



**PALEO**

Revue d'archéologie préhistorique

24 | 2013

Varia

---

## *Mimomys pyrenaicus* nov. sp. a new Upper Pleistocene Arvicolid (*Mammalia*, *Rodentia*) from the Pyrénées (Fréchet-Aure, Hautes-Pyrénées, France)

*Mimomys pyrenaicus* nov. sp. nouvel arvicolidé (*Mammalia*, *Rodentia*) dans le Pléistocène supérieur des Pyrénées (Fréchet-Aure, Hautes-Pyrénées, France)

Marcel Jeannet and Vincent Mourre

---



### Electronic version

URL: <http://journals.openedition.org/paleo/2860>

DOI: 10.4000/paleo.2860

ISSN: 2101-0420

### Publisher

SAMRA

### Printed version

Date of publication: 15 December 2013

Number of pages: 139-147

ISSN: 1145-3370

### Electronic reference

Marcel Jeannet and Vincent Mourre, « *Mimomys pyrenaicus* nov. sp. a new Upper Pleistocene Arvicolid (*Mammalia*, *Rodentia*) from the Pyrénées (Fréchet-Aure, Hautes-Pyrénées, France) », *PALEO* [Online], 24 | 2013, Online since 04 September 2015, connection on 07 July 2020. URL : <http://journals.openedition.org/paleo/2860> ; DOI : <https://doi.org/10.4000/paleo.2860>

---

This text was automatically generated on 7 July 2020.



*PALEO* est mis à disposition selon les termes de la licence Creative Commons Attribution - Pas d'Utilisation Commerciale - Pas de Modification 4.0 International.

---

# *Mimomys pyrenaicus* nov. sp. a new Upper Pleistocene Arvicolid (Mammalia, Rodentia) from the Pyrénées (Fréchet-Aure, Hautes- Pyrénées, France)

*Mimomys pyrenaicus* nov. sp. nouvel arvicolidé (Mammalia, Rodentia) dans  
le Pléistocène supérieur des Pyrénées (Fréchet-Aure, Hautes-Pyrénées, France)

Marcel Jeannet and Vincent Mourre

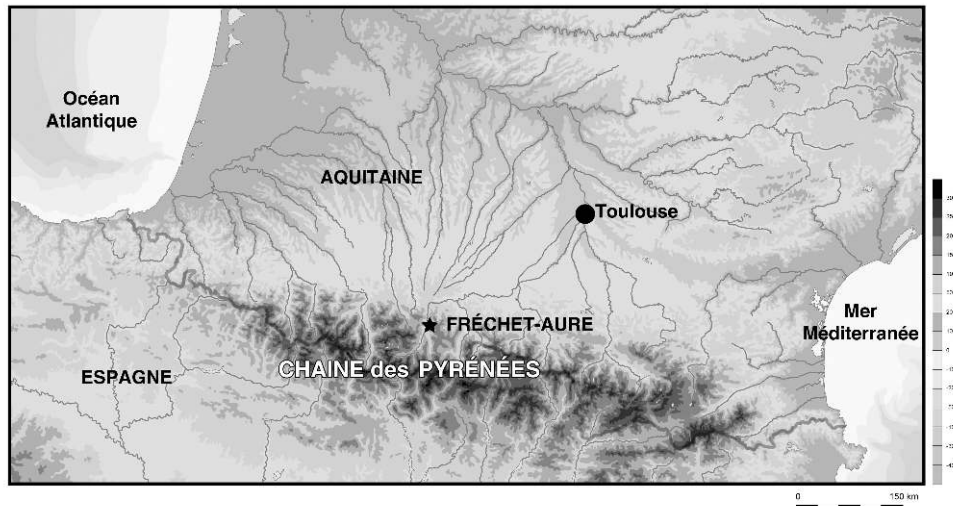
---

*It is a pleasure, and not a mere duty, for us to extend our heartfelt thanks to all those who helped to carry out this work and to whom we dedicate this article. Thanks to M. Allard and all those who brought us so much. I would like to add my profound gratitude to Françoise Delpech who kindly corrected the text and reformatted the presentation.*

## Introduction

- 1 Noisetier Cave (or Peyrère 1) is located on the western slope of the Aure Valley, on the townland of Fréchet-Aure just outside the village, at an altitude of 825 m and 145 m above the valley floor (Mourre 2010) (fig. 1). The main gallery is oriented north-south and the entrance opens towards the south (fig. 2 and 3).
- 2 After the rescue excavation by M. Allard (Direction Régionale des Antiquités de Midi-Pyrénées), conducted in the central zone of the cavern, we took over the determination of the microfauna extracted by V. Mourre's team over a period of five years (Jeannet 2001). This work involved the examination of 139,840 remains, 82,267 of which were judged to be determinable (Mourre *et al.* 2008).

Figure 1 - Location of the Grotte du Noisetier (according to French grand atlas map; Reader'sDigest selection).



- 3 This set of data from level 1 was dated by AMS to 42 ka BP (+3100/-2300) (Gif 7997), and contained two molars with roots from a minute arvicolid: a first lower right molar (M1D) in a perfect state of conservation and a third upper right molar (M3D) without the posterior loop (fig. 4). The Mimomyan morphology and the deposit conditions raise questions as to the origin, the chronology and the kinship of these teeth. A link with *Mimomys salpatrierensis* (Chaline 1980) seems to be ineluctable.
- 4 Noisetier Cave is a subhorizontal gallery overhanging the Neste at 140 m. It opens due south at an altitude of 845 m, opposite the Aspin pass. It is the ideal site for large birds of prey, which can brood and survey the surrounding slopes for prey. Nearby, the fields, forests and the glacial trough of Val de Louron extend and diversify their hunting grounds.

