

Catalogue of the Late Quaternary Iberian micromammals (Rodentia, Eulipotyphla, Chiroptera) from the Museu de Geologia de Barcelona, Spain

Juan Manuel LÓPEZ-GARCÍA*, Jordi AGUSTÍ** & Gloria CUENCA-BESCÓS***

RESUMEN

LÓPEZ-GARCÍA, J.M., AGUSTÍ, J. & CUENCA-BESCÓS, G. Catálogo de los micromamíferos (Rodentia, Eulipotyphla, Chiroptera) del Cuaternario Superior Ibérico del Museu de Geologia de Barcelona, Spain.

En este trabajo se presenta una lista del material de micromamíferos del Pleistoceno Medio - Superior y Holoceno depositado en el Museu de Geología de Barcelona, perteneciente a 12 yacimientos de la Península Ibérica (diez de Cataluña, uno de Castilla y León y uno de Andalucía). Este listado nos permite observar cambios en la distribución de especies como *Iberomys cabreræ*, *Microtus oeconomus*, *Hystrix cristata* o *Citellus* sp. respecto a su actual situación geográfica. Así mismo, nos permite vislumbrar la existencia durante el Pleistoceno Medio - Superior de algunas especies actualmente extintas, como *Pliomys lenki* y *Allocricetus bursæ*.

Palabras clave: Pleistoceno Medio-Superior, Holoceno, Micromamíferos, Paleobiogeografía, Museu de Geologia de Barcelona, España.

ABSTRACT

The present catalogue represents an attempt to list Middle - Upper Pleistocene and Holocene micromammal material deposited in the Museu de Geologia de Barcelona, coming from 12 Iberian Peninsula localities (ten from Catalonia, one from Castilla y León and one from Andalucía). It permits to observe changes in species geographical distribution as *Iberomys cabreræ*, *Microtus oeconomus*, *Hystrix cristata* or *Citellus* sp. with regard to their present location. By this way, we can observe the existence during the Middle - Upper Pleistocene of some today extinct species such as *Pliomys lenki* or *Allocricetus bursæ*.

Key words: Middle-Upper Pleistocene, Holocene, Micromammals, Palaeobiogeography, Museu de Geologia de Barcelona, Spain.

* Institut de Paleoecologia Humana i Evolució Social. Universitat Rovira i Virgili. Plaça Imperial Tàrraco, 1, E-43005 TARRAGONA, Spain. E-mail: jlopez@prehistoria.urv.cat

** ICREA. Institut de Paleoecologia Humana i Evolució Social. Universitat Rovira i Virgili. Plaça Imperial Tàrraco, 1, E-43005 TARRAGONA, Spain. E-mail: jordi.agusti@icrea.es

*** Departamento de Ciencias de la Tierra. Área de Paleontología de la Universidad de Zaragoza. C/ Pedro Cerbuna, 12, E-50009 ZARAGOZA, Spain. E-mail: cuencag@unizar.es

INTRODUCTION

The study of the Middle–Late Pleistocene and Early Holocene micromammals may contribute to a better knowledge of the taxonomic change of the different species (extinctions, or changes in geographical distribution), and to the reconstruction of the palaeoenvironment or palaeoclimate of Late Quaternary.

The remains presented in this paper come from the collection of the Museu de Geologia de Barcelona.

CATALOGUED SITES

CATALUNYA

Begur 1, Girona

Localization: Quarry of Puig Broca, close to the road from Begur to Regencós, at 1 km of this city.

Age: Middle Pleistocene (Mindel according to López *et al.*, 1976).

The fossils appear in some fissure fillings in the quarry situated at the North of the road, property of Servià Cantó, S.A. The locality was discovered in 1974 by C.S. Martí and destroyed the same year by the quarry exploitation.

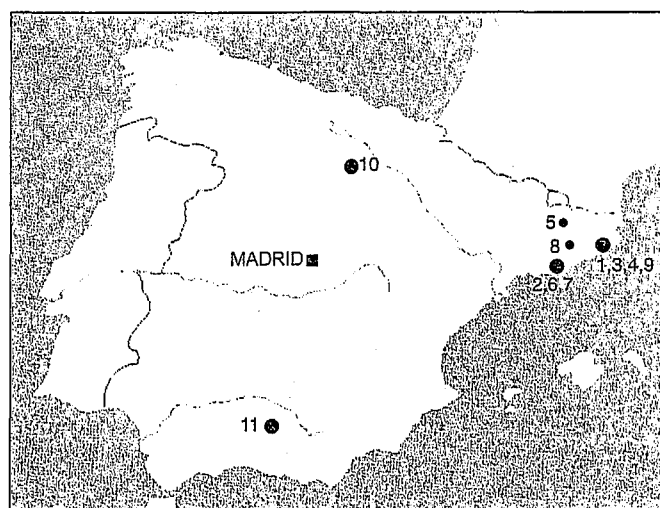


Fig. 1. Geographical location in the Iberian Peninsula of the localities listed in this work: 1. Begur; 2. Brecha de Begues; 3. Cal Ferrer; 4. Cau del Duc; 5. Cova Olopte B; 6. Cova del Gegant; 7. Cova dels Musclos; 8. Cova del Toll; 9. Montjuïc; 10. Palacio de la Sierra; 11. Cueva del Agua.

Fig. 1. Situación geográfica en la Península Ibérica de los yacimientos listados en este trabajo: 1. Begur; 2. Brecha de Begues; 3. Cal Ferrer; 4. Cau del Duc; 5. Cova Olopte B; 6. Cova del Gegant; 7. Cova dels Musclos; 8. Cova del Toll; 9. Montjuïc; 10. Palacio de la Sierra; 11. Cueva del Agua.

- V7319. *Eliomys quercinus* (Linnaeus, 1766), 1 fourth lower premolar (P₄).
- V7321. *Allocricetus bursae* Schaub, 1930, first to third lower left molars (M₁- M₃).

Begur 3, Girona

Localization: Quarry of Puig Broca, close to the road from Begur to Regencós, at 1 km of this city.

Age: Late Pleistocene or Holocene?

- V7326. *Mus* sp., 1 first lower left molar (M₁), 1 first upper left molar (M¹).
- V7327. *Eliomys quercinus* Wagner, 1840, 1 fourth lower premolar (P₄).
- V7328. *Apodemus* sp., 1 first lower left molar (M₁), 1 first upper left molar (M¹).

Brecha de Begues

Without site location

Age: Late Pleistocene?

- V7853. *Eliomys quercinus* Wagner, 1840, several molars; *Apodemus* sp., several molars.
- V7854. *Crocidura* sp., 1 right lower molar.

Cal Ferrer, Serinyà, Pla de l'Estany, Girona

Location: This is an ancient house, that is located inside of an ancient castle walls.

Age: Holocene. Middle Age (S.XIII).

- V7528. *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 6 first lower left molars (M₁); *Terricola pyrenaicus* (de Sèys-Longchamps, 1847), 6 first lower left molars (M₁).
- V7529. *Mus spretus* Lataste, 1883, 2 right jaw, 1 left jaw; *Apodemus sylvaticus* (Linnaeus, 1758), 1 left jaw, 1 right jaw.
- V7531. *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 9 first lower right molars (M₁); *Terricola pyrenaicus* (de Sèys-Longchamps, 1847), 3 first lower right molars (M₁).

Cau del Duc, Torroella de Montgrí, Girona

Localization: This cave is near the village of Torroella de Montgrí. It is placed to the south of the mountain, 200 meters over the level sea.

Age: Middle Pleistocene.

- V4171. *Terricola pyrenaicus* (de Sèys-Longchamps, 1847), 1 first lower molar (M₁); *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 15 first lower right molars, 10 first lower left molars; *Arvicola sapidus* Miller, 1908, 1 first lower right molar.
- V4172. *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 5 first lower right molars, 4 first lower left molars; *Terricola pyrenaicus* (de Sèys-Longchamps, 1847), 1 first lower left molar.

Cova d'Olopte (Cova B), Isòvol, Cerdanya

Localization: The cave is open in the direction of the city of Olopte at the South-West and situated along the river Duran, at 50 m from the cave named Cova Gran and 35 m above the river bed level (Borràs *et al.*, 1978; Monzonis, 1975). Latitude, 42° 23' 20". Longitude, 5° 29' 58". Altitude, 1.145 m.

Age: Middle-Upper Pleistocene, Middle Bronze Age and part and final of the Iron Age (Hallstatt). According to Villalta (1974) the age of the material associate to *Marmota marmota* and *Citellus major* is Würm II (OIS 2).

The fossils of the Museu de Geologia have been recovered from the 18 to 23 April 1973 by the Equip de Recerques Espeleològiques of the Centre Excursionista de Catalunya, in relation with the Sección de Ecología del Cuaternario of the Institut J. Almera (CSIC, Barcelona), managed by J.F. de Villalta. In addition to the Museum catalog number, we note the excavation square.

- V30014 (A13). *Arvicola sapidus* Miller, 1908, 1 first lower left molar.
- V30930 (Bolsa A). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar.
- V30932 (B12). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar, 1 first lower left molar.
- V3936 (B12). *Pliomys lenki* (Heller, 1830), 1 first lower right molar.
- V3937 (B15). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
- V3940 (A9). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar, 1 third lower right molar.
- V3941 (A12). *Eliomys quercinus* (Linnaeus, 1776), 1 fourth upper left premolar, 2 first upper molars.
- V3942 (B10). *Pliomys lenki* (Heller, 1830), 1 first lower left molar; *Microtus arvalis – agrestis* (Pallas, 1779 – Linnaeus, 1761), 1 first lower right molar.
- V3943 (B3). *Arvicola sapidus* Miller, 1908, 1 first lower left molar; *Apodemus sylvaticus* (Linnaeus, 1758), right maxillar.
- V3944 (B13). *Galemys pyrenaicus* (Geoffroy Saint-Hilaire, 1811), 1 second lower left molar.
- V3953 (A10). *Eliomys quercinus* (Linnaeus, 1776), 1 fourth lower left premolar.
- V3955 (A10). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar, 1 first lower right molar, 2 first upper left molars.

-
- V3957 (A6). *Microtus oeconomus* Pallas, 1776, 1 first lower left molar.
 - V3958 (B12). *Eliomys quercinus* (Linnaeus, 1776), 1 first lower left molar, 1 first upper right molar.
 - V3960 (B13). *Pliomys* sp., 2 first lower molars.
 - V3961 (B13). *Crocidura* sp., 1 first lower left molar.
 - V3962 (B12). *Apodemus flavicollis* (Melchior, 1834), 2 first lower left molars, 1 first upper right molar, 1 second upper left molar.
 - V3964 (B84). *Rhinolophus* sp., 1 humerus.
 - V3965 (A9). *Allocricetus bursae* Schaub, 1930, 1 second lower molar, 1 third lower molar.
 - V3966 (A12). *Allocricetus bursae* Schaub, 1930, 1 second upper right molar.
 - V3967 (A12). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
 - V3969 (A8). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar; *Pliomys lenki* (Heller, 1830), 2 first lower right molars, 1 first lower left molar.
 - V3970 (B12). *Iberomys* sp., 1 first lower right molar.
 - V3971 (B13). *Sorex* sp., 1 right jaw.
 - V3972 (B13). *Pliomys* sp., 1 second upper right molar.
 - V3973 (B12). *Plecotus auritus* (Linnaeus, 1758), 1 right jaw.
 - V3976 (B14). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar.
 - V3977 (A9). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
 - V3978 (A12). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 2 first lower right molars, 2 first lower left molars.
 - V3980 (B13). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar; *Pliomys* sp. 1 first lower right molar.
 - V3986 (B12). *Galemys pyrenaicus* (Geoffroy Saint-Hilaire, 1811), 1 third lower right molar.
 - V3986 (B13). *Allocricetus bursae* Schaub, 1930, 2 first lower left molars, 3 second lower left molars, 1 third lower molar.
 - V3988 (B84). *Myotis myotis* (Borkhausen, 1797), 2 femur.
 - V3989 (A10). *Allocricetus bursae* Schaub, 1930, 1 first upper left molar.
 - V3990 (A10). *Microtus arvalis* (Pallas, 1779), 2 first lower right molars, 1 first lower left molar.
 - V3991 (A10). *Pliomys lenki* (Heller, 1830), various molars.
 - V3993 (B12). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar.
 - V3994 (B12). *Citellus* sp., various molars and premolars.

-
- V3995 (B12). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar.
 - V3996 (B13). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar; *Microtus agrestis* (Linnaeus, 1761), 1 first lower left molar.
 - V3997 (B13). *Rhinolophus* sp., canine tooth.
 - V3999 (B14). *Eliomys quercinus* (Linnaeus, 1776), 1 second lower left molar.
 - V31001 (A12). *Pliomys lenki* (Heller, 1830), 1 first lower right molar, 1 first lower left molar.
 - V31002 (A12). *Microtus arvalis* (Pallas, 1776), 1 first lower left molar.
 - V31005 (B9). *Arvicola sapidus* Miller, 1908, 1 first lower left molar.
 - V31011 (B12). *Pliomys* sp., 2 first lower left molars.
 - V31017 (A9). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.
 - V31018 (B13). *Eliomys quercinus* (Linnaeus, 1776), 1 fourth lower premolar, 1 first lower molar, 1 second lower molar, 1 third upper molar.
 - V31020 (B12). *Rhinolophus* sp., 1 right jaw.
 - V31023 (A11). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
 - V31025 (A13). *Citellus* sp., 1 first upper right molar.
 - V31026 (A10). *Rhinolophus* sp., 1 right jaw.
 - V31030 (B13). *Sorex* Linnaeus 1758, 1 left jaw.
 - V31031 (B13). *Pliomys lenki* (Heller, 1830), 1 first lower right molar, 1 first lower left molar.
 - V31032 (B12). *Microtus arvalis* (Pallas, 1776), 3 first lower right molars, 2 first lower left molars; *Microtus agrestis* (Linnaeus, 1761), 1 first lower right molar, 1 first lower left molar.
 - V31033 (B12). *Arvicola terrestris* (Linnaeus, 1758), 1 first lower left molar.
 - V31035 (B14). *Allocrietus bursae* Schaub, 1930, 1 first lower left molar, 1 second lower left molar.
 - V31036 (A12). *Microtus arvalis* (Pallas, 1779), 2 first lower left molars.
 - V31037 (A13). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
 - V31040 (B4). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.
 - V31041 (A12). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar. *Microtus agrestis* (Linnaeus, 1761), 1 first lower right molar.
 - V31042 (B12). *Arvicola terrestris* (Linnaeus, 1758), 1 first lower left molar.
 - V31043 (B13). Chiroptera indet., right jaw.
 - V31044 (B12). *Allocrietus bursae* Schaub, 1930, various molars.
 - V31047 (B84). *Rhinolophus ferrumequinum* (Schreber, 1774), 2 humerus, 1 femur.

-
- V31049 (A12). *Crocidura* sp., 1 left jaw.
 - V31051. *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
 - V31052. *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower molar, 1 second lower molar.
 - V31059 (B3). *Rhinolophus* sp., 1 first or second upper right molar.
 - V31060 (B10). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar, 1 first lower right molar.
 - V31061 (B7). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.
 - V31064 (B10). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first upper molar, 1 second upper molar.
 - V31069. *Hystrix* sp., 1 premolar, 2 molars.
 - V31070 (A8). *Microtus agrestis* (Linnaeus, 1761), 1 first lower right molar.
 - V31071 (A7). *Galemys pyrenaicus* (Geoffroy Saint-Hilaire, 1811), 1 first upper molar.
 - V31072 (BT7). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower left molar.
 - V31075 (B9). *Arvicola sapidus* Miller, 1908, 1 first lower left molar.
 - V31078 (A6). *Glis glis* (Linnaeus, 1766), 1 second upper left molar.
 - V31079 (B11). *Galemys pyrenaicus* (Geoffroy Saint-Hilaire, 1811), 1 second lower right molar, 1 third lower right molar.
 - V31096 (B11). *Allocricetus bursae* Schaub, 1930, 1 first lower left molar, 1 second lower left molar, 1 second upper right molar.
 - V31101 (19 estrat 7). *Marmota* sp., 1 left jaw.
 - V31102 (19 estrat 7). *Marmota* sp., 1 right jaw.
 - V31125 (BT7). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar, 1 second lower left molar.
 - V31126 (B8). *Galemys pyrenaicus* (Geoffroy Saint-Hilaire, 1811), 1 fourth upper premolar.
 - V31128 (bolsa A). *Pliomys* sp., 1 first lower left molar.
 - V31133 (B9). *Pliomys lenki* (Heller, 1830), 1 first lower left molar, 1 first lower right molar.
 - V31155 (B11). *Rhinolophus* sp., right jaw.
 - V31157 (B11). *Eliomys quercinus* (Linnaeus, 1776). 3 molars.
 - V31158 (BT5). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar, 1 second lower right molar, 1 first upper right molar, 1 third upper right molar.
 - V31159 (B4). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.

-
- V31160 (B3). Chiroptera indet., 1 first or second left lower molar.
 - V31162 (A8). *Pliomys lenki* (Heller, 1830), 1 first lower left molar, 1 first lower right molar.
 - V31164 (B9). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
 - V31165 (B10). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.
 - V31168 (B10). *Eliomys quercinus* (Linnaeus, 1776). 2 molars.
 - V31169 (A7). *Eliomys quercinus* (Linnaeus, 1776), 1 fourth upper molar.
 - V31170 (B11). *Pliomys lenki* (Heller, 1830), 1 first lower left molar, 2 first lower right molars.
 - V31171 (B13). *Citellus* sp., various molars.
 - V31174 (B9). *Allocricetus bursae* Schaub, 1930 various molars.
 - V31180 (B11). *Microtus arvalis* (Pallas, 1779), 2 first lower right molars.
 - V31181 (estrat 7). *Citellus* sp., 1 left jaw.
 - V31182 (B8). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar.
 - V31186 (bolsa B). *Sorex* sp., 1 left jaw.
 - V31188 (bolsa A). *Pliomys lenki* (Heller, 1830), 1 first lower left molar, 2 first lower right molars.
 - V31191 (A7). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
 - V31193 (A6). *Apodemus sylvaticus* (Linnaeus, 1758), 1 left jaw.
 - V31198 (bolsa A). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
 - V31199 (T5). *Microtus arvalis* (Pallas, 1779), 1 first lower left molar.
 - V31200 (B11). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
 - V31201 (B4). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
 - V31204 (B10). *Citellus* sp., 1 first lower molar.
 - V31205 (B5). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.
 - V31206 (A12). *Arvicola sapidus* Miller, 1908, 1 first lower right molar.
 - V31207 (A6). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
 - V31208 (A6). *Crocidura* sp., 1 first or second lower left molar.
 - V31214 (A8). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar.
 - V31215 (B11). *Microtus oeconomus* Pallas, 1776, 1 first lower left molar.
 - V31216 (B3). *Myotis* sp., 1 humerus.
 - V31217 (B11). *Arvicola sapidus* Miller, 1908, 1 first lower right molar.
 - V31218 (B4). *Pliomys lenki* (Heller, 1830), 1 first lower right molar.
 - V31219 (B6). *Pliomys lenki* (Heller, 1830), 1 first lower left molar.

- V31231 (B9). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar; *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower left molar.
- V31232 (B11). Chiroptera indet., 1 right jaw.
- V31233 (B9). *Eliomys quercinus* (Linnaeus, 1766), 1 first upper molar.
- V31234 (B9). *Myotis* Kaup, 1829, 1 humerus.
- V31235 (B3). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar; *Glis glis* (Linnaeus, 1766), 1 molar; *Allocricetus bursae* Schaub, 1930, 1 second lower left molar.
- V31236 (A7). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
- V31237 (A6). *Pliomys lenki* (Heller, 1830), 1 first lower right molar.

Cova del Gegant, Massif of Garraf, Sitges, Barcelona

Location: The cave is situated in the tip named Punta de les Coves, between the beaches of Rosés and Les Coves (Vilanova de la Geltrú, Sitges). It is the largest one of the place in size and the second one in depth (Ferrer, 1966).

Age: Late Pleistocene, Mousterian.

The material has been recovered during the excavation made in 1974 and 1975, at the instances of the Sección de Ecología del Cuaternario of the Institut Jaime Almera (CSIC, Barcelona), by a team managed by Ramón Viñas. In the excavation participated members of the Equip de Recerques Espeleològiques of the Centre Excursionista de Catalunya and of the A.R.S. of Barberà del Vallès (Viñas & Villalta, 1975).

- V2434. *Myotis myotis-blythi* (Borkhausen, 1797- Tomes, 1857), 1 right jaw.
- V2435. Chiroptera indet., 1 left jaw.
- V2672 (C2 50-60). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar.
- V2912 (C1 0-30). *Talpa* sp., humerus.
- V2926. *Miniopterus shreibersi* (Khul, 1817), 1 left jaw.
- V2997. *Crocidura* sp., 1 left jaw.
- V2998. *Crocidura* sp., 1 left jaw.
- V3027. *Myotis myotis-blythi* (Borkhausen, 1797- Tomes, 1857), 1 right jaw.
- V3087 (C4 0-30). *Apodemus* sp., 1 right jaw.
- V3175 (C5 0-30). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar.
- V3206 (C1 60). *Crocidura* sp., 1 right jaw.
- V3208 (C1 60-65). *Apodemus* sp., 1 first upper left molar, 1 left maxillar.
- V3232 (C1 60-65). *Crocidura* sp., 1 left jaw.

-
- V3234 (C2 40-50). *Crocidura* sp., 1 left jaw; *Microtus arvalis* (Pallas, 1779), 1 first lower left molar.
 - V3256 (C1 0-30). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower left molar.
 - V3266 (C2 5-10). Chiroptera indet., 1 left jaw.
 - V3276 (C1 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 2 first lower left molars, 3 first lower right molars, 2 second lower left molars, 3 second lower right molars.
 - V3277 (C1 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar; *Microtus arvalis* (Pallas, 1779), 1 first lower left molar; Chiroptera indet., 1 right jaw.
 - V3278 (C1 0-30). *Eliomys quercinus* (Linnaeus, 1776), 1 fourth upper left pre-molar, 1 first upper left molar.
 - V3279 (C1 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first upper right molar, 1 second upper right molar.
 - V3280. *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 2 first lower left molars.
 - V3281 (C1 0-30). *Iberomys* sp., 2 first lower left molars.
 - V3283 (C2 5-10). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar.
 - V3284 (C1 0-30). *Microtus agrestis* (Linnaeus, 1761), 1 first lower left molar.
 - V3285 (C1 0-30). *Eliomys quercinus* (Linnaeus, 1776), 3 molars, 1 fourth lower left premolar; *Apodemus sylvaticus* (Linnaeus, 1758), 2 first lower left molars.
 - V3286 (C1 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar, 1 second lower left molar, 1 third lower left molar.
 - V3287 (C4 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 4 first lower left molars, 2 first lower right molars.
 - V3288 (C1 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 2 right jaws, 1 left jaw, 2 maxillar; *Mus spretus* Lataste, 1883, 2 first lower right molars, 1 second lower right molar.
 - V3289 (C1 60). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar; *Microtus agrestis* (Linnaeus, 1761), 1 first lower right molar; *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar; *Myotis* sp., 1 right jaw.
 - V3290 (C2 5-10). *Crocidura* sp., 2 right jaws; *Apodemus sylvaticus* (Linnaeus, 1758), 3 first lower right molars, 2 first lower left molars, 1 second lower right molar, 1 third lower right molar, 2 left jaws; *Eliomys quercinus* (Linnaeus, 1776), 1 fourth upper premolar, 1 first upper molar; *Mus spretus* Lataste, 1883, 1 first lower right molar; *Miniopterus shreibersi* (Khul, 1817), 1 first molar, 1 second molar.
 - V3291 (C1 0-30). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar; *Iberomys* sp., 1 first lower right molar.

-
- V3292 (C2 60-70). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar, 3 first upper molars, 1 third upper molar; *Eliomys quercinus* (Linnaeus, 1776), 1 molar; *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar.
 - V3293 (C1 60-65). *Iberomys* sp., 1 first lower right molar; *Apodemus sylvaticus* (Linnaeus, 1758), 1 molar; *Eliomys quercinus* (Linnaeus, 1776), 1 fourth lower premolar.
 - V3294 (C1 0-30). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first upper left molar, 1 second upper left molar.
 - V3295 (C2 5-10). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first upper right molar; *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower left molar.
 - V3296 (C5 50-60). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar.
 - V3297 (C2 10-20). *Miniopterus shreibersi* (Khul, 1817), 1 right jaw.
 - V3298 (C2 10-20). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar, 1 second lower right molar; *Crocidura* sp., 1 first lower left molar.
 - V3299 (C1 0-0,30). *Rattus norvegicus* (Berkenhout, 1769), left maxillar.
 - V3302. *Rattus norvegicus* (Berkenhout, 1769), 1 first lower left molar.
 - V3303 (C5 0-20). *Apodemus sylvaticus* (Linnaeus, 1758), 2 first lower right molars, 1 third lower right molar; *Eliomys quercinus* (Linnaeus, 1776), 1 fourth upper premolar; *Microtus agrestis* (Linnaeus, 1761), 1 first lower right molar.
 - V3304 (C5 40-60). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar; *Crocidura* sp., 1 first lower left molar, 1 second lower left molar; *Erinaceus europaeus*, Linnaeus, 1758, 1 first or second molar.
 - V3305 (C1 50-60). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
 - V3306 (C2 20-30). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower left molar; *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar, 1 first lower left molar, 1 first upper molar; *Eliomys quercinus* (Linnaeus, 1776), upper molar; *Crocidura* sp., 1 right jaw, 1 lower second left molar.
 - V3308 (C1 60-65). *Microtus agrestis* (Linnaeus, 1761), 1 first lower left molar; *Apodemus sylvaticus* (Linnaeus, 1758), 1 third lower left molar; *Crocidura* sp., 1 left jaw; *Miniopterus shreibersi* (Khul, 1817), 1 right jaw.
 - V3309 (C1 70-75). *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower left molar.
 - V3310 (C5 20-40). *Iberomys* sp., 1 first lower right molar.
 - V3311 (C2 0-5). *Crocidura* sp., 1 second lower left molar.
 - V3312 (C2 30-40). *Iberomys* sp., 1 first lower left molar; *Microtus agrestis* (Linnaeus, 1761), 1 first lower left molar; *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar; *Eliomys quercinus* (Linnaeus, 1776), 1 molar.

- V3313 (C1 0-30). *Eliomys quercinus* (Linnaeus, 1776), 1 left jaw.
- V3314 (C2 10-20). *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar.
- V3315 (C1 65-70). *Microtus arvalis* (Pallas, 1779), 1 first lower right molar; *Eliomys quercinus* (Linnaeus, 1776), 1 fourth upper right molar; *Erinaceus europaeus*, Linnaeus, 1758, 1 molar.
- V3317 (0-25). *Hystrix cristata* (Linnaeus, 1758), 2 fourth lower left premolar, 1 first upper right molar, 1 third upper left molar.
- V3321 (C1 0-30). *Iberomys* sp., 1 first lower right molar; *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar; *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.

Cova dels Musclos, Massif of Garraf, Sitges, Barcelona

Location: At the tip named Punta de les Coves, between the beaches of Rosés and Les Coves, at 30 m of the Cova del Gegant. It can be distinguished by its large entrance, visible from the sea, from 13 m high and 5 m wide (Ferrer, 1966).

Age: Late Pleistocene, Mousterian

- V1704. *Apodemus sylvaticus* (Linnaeus, 1758), 4 first lower left molars, 1 first lower right molar; *Miniopterus shreibersi* (Khul, 1817), 1 left jaw.
- V1733. *Talpa* sp., humerus.
- V1735. Chiroptera indet., femur.
- V1736. Chiroptera indet., humerus.
- V1738. Chiroptera indet, femur.
- V1739. Chiroptera indet., humerus.
- V1851. *Apodemus sylvaticus* (Linnaeus, 1758), 9 first lower left molars, 8 first lower right molars.
- V1852. *Terricola duodecimcostatus* (de Sèys-Longchamps, 1839), 1 first lower right molar; *Terricola pyrenaicus* (de Sèys-Longchamps, 1847), 1 first lower right molar.
- V1853. *Iberomys* sp., 5 first lower left molars, 3 first lower right molars.
- V1854. *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower left molar, 1 first lower right molar; *Crocidura* sp., 1 first or second lower molar.
- V1855. *Iberomys* sp., 3 first lower left molars, 1 first lower right molar; *Apodemus sylvaticus* (Linnaeus, 1758), 3 first lower left molars, 5 first lower right molars; *Eliomys quercinus* (Linnaeus, 1776), 1 first or second lower molar; *Mus spretus* Lataste, 1883, 1 first lower right molar; *Crocidura* Wagler, 1832, 1 right jaw, 1 left jaw.
- V1856. *Iberomys* sp., 1 first lower left molar; *Apodemus sylvaticus* (Linnaeus, 1758), 5 first lower left molars, 3 first lower right molars; *Glis glis* (Linnaeus, 1766), 4 molars.

- V1857. *Apodemus sylvaticus* (Linnaeus, 1758), 2 first lower left molars, 3 first lower right molars; *Eliomys quercinus* (Linnaeus, 1776), 5 upper molars, 1 lower molar, 4 premolars; *Crocidura* sp., 1 second lower left molar, 1 second lower right molar, 1 third lower left molar, 1 third lower right molar; *Miniopterus shreibersi* (Khul, 1817), 1 right jaw.
- V1858. *Iberomys* sp., 1 first lower right molar; *Apodemus sylvaticus* (Linnaeus, 1758), 1 first lower right molar, 1 first lower left molar; *Eliomys quercinus* (Linnaeus, 1776), 1 fourth premolar.

Cova del Toll, Moià, Barcelona

Localitzation: This cave is near of the village of Moià, between this population and the city of Vic (Olot, Girona).

Age: Holocene (Neolithic)

- V1148. *Erinaceus europaeus* Linnaeus, 1758, 1 left jaw.
- V1161. *Talpa* sp., humerus.
- V1162. *Talpa* sp., humerus.
- V1163. *Talpa* sp., humerus.
- V1164. *Talpa* sp., humerus.
- V1165. *Talpa* sp., humerus.
- V1166. *Talpa* sp., humerus.
- V1167. *Talpa* sp., humerus.
- V1168. *Talpa* sp., humerus.
- V1169. *Talpa* sp., humerus.
- V1177. *Erinaceus europaeus* Linnaeus, 1758, 1 left jaw.
- V1178. *Erinaceus europaeus* Linnaeus, 1758, 1 left jaw.
- V1179. *Erinaceus europaeus* Linnaeus, 1758, 1 left jaw.
- V1199. *Microtus arvalis* (Pallas, 1779), 1 first lower right molar.
- V1200. *Terricola pyrenaicus* (de Sèys-Longchamps, 1847), 1 first lower left molar.
- V1202. *Pipistrellus* sp., 1 femur
- V1203. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1204. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1205. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1206. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1207. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1208. *Myotis myotis* (Borkhausen, 1797), 1 femur.

- V1209. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1210. *Myotis myotis* (Borkhausen, 1797), 1 femur.
- V1211. *Rhinolophus hipposideros* (Bechstein, 1800), 1 femur.
- V1212. *Rhinolophus hipposideros* (Bechstein, 1800), 1 humerus.
- V1241. *Talpa* sp., 1 right jaw.

Montjuïc (Girona)

Without data on location
Age: Middle-Upper Pleistocene

- V4185 (II). *Apodemus sylvaticus* (Linnaeus, 1758), 3 first upper molar, 1 third upper molar, 1 third lower molar, 1 first lower right molar.
- V4193. *Allocricetus bursae* Schaub, 1930, 1 first lower left molar, 3 others molars; *Crocidura* sp., 1 first or second lower right molar; *Erinaceus europaeus* Linnaeus, 1758, 1 premolar; *Myotis* sp., 1 left maxillar

CASTILLA Y LEÓN

Palacio de la Sierra (Burgos)

Localitzation: Without data on location
Age: Middle-Upper Pleistocene

- V6559. *Iberomys* sp., 1 first lower left molar.
- V6562. *Iberomys* sp., 2 first lower right molars, 1 first lower left molar.
- V6564. *Iberomys* sp., 2 first lower right molars, 1 first lower left molar.
- V6565. *Iberomys* sp., 2 first lower left molars.
- V6566. *Talpa* sp., 1 right jaw.
- V6569. *Erinaceus europaeus* Linnaeus, 1758, 1 left jaw.

ANDALUCÍA

Cueva del Agua (Cerro de las Montillas, Granada)

Location: The cave is situated in the Pico del Asno of the Sierra Harana. Latitude, 37° 46' 0". Longitude, 3° 1' 0". Altitude, 1750 m.

Age: Middle to Late Pleistocene.

It is one of the largest cave of the province of Granada, with a difference in height of 180 m. and a total length of 3000 metres.

- V8567. *Crocidura* sp., 4 left jaw, 3 right jaw, 1 upper incisor, 1 second lower left molar; *Sorex* sp., 1 right maxilla; Chiroptera indet., 1 right maxilla; *Eliomys quercinus* Wagner, 1840, 1 fourth lower premolar.

DISCUSSION

From a biogeographical point of view, the analysis of the material kept at the MGB indicates that several species of rodents changed its range in the Iberian Peninsula across the Middle-Upper Pleistocene and the beginning of the Holocene, as evidenced by their present distribution. This is the case, for instance, of the living *Iberomys cabreræ*, a species which can be considered as the descendant of the Middle Pleistocene *Iberomys brecciensis* and that appears at the beginning of the late Pleistocene (Chaline, 1972; Cabrera *et al.*, 1982). We can find *Iberomys cabreræ* or advanced *Iberomys brecciensis* populations in a number some sites of Middle-Late Pleistocene age, such as Cova del Gegant, Cova dels Musclos and Cova Olopte B. This is also the case of some other Late Pleistocene sites not being the subject of this paper, such as Abric Romaní (Capellades, Barcelona; López-García & Morales-Hidalgo, 2007). However, the present distribution of *Iberomys cabreræ* includes a number of Iberian Mountain ranges, around the Sistema Central, the Sistema Ibérico meridional and the Sierras subéticas (Blanco, 1998), but not Catalonia.

Other cases include species that are no longer present in Iberia, such as *Microtus oeconomus*, *Hystrix cristata* and those of the genus *Citellus*. *Microtus oeconomus* is a rodent that appears in the Middle-Upper Pleistocene at the Iberian Peninsula. Their representation in the Upper Pleistocene of Cantabrian Region is very high. Its last mentions provides from a roman layer of Amalda Cave (Basc Country) (Peman, 1990), and a layer of the beginning of Bronze Age at the El Miron Cave (Cantabria) (Altuna *et al.*, 2004).

This species is represented nowadays in Central Europe (Schilling *et al.*, 1987).

Hystrix (porcupine) is a genus well represented in some sites of Lower - Middle Pleistocene as Atapuerca TD3 to TD8 (*Hystrix refossa*) or Atapuerca Galeria (*Hystrix (Acanthion) vinogradovi*) (Cuenca Bescós *et al.*, 2001; Cuenca Bescós *et al.*, 2006). *Hystrix cristata* disappear of the Iberian Peninsula at the beginning of the Upper Pleistocene, as demonstrated its presence at the Level II of the "Cova del Gegant" (Alcalde, 1986).

Currently in Europe we find this species in Sicilia and the Italic Peninsula, