTRACT

The Oligocene locality at Aubenas-les-Alpes, France, has yielded an interesting sample of anthracotheres representing two subfamilies, Anthracotheriinae and Bothriodontinae. The large dental remains are attributed to *Anthracotherium magnum*, the smaller dental and postcranial fossils are attributed to *Elomeryx crispus*. The phalanges of the latter species are proximo-distally shortened, suggesting a brachypothere-like distal limb morphology, in contrast to the elongated pedal elements that are usually found in anthracotheres. The presence of these two taxa at the site agrees with correlation to MP 25.

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R É S U M É

La localité oligocène d'Aubenas-les-Alpes, France, a livré d'intéressants restes d'anthracothères représentant deux sous-familles, Anthracotheriinae et Bothriodontinae. Les restes dentaires de grande taille sont attribués à *Anthracotherium magnum*, et les restes dentaires et post-crâniens de plus petite taille sont attribués à *Elomeryx crispus*. Les phalanges de cette dernière espèce sont raccourcies proximo-distalement, suggérant une morphologie distale des membres de type brachypothère, ce qui contraste avec les éléments allongés généralement observés chez les anthracothères. La présence de ces deux taxons dans ce site est en accord avec l'attribution au niveau MP 25.

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1. Introduction

Aubenas-les-Alpes, an Oligocene locality in Southern France (Fig. 1) has yielded a sample of anthracothere fossils belonging to two subfamilies, Anthracotheriinae and Bothriodontinae. The aim of this paper is to make information about these fossils available to colleagues by providing descriptions, measurements and illustrations. Escarguel et al. (1997) correlated the locality of Aubenas-les-Alpes to MP 25 (ca 28.35 Ma) of which La Garouil-las is the reference level. In much of the literature, this period of geological time is included in the Stampian.

The fossils from Aubenas-les-Alpes exhibit two styles of preservation. Many of the *Anthracotherium* teeth are shiny, black, and

brittle, and have adherant grey clay, whereas some of the *Anthracotherium* specimens, and all the specimens of *Elomeryx* are better preserved, pale orange to olive-brown and often have a thin coating of uniform thickness of iron oxides. This indicates that the fossils were preserved in different depositional environments, close to, or within, grey clays for many of the *Anthracotherium*, and within marls for some of the *Anthracotherium* and all the *Elomeryx* specimens. This presumably reflects some difference in the life environments of the two taxa, but the remains of both taxa were fossilised in calm rather than turbulent, energetic, depositional environments.

2. Material and methods

The fossils described herein are curated at the Musée Requien d'Avignon (specimens numbers start with 3.) and at the Musée

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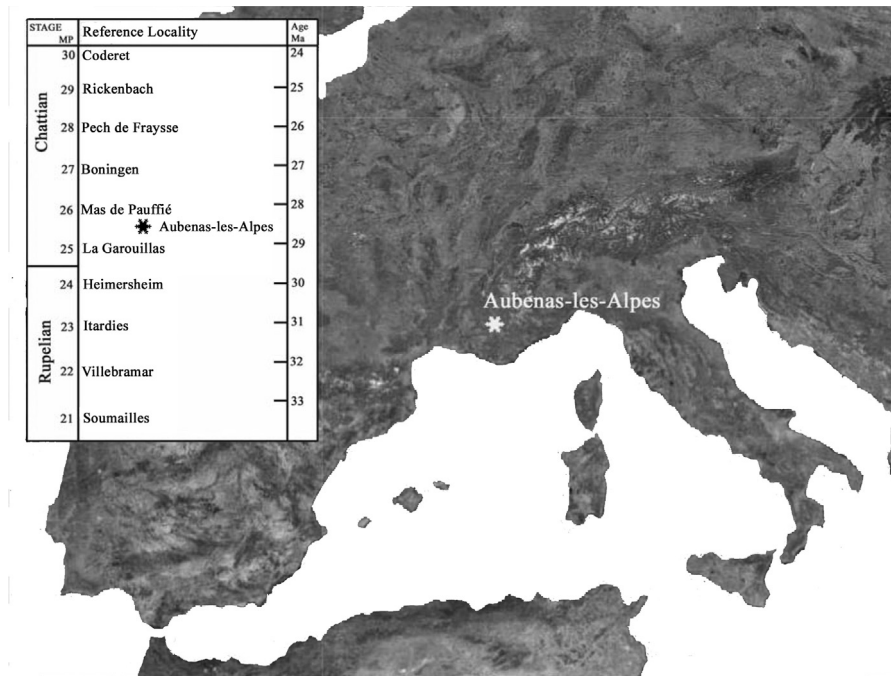


Fig. 1. Geographic location and biostratigraphic position of the fossiliferous locality at Aubenas-les-Alpes, southeastern France.
Situation géographique et position biostratigraphique du site fossilifère d'Aubenas-les-Alpes, sud-est de la France.

d'Histoire naturelle d'Aix-en-Provence (specimen 2010). They were collected at beginning of the 20th century by Deydier (numbers 3.003, 3.004) and more recently specimens beginning with the numbers 3.005 or 3.006 were collected by Bernard Menouret et al.

Measurements are in mm, taken with sliding calipers to the nearest tenth of a mm. Images were obtained with an 8 megapixel Sony Cybershot camera, and treated with Photoshop Elements 3.

Comparisons were made with original fossils and casts curated in various museums, and with images, measurements and descriptions in the literature. It is clear that a revision of the brachyodont and selenodont anthracotheres is needed, meaning that the identifications proposed here are open to revision, but at present they correspond to species determinations in recent literature such as Ducrocq and Lihoreau (2006).

Abbreviations of teeth.

Upper teeth are denoted by upper case letters, followed by a numeral denoting the meristic position and a slash representing the occlusal surface (e.g. M1/, P4/). Lower teeth are in lower case letters, followed by a slash indicating the occlusal surface, followed by a number denoting the meristic position (e.g. m/2, p/3). (D, d – deciduous tooth, P, p – premolar, M, m – molar).

Nomenclature of cusps and crests of anthracothere teeth has varied enormously over the past two centuries. In this paper, I extend the nomenclature proposed by Lihoreau and Ducrocq (2007) (Fig. 2).

3. Systematic palaeontology

Family Anthracotheriidae Leidy, 1869
Subfamily Anthracotheriinae Leidy, 1869
Genus *Anthracotherium* Cuvier, 1822

Anthracotherium magnum Cuvier, 1822

Material: see Table 1.

Dentition:

Upper dentition

A left first upper incisor (3.003.207) is lightly worn, but broken mesially and lacks most of the root (Fig. 3). The main cusp is tall and triangular with rounded corners. There are rounded, thick mesial and distal crista descending from the apex of the tooth towards the cervix. The mesial one is broken, but the distal one terminates at a low distal style, which extends slightly onto the labial surface of

Table 1

Measurements (in mm) of the teeth of *Anthracotherium magnum* from Aubenas-les-Alpes, France.

Mesures (en mm) des dents Anthracotherium magnum d'Aubenas-les-Alpes, France.

Catalogue	Specimen	Mesio-distal length	Bucco-lingual breadth	Crown height
3.003.207	I1/left	24	19.4	
3.003.147	I2/left	24	18.4	
3.003.229	I2/left	26	18.5	
3.004.789	I3/left	26 ^e	16.6	
3.003.624	Upper canine	–	–	31
3.003.244	Upper canine	20	17.5	
3.003.328	P2/right	28	17.7	
3.004.788	P2/left	–	19.4	
3.005.619	P3/right	34.6	–	
3.007.731	P4/right	25.3	31	
3.005.625	P4/left	24.8	34	
3.003.277	P4/left	24.7	–	
3.003.136	D4/right	33	35.3	
3.003.102	M1/left	–	40	
3.003.226	M2/right	44	–	
3.003.101	M2/right	46	–	
3.003.099	M3/left	51	60.3	
3.003.200	M3/left	–	–	
3.003.168	i/3 right	25	15	
3.005.624	Lower canine	–	–	27.8
3.003.203	Lower canine	27.8	19.8	
3.003.154	p/3 right	27	13.5	
3.003.625	p/3 right	–	13.8	
3.005.626	p/4 right	–	15.4	
3.003.249	p/4 left	31.8	17.7	
3.003.270	m/3 left	–	27.7	

e: estimated.

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