### Location of the remains (fig. 2 and 3)

Figure 2 - Fréchet-Aure - Grotte du Noisetier. Cave plan and digged zones (DAO V. Mourre).

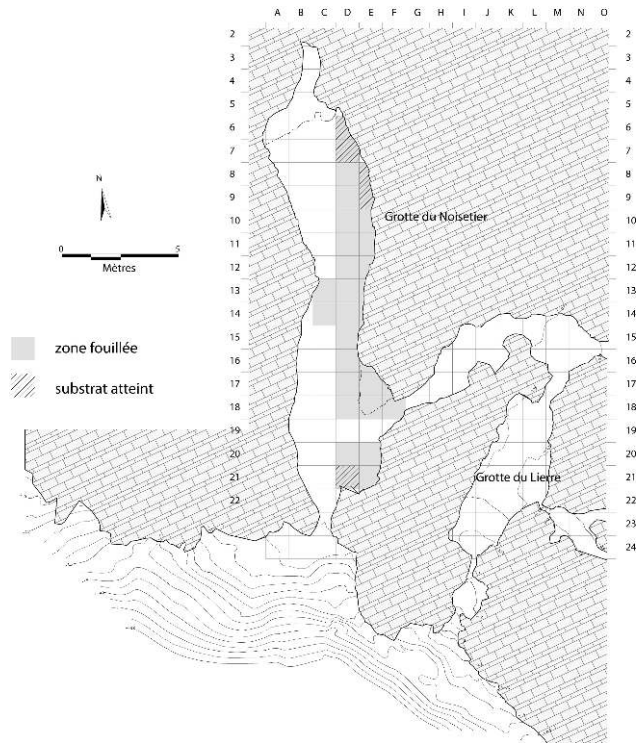
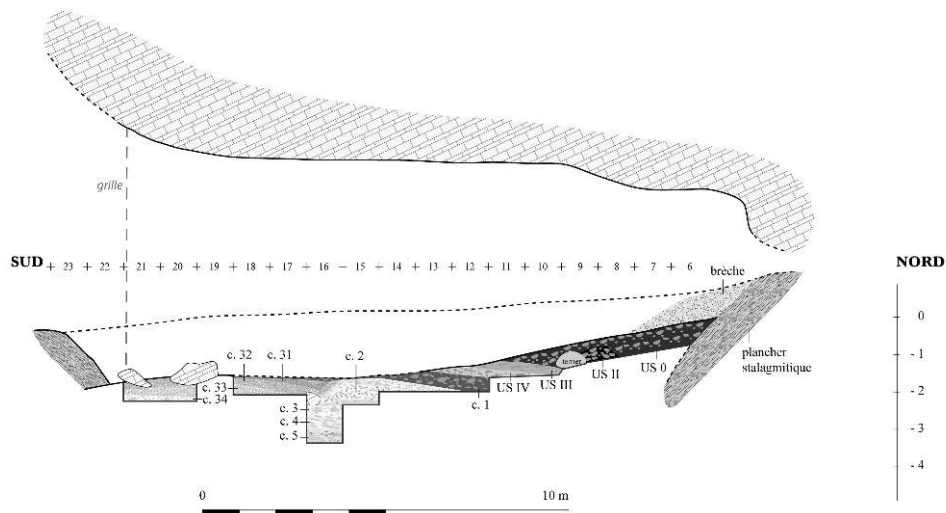
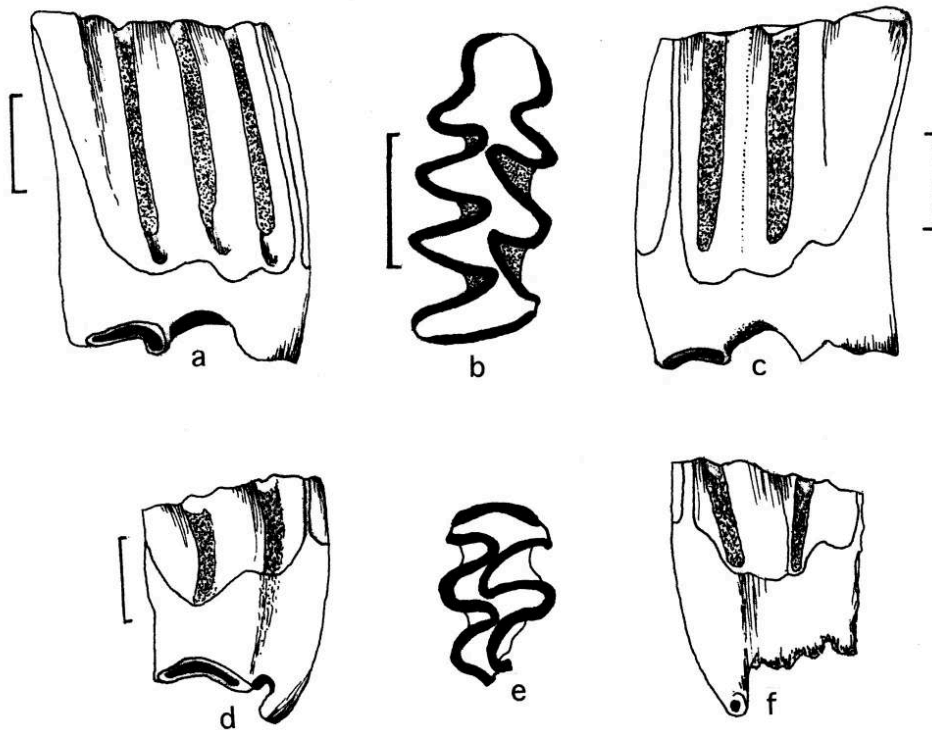


Figure 3 - Fréchet-Aure – Grotte du Noisetier. Longitudinal cutting on C/D axis (DAO V. Mourre).



- 5 The M1D (fig. 4 a, b, c) was discovered in the square D18, (in the porch area), with a Z reading of 204. It is recorded as n° FGN.402-6393 and belongs to level 1a.
- 6 The M3D (fig. 4 d, e, f) is issued from the stripping of square D16, in the central zone, between the Z readings = 240 and 250. It is recorded as n° FGN. 451-7174 and belongs to level 3.
- 7 This spread out distribution seems to indicate that these molars do not belong to the same specimen even though their morphology links them to the same species.

Figure 4 - Fréchet-Aure - Grotte du Noisetier. Holotypus of *Mimomys pyrenaicus* n. sp. a/ buccal face ; b/ occlusal face ; c/ jugal face. Scale = 1mm. Paratypus : amputated M3D of posterior loop. d/ buccal face ; e/ occlusal face ; f/ jugal face. Common scale = 1mm.



## Bioclimatic association

- 8 The list and identification of the remains found in association with each of the two molars illustrates the taxinomic abundance of each series (tab. 1) and the biodiversity of the complex as a whole.

Tableau 1 - Fréchet-Aure - Grotte du Noisetier. Extract of catalog recording assemblages of remnant associated to *Mimomys pyrenaicus* nov. sp. molars.

Extraits du catalogue des vestiges recueillis										
AN	Ech.	Carre	ZONE	NIV	Z	N°	type	contenus	nmi	NTR
04	402	D18	Porche	1a	204	6386	<i>Microtus arvalis</i>	Mdb,Ml	11	33
04	402	D18	Porche	1a	204	6387	<i>Microtus agrestis</i>	Ml	2	4
04	402	D18	Porche	1a	204	6388	<i>Microtus nivalis</i>	Ml	1	2
04	402	D18	Porche	1a	204	6389	<i>Microtus pyrenaicus</i>	Ml	1	2
04	402	D18	Porche	1a	204	6390	<i>Dicrostonyx torquatus</i>	fgt Ml	1	1
04	402	D18	Porche	1a	204	6391	<i>Pliomys lenki</i>	Ml	2	6
04	402	D18	Porche	1a	204	6392	<i>Arvicola terrestris</i>	Ml & divers	2	11
04	402	D18	Porche	1a	204	6393	<i>Mimomys sp.</i>	Ml,D	1	1
04	402	D18	Porche	1a	204	6394	<i>Rongeurs</i>	Incisives	50	
04	402	D18	Porche	1a	204	6395	<i>Uromys</i>	Os dét.	51	
04	402	D18	Porche	1a	204	6396	<i>Uromys</i>	Os indéf.	47	
04	402	D18	Porche	1a	204	6397	<i>Uromys</i>	Os	15	
04	402	D18	Porche	1a	204	6398	<i>Uromys</i>	Tronc	19	
04	402	D18	Porche	1a	204	6399	<i>Uromys</i>	Vertèbre	14	
04	402	D18	Porche	1a	204	6400	<i>Uromys</i>	Autopodes	50	
04	402	D18	Porche	1a	204	6401	<i>Talpa europaea</i>	Os divers	7	
04	402	D18	Porche	1a	204	6402	<i>Sorex minutus</i>	Tibia	4	
04	402	D18	Porche	1a	204	6403	<i>Myotis sp.</i>	M3	1	
04	402	D18	Porche	1a	204	6404	<i>Rana temporaria</i>	Divers	17	
04	402	D18	Porche	1a	204	6405	<i>Anguis fragilis</i>	Vertèbre	1	
04	402	D18	Porche	1a	204	6406	<i>Lagomorphs (?)</i>	fgt Ml	1	
04	402	D18	Porche	1a	204	6407	<i>Oiseaux</i>	Os divers	7	
04	402	D18	Porche	1a	204	6408	<i>Sorex araneus</i>	Mdb,Ml	1	
06	451	D16	Centre	3	240-250	7165	<i>Microtus arvalis</i>	Mdb,Ml	27	69
06	451	D16	Centre	3	240-250	7166	<i>Microtus agrestis</i>	Mdb,Ml; Ml	20	63
06	451	D16	Centre	3	240-250	7167	<i>Microtus nivalis</i>	Ml	3	8
06	451	D16	Centre	3	240-250	7168	<i>Microtus pyrenaicus</i>	Ml	3	7
06	451	D16	Centre	3	240-250	7169	<i>Microtus oeconomus</i>	Ml	2	1
06	451	D16	Centre	3	240-250	7170	<i>Pliomys lenki</i>	Mdb,Ml	7	28
06	451	D16	Centre	3	240-250	7171	<i>Arvicola sapidus</i>	Ml,Os	8	43
06	451	D16	Centre	3	240-250	7172	<i>Apodemus sylvaticus</i>	Mdb,Ml	2	24
06	451	D16	Centre	3	240-250	7173	<i>Microtus breccianis</i>	Ml	1	1
06	451	D16	Centre	3	240-250	7174	<i>MIMOMYS SP.</i>	M3D	1	1
06	451	D16	Centre	3	240-250	7175	<i>Microtus</i>	fgt Ml	28	
06	451	D16	Centre	3	240-250	7176	<i>Rongeurs</i>	Incisives	71	
06	451	D16	Centre	3	240-250	7177	<i>Uromys</i>	Os dét.	325	
06	451	D16	Centre	3	240-250	7178	<i>Uromys</i>	Os indéf.	1129	
06	451	D16	Centre	3	240-250	7179	<i>Uromys</i>	Os	77	
06	451	D16	Centre	3	240-250	7180	<i>Uromys</i>	Tronc	31	
06	451	D16	Centre	3	240-250	7181	<i>Uromys</i>	Vertèbres	128	
06	451	D16	Centre	3	240-250	7182	<i>Uromys</i>	Autopodes	134	
06	451	D16	Centre	3	240-250	7183	<i>Talpa europaea</i>	Os divers	46	
06	451	D16	Centre	3	240-250	7184	<i>Sorex araneus</i>	Mdb	13	
06	451	D16	Centre	3	240-250	7185	<i>Rhinolophus ferrumequinum</i>	Canine	3	
06	451	D16	Centre	3	240-250	7186	<i>Mustela erminea</i>	Canine	3	
06	451	D16	Centre	3	240-250	7187	<i>Rana temporaria</i>	Os divers	220	
06	451	D16	Centre	3	240-250	7188	<i>Salmonid</i>	fgt Vertèbre	2	
06	451	D16	Centre	3	240-250	7189	<i>Iconium</i>	Vertèbre	1	
06	451	D16	Centre	3	240-250	7190	<i>Lacerta agilis</i>	Humérus	4	
06	451	D16	Centre	3	240-250	7191	<i>Calceus striatus</i>	fgt Ml	1	
06	451	D16	Centre	3	240-250	7192	<i>Anguis fragilis</i>	Vertèbre	4	
06	451	D16	Centre	3	240-250	7193	<i>Vipera berus (ou seoiand?)</i>	Vertèbre	13	
06	451	D16	Centre	3	240-250	7194	<i>Oiseaux</i>	Os divers	67	
06	451	D16	Centre	3	240-250	7184	<i>Sorex minutus</i>	Os	2	
06	451	D16	Centre	3	240-250	7184	<i>Neomys fodiens</i>	Humérus	1	
06	451	D16	Centre	3	240-250	7187	<i>Rana diemantina</i>	Humérus	1	
06	451	D16	Centre	3	240-250	7187	<i>Alytes obstetricans</i>	vertèbre		
06	451	D16	Centre	3	240-250	7187	<i>Bufo viridis</i>	vertèbre		
06	451	D16	Centre	3	240-250	7187	<i>Bombina variegata</i>	Sphinctroïde		
06	451	D16	Centre	3	240-250	7187	<i>Bufo bufo</i>	Humérus		
06	451	D16	Centre	3	240-250	7187	<i>Bufo viridis</i>	scapula		
06	451	D16	Centre	3	240-250	7187	<i>Alytes obstetricans</i>	Tibia péroné		
06	451	D16	Centre	3	240-250	7187	<i>Rana diemantina</i>	Humérus		

**ABBREVIATIONS: TOP OF COLUMNS: AN: Digging Year; ÉCH.: SAMPLE N°; N°: PART N°; NMI: MINIMAL NUMBER OF INDIVIDUALS (RODENTS ONLY); NTR: TOTAL NUMBER OF RESTS; Z: DEPTH. COLUMN "CONTENU": ÉD: TOOTHLESS; FGT: FRAGMENT; MDB: MANDIBULE; ML: UPPER MOLAR; ML: LOWER MOLAR; MI: ALONE MOLAR; MXL: MAXILLARY; OS DÉT.: DETERMINABLE BONE (BONE WITH EPIPHYSIS OR CHARACTERISTIC); OS INDÉT.: INDEFINITE BONE (SPLINTER, DIAPHYSIS).**

- 9 With the first lower molar, in level 1a, the presence of the collared lemming (*Dicrostonyx torquatus*) can be misleading as to the severity of climatic conditions; but it is important to bear in mind that this species is only represented by a single remain out of a total number of more than 80,000 determined remains and that the ten other taxa are associated with relatively temperate climatic conditions. It is possible that this species came to seek refuge in a mid-mountainous region, during a period of climatic warming, as the cavern was closed off by ice or firns at this altitude, during a periglacial phase (850 m).
- 10 As for the rodents from level 3, only the northern vole (*Microtus oeconomus*) adds a cold note: its presence indicates nearby marshy zones. Unlike the collared lemming, this species is present in most of the samples and all the levels of the infilling.
- 11 The climatic conditions of the final Pleistocene from layer b2 from Salpêtrière Cave presents a very different suite of taxa around *Mimomys salpêtrierensis* (Chaline 1980), where five species out of eight can withstand very harsh climatic conditions. Four of these are still present locally, apart from the water vole (*Arvicola terrestris*); the field vole (*Microtus arvalis*), the European snow vole (*Microtus nivalis*), the wood mouse (*Apodemus sylvaticus*) and the garden dormouse (*Eliomys quercinus*).
- 12 The significant climatic differences which emerge from the faunal associations from Noisetier Cave and Salpêtrière Cave could explain, if not validate, the morphological

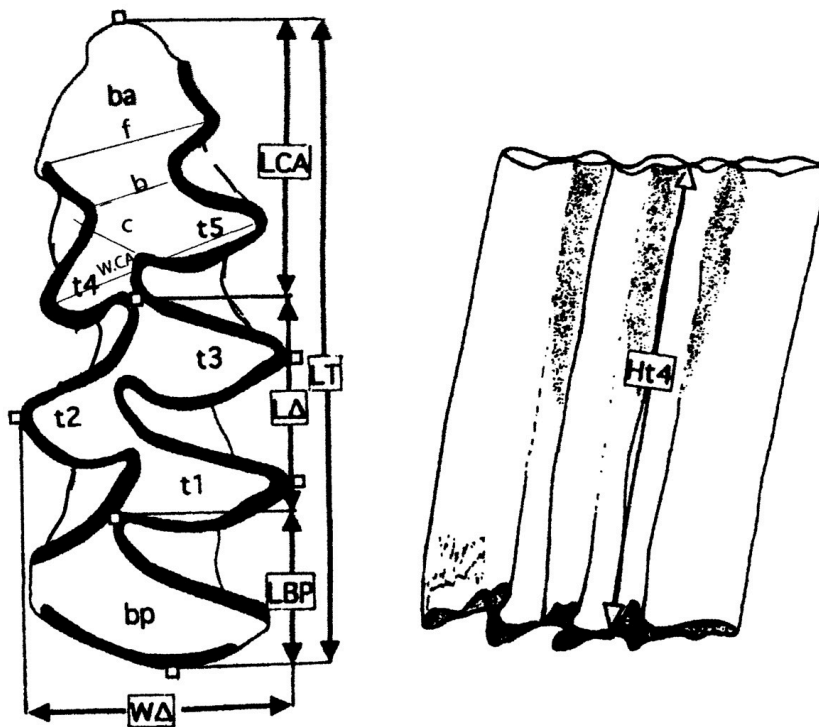


differences between the molars, as we showed for *Arvicola terrestris* from Chênélaz (Jeannet and Cartonnet 2000).

## Description, comparisons and determination (fig. 5)

- 13 The right M1 (fig. 4) clearly shows an Arvicola type chewing function with several surprising particularities: the tiny size and the absence of closed triangles. Laterally (fig. 4a and 4c), the tooth presents a high crown, two sturdy roots and abundant cement in the internal angles. On the sides of the molar, the linea sinuosa (Rabeder 1981) follows a very simplified line, very different from the “gloved finger” shape of Pliocene species. It reaches the chewing surface at the tips of the posterior loop (bp) and on the front of the anterior loop (ba), creating an interruption of the cordon of peripheral enamel. On the anterior loop, in spite of the advanced age of the animal, the interruption is clearly shorter than in most of the Lower Pleistocene *Mimomys*. We note the absence of the Mimomyan fold adjoining the t4 and the enamel « puiŕelet » perforating the anterior loop, which is very frequent in primitive forms. Due to these morphological lacunae, the reduced size and the wide space separating the t1 and the t2, the Fréchet form is similar to the *Mimomys pusillus* lineage (Méhely 1914).

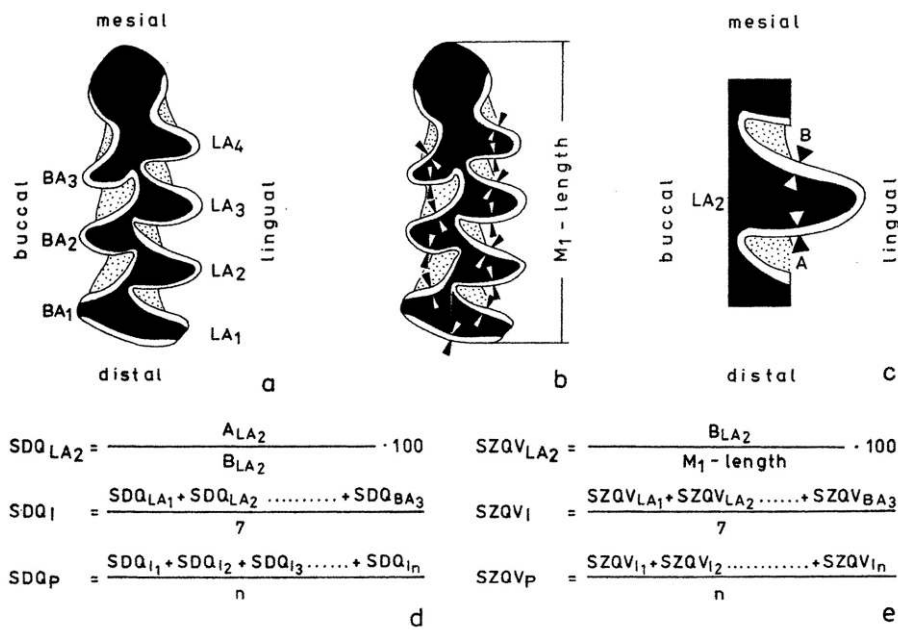
Figure 5 - Biometry. Measurement technique of the different elements of the Arvicola m1.



a/ Mastication table of a left m1 molar. ba = Anterior loop. bp = Posterior loop. b = Anterior complex constriction. c = neck t4/t5. f = Anterior loop width. t1, t2, t3, t4, t5 = sub-triangular elements constituting the molar body and delimited by peripheral enamel cordon. L.CA. - Anterior complex length. L.BP. - Posterior loop mesio-distal length. LT. - Molar total length. L. - Trigonid mesio-distal length (Triangles t1, t2, t3). W. - Trigonid width. b/ Lateral jugal view of m1D Ht4 = Molar height between high and low contacts of t3-t4. (The molar jugal curvature allows for this measurement).

- 14 We have not been able to observe and compare the intertwined enamel structures (Chaline and Laborier 1981), but the other morphological similarities are sufficient and clear enough to justify the attribution of the molar to the *Mimomys* genus to a form close to *Mimomys pusillus* (Méhely 1914), in the same way as G. Rabeder (1981). The comparison with *Mimomys blanci* van der Meulen 1973, another descendant of *Mimomys pusillus*, is much more conclusive. We observe the interval separating the t1 from the t2, the abundant cement on the internal angles, the simplified linea sinuosa, the breaks in the enamel, slight retraction on the anterior loop, which is widened but asymmetric. The length of the Fréchet molar is in keeping with the variations of those of *Mimomys blanci* but remains below average (2.49 mm). The Middle Pleistocene species from Italy provides the criteria missing from *Mimomys pusillus* for a close assimilation with the Fréchet *Mimomys*, such as the narrow break in the enamel at the front of the anterior loop and the sporadic presence of cement in the internal A6 angle.
- 15 The last criterion inherited from the Mimomyan lineage which was not evoked by the different cited authors is the variation in enamel thickness for which we will simply observe that the enamel is not very differentiated. According to the SDQ (Schmelzband Differenzierungs Quotient) method elaborated by W. D. Heinrich (1990) (fig. 6), this value is 107 for the m1, like for the m3 from Fréchet. This value confirms that the molar belongs to the *Mimomys* group, by displaying thicker posterior enamel walls for the triangles than those of the anterior walls (tab. 2). This is inversed in modern *Arvicola* molars. This same table shows the most widespread measurements for *Mimomys pyrenaicus* nov.sp.

Figure 6 - Biometry - According to W.D. Heinrich (1990), measuring technique and processing for the definition of the SDQ (Schmelzband Differenzierungs Quotient).



- 16 Chronologically, the Fréchet m1 is closer to those from Salpêtrière Cave, excavated by F. Bazile in 1979, which were the subject of two publications (Chaline 1980; Chaline and Laborier 1981). In *Mimomys salpêtrierensis*, the m1 presents a structure of enamel fibres similar to that of *Mimomys* pliocènes, as shown by C. Laborier with a scanning electron



microscope. Moreover, the detailed description and the measurements bring to light the minuscule size, ( $Lm1=1.55$  mm), the presence of two roots, thick, poorly differentiated enamel, a wide space between  $t1$  and  $t2$ , abundant cement in the internal angles and a poorly indented *linea sinuosa* reaching the chewing surface in front of the largely unrestricted anterior loop and at the tips of the posterior loop.

- 17 These diverse characteristics are present on the Fréchet  $m1$ , cited previously in the comparison with the other *Mimomys*. The most marked difference is the tiny size of *Mimomys salpatriensis* compared to all the others, including the Fréchet molar: 1.55 mm for *Mimomys salpatriensis*, 2.31 mm for *Mimomys pyrenaicus* nov. sp. and 2.49 mm on average for *Mimomys blanci*.
- 18 Above all, the intermediary position of the Fréchet molar between *Mimomys blanci* (van der Meulen 1973) and *Mimomys salpatriensis* (Chaline 1980) is noteworthy, as regards the chronology, the size and the morphology.
- 19 These diverse distinctive parameters prompt us to consider the Fréchet molar as a well-individualized species, due to its morphology characterized by the absence of closed triangles and the presence of a pitemyan rhombus. These two associated morphological criteria are not present in any *Mimomys* of the “reidi- pusillus-blanci” lineage. For these diverse reasons and criteria, we believe that it is pertinent to create a new species which will serve as a chronological marker for similar ulterior discoveries.

### ***Mimomys pyrenaicus* nov. sp (fig. 4 a, b, c)**

- 20 *Derivatio Nominis*: Name derived from the geographic sector of the discovery, indicating in particular the refuge zone of endemic species.

Type locality: Noisetier Cave (or Peyrère 1), townland of Fréchet - Aure, (Hautes-Pyrénées, France).

Type level: layer 1a (MIS 3), containing a Mousterian industry.  $^{14}C$  AMS date from level: (Gif 7997) = 42 ka BP (+3100/-2300).

Holotype:  $m1D$  (n° FGN 402-6393); fig. 4b

- 21 *Diagnosis*: Small-sized *Mimomys* ( $L.m1= 2.308$ mm). The  $m1$  has no Mimomyan fold and no enamel islet on the anterior loop. Interruptions of the peripheral enamel cordon on the front of the anterior loop and the lateral tips of the posterior loop. Absence of closed triangle: wide corridor between triangles  $t1$  and  $t2$ . Presence of a well-developed Pitemyan rhombus. From a lateral view: poorly indented *linea sinuosa* reaching the mastication table. Abundant cement in the internal angles. Poorly differentiated enamel on the walls of the triangles but of ancestral type (posterior walls thicker than the anterior walls;  $SDQ = 107$ ).
- 22 *Paratype*: the posterior loop has been removed from the  $M3D$  and it is thus impossible to take measurements. It bears two roots, one of which is a longitudinally elongated anterior root, the other is a posterior sub-cylindrical root. Comes from layer 3 from square D16 dated by  $^{14}C$  AMS to 47 ka +/- 2000 BP (Poz 14255). Very thick, poorly-differentiated enamel and an identical  $SDQ (=107)$  to that of the  $m1$ . Abundant cement in the internal angles (catalogue n°: FGN 451-7174).

Tableau 2 - Fréchet-Aure - Grotte du Noisetier. Biometric data of *Mimomys pyrenaicus* nov. sp. molars.

ESPÈCE	N°	LT	LCA	LA	LBP	WCA	WBA(f)	
<i>Mimomys pyrenaicus</i> n.sp. m1D - Holotype	FGN.402-6393	2,308	0,845	0,896	0,567	0,780	0,525	
<i>Mimomys pyrenaicus</i> n. sp. m1D - Holotype	FGN.402-6393	SDQ m1D 107	>b< 0,31	>c< 0,16	WΔ 1,07	W t2 0,46	W t3 0,79	Asym. 58,23%
<i>Mimomys pyrenaicus</i> M3D	FGN 451-7174	SDQ M1G 107						

## Conclusion

- 23 The discovery of rodent remains from the *Mimomys* genus is important for several reasons. It led to the creation of a new species: *Mimomys pyrenaicus* nov. sp. It confirms the fact that the Pyrenees Mountains acted as a refuge for species that are endemic today. It enables us to add a link in the *Mimomys reidi* - *pusillus* - *blanci* lineage. With *Mimomys salpatriensis*, D. Janossy's idea (1970) of defining the Lower Pleistocene/Middle Pleistocene through the disappearance of *Mimomys* is thus partially called into question. But this is also true for other groups, such as *Pliomys* or *Allocricetus*, which were presumed to have become extinct during the Eemian and which survived sporadically in several Upper Pleistocene refuge zones. We can also evoke the European adder (*Vipera berus*) which evolved towards the Baskian viper and occupies the Cantabrian region and naturally the Pyrenean desman (*Galemys pyrenaicus*), found in fossil form at the site (Jeannet 1996; Allard and Juillard). *Arvicola terrestris* (the European water vole) retained a Pyrenean enclave whereas the rest of the population turned towards Asia. The other logical consequence of these close links with the *Mimomys* genus is plainly the nomen nudum characteristic of the *Nemausia* genus (Chaline and Laborier 1981), which J. Chaline himself seems to have abandoned, judging by the *Mimomys salpatriensis* appellation that he used.

## BIBLIOGRAPHY

- AGENBROAD L.D. 1989 - Spiral Fractured Mammoth Bone from Nonhuman Taphonomic Processes at Hot Spring Mammoth Site. In : R. Bonnicksen, M.A. Sorg (Eds.), *Bone Modification*. Orono: Center for the Study of the First Americans, University of Maine, p. 139-147.
- AGENBROAD L.D. 1990 - The mammoth population of the Hot Springs site and associated megafauna. In : L.D. Agenbroad, J. I. Mead, L. Nelson (Eds.), *Megafauna and Man*. The discovery of America's Heartland. Hot Springs, South Dakota: Mammoth Site of Hot Springs, p. 32-35.
- AGENBROAD L.D., MEAD J.I. 1987 - Age structure analysis of *Mammuthus columbi*, Hot Springs, South Dakota, *Current Research in the Pleistocene* 4, p. 101-102.

- AGENBROAD L.D., MEAD J.I. 1994 (Eds.) - *The Hot Springs Mammoth Site: a Decade of Field and Laboratory Research in Paleontology, Geology, and Paleoecology*, Mammoth Site of Hot Springs. South Dakota, Inc., Hot Springs. 451 p.
- ANDREWS P., LORD J.M., NESBIT-EVANS E.M. 1979 - Patterns of ecological diversity in fossil and mammalian faunas. *Biology journal Linnean Society*, 11, p.177-205.
- AULAGNIER S., HAFFNER P., MITCHELL-JONES T., MOUTOU F., ZIMA J. 2010 - *Guide des mammifères d'Europe, d'Afrique du Nord et du Moyen-Orient*. Paris, Ed. Delachaux et Niestlé. 272p.
- BEDEN M. 1979 - *Les Éléphants d'Afrique Orientale : systématique, phylogénie, intérêt biochronologique*. Thèse de la Faculté des Sciences Universitaires de Poitiers, 2 vol., 567 p. (inédit).
- CRAIG G.C. 1991 - in: Haynes G. 1991 - *Mammoths, mastodonts and elephants. Biology, behavior, and the fossil record*. Cambridge University Press, 413 p.
- DUTROW B. 1980 - *Metric analysis of a Late Pleistocene Mammoth Assemblage, Hot Springs, South Dakota*. M.S. thesis, Southern Methodist University (unpublished).
- FIGUEIRIDO B., PÉREZ-CLAROS J. A., TORREGROSA V., MARTÍN-SERRA A., PALMQVIST P. 2010 - Demythologizing *Arctodus simus*, the “ Short-Faced ” long-legged and predaceous bear that never was, *Journal of Vertebrate Paleontology*, 30: 1, p. 262-275.
- FISHER D.C, FOX D.L., AGENBROAD L.D. 2003 - Tusk growth rate and season of death of *Mammuthus columbi* from Hot Springs. South Dakota, USA *Deinsea*, 9, p. 117-133.
- FLEMING T.H. 1973 - Numbers of mammal species in north and central America forest communities. *Ecology*, 54, n° 3, p. 555-563.
- GUÉRIN C., FAURE M. 1987 - Grands Mammifères. In : J.C. Miskovsky *et al.*, *Géologie de la Préhistoire : méthodes, techniques, applications*, GéoPré édit., Maison de la Géologie, Paris, p. 801-830.
- HANNUS L.A. 1989 - Flaked Mammoth Bone from the Lange Ferguson Site, With River Badlands Area, South Dakota. In : R. Bonnicksen, M.A. Sorg (Eds.), *Bone Modification*. Orono: Center for the Study of the First Americans, University of Maine, p. 395-412.
- HAYNES G., 1987 : Proboscidean die-offs and die-outs : Age profiles in fossil collections. *Journal of Archaeological Sciences*. 14(6) : p. 659-668.
- HAYNES G. 1991 - *Mammoths, mastodonts and elephants. Biology, behavior, and the fossil record*. Cambridge University Press, 413 p.
- LAURY R.L. 1990 - Geologic History of the Mammoth site and Surrounding Region Hot Springs Area, Fall River and Custer Counties, South Dakota: An Overview. In : L.D. Agenbroad, J.I. Mead, L.W. Nelson (Eds.), *Megafauna and Man*. Flagstaff, Arizona, p. 15-21.
- LAWS R.M. 1966 - Age criteria for the African elephant, *Loxodonta a. africana*. *East African Wildlife Journal*. 4, p. 1-37.
- LEGENDRE S. 1989 - *Les communautés de mammifères du Paléogène (Éocène supérieur et Oligocène) d'Europe occidentale : structures, milieux et évolution*. Ed. F. Pfeil., München 265 p.
- LOUGUET-LEFEBVRE S. 2005 - *Les mégaherbivores au Paléolithique moyen en Europe du Nord-Ouest : paléoécologie, taphonomie et aspects paléthnographiques*. *British Archaeological Reports, International Series / S1451*, 357 p.
- LOUGUET-LEFEBVRE S. 2006 - Determining the age of death of Proboscids and Rhinocerids from dental attrition. *Oxbow*, Icaz Durham 2002, International Council of Archaeozoology, 9th Conference, 23-28 August, p. 179-188.

- MADDEN C.T. 1981 - *Mammoths of North America*. Ph. D. thesis of Colorado University, Ann Arbor, 271 p. (unpublished).
- MAGLIO V.J. 1973 - The origin and evolution of the Elephantidae. *The American Philosophical Society*, 62, 149 p.
- MEAD J., HELVY R.H., AGENBROAD L.D., 1990 - Late Pleistocene Invertebrates and Plant Remains, Mammoth Site, Black Hills, South Dakota. In : L.D. Agenbroad, J.L. Mead, L. Nelson (Eds.), *Megafauna and Man. The discovery of America's Heartland*. Hot Springs, South Dakota: Mammoth Site of Hot Springs, p. 9.
- MONTUIRE S., MARCOLINI F. 2002 - Palaeoenvironmental significance of the mammalian faunas of Italy since the Pliocene. *Journal of Quaternary Science*, vol. 17(1), p. 87-96.
- OSBORN H.F. 1942 - *Proboscidea, a Monograph of the Diversity, Evolution, Migration and Extinction of the Mastodons and Elephants of the World, Vol. II: Stegodontoidea, Elephantoidea*. American Museum of Natural History, New York, p. 805-1675.
- PÉAN, S. 2001 - *Comportements de subsistance au Gravettien en Europe centrale*. Thèse Doct. MNHN Paris. 413 p. (unpublished).
- SAUNDERS J.J. 1970 - *The distribution and taxonomy of Mammuthus in Arizona*. M.Sc. thesis of Arizona University, Tucson, 115 p. (unpublished).
- STANFORD D., WEDEL W. R., SCOTT G. R. 1981 - Archaeological investigations of the Lamb Spring site. *Southwestern Lore* 47(1), p. 14-27.
- VALVERDE J.A. 1964 - Remarque sur la structure et l'évolution des communautés de vertébrés terrestres. *Terre et Vie*, III, p. 121-154.

## ABSTRACTS

Vincent Mourre excavations in the Grotte du Noisetier (or Peyrère 1) permit to gather by sifting more than 80 000 determinable rests of microvertebrates. Among them, two rhizodont molars of a minute Arvicolid have been isolated. The small size, the abundant cement in the re-entrant angles and the distinctly wide separation of t1 and t2 triangles attest their belonging to the mimomyan phylum of *Mimomys reidi*-*M. pusillus* and *M. blanci*, extended sporadically over all Quaternary.

Chronologically, this new discovery takes place in the descent of *Mimomys blanci* during the stage MIS 3, in presence of musterian industry in the beginning of the last glaciation and precedes *Mimomys salpatriensis* from the end of Würm.

Morphologically, *Mimomys pyrenaicus* nov. sp. is intermediate by its size between *M. blanci* and *M. salpatriensis*, as in chronology. However, it is different from all other *Mimomys* of that lineage because there is no one closed triangle and possesses associated "pitymyan rhombus" which give the specific character to this taxon

Les fouilles poursuivies par l'un de nous (VM) à la Grotte du Noisetier (ou Peyrère 1) à Fréchet-Aure (Hautes-Pyrénées) ont permis de récolter, par tamisage, plus de 80 000 vestiges réputés déterminables (sur près de 140 000 restes) de microvertébrés. Parmi eux, deux molaires rhizodontes d'un minuscule arvicolidé ont été isolées. La taille réduite, l'abondance de ciment dans les angles rentrants et la nette séparation des triangles t1 et t2 attestent leur appartenance au phylum mimomyen de *Mimomys reidi* - *M. pusillus* et *M. blanci* étalé sporadiquement sur l'ensemble du Quaternaire. Chronologiquement, cette nouvelle découverte se place dans la lignée de *Mimomys blanci* (Van der Meulen 1973), dans la période isotopique de MIS 3 ou plus ancien, en

présence d'industrie moustérienne, et précède *Mimomys salpatriensis* (Chaline 1980) de la fin du Würm. Morphologiquement, *Mimomys pyrenaicus* nov sp. est intermédiaire par sa taille entre *Mimomys blanci* et *Mimomys salpatriensis* comme il l'est dans la chronologie. Il diffère cependant de tous les autres *Mimomys* de la lignée par l'absence de triangles clos et la présence associée d'un « rhombe pitymyen » nettement développé, qui en font les caractères spécifiques de ce nouveau taxon.

## INDEX

**Mots-clés:** *Mimomys pyrenaicus* nov sp., Pléistocène supérieur, systématique, biométrie, environnement, Fréchet (Hautes-Pyrénées)

**Keywords:** *Mimomys pyrenaicus* nov.sp., Upper Pleistocene, Systematics, Biometry, Environment, Fréchet (Hautes-Pyrénées)

## AUTHORS

### MARCEL JEANNET

UMR 7269-MMSH, BP.647 FR-13904 Aix-en-Provence cedex 2 - m.jeannet.arpa.mf@wanadoo.fr

### VINCENT MOURRE

INRAP Méditerranée, UMR 5608-TRACES, 561 rue Étienne Lenoir, Km Delta FR-30900 Nîmes - vincent.mourre@inrap.fr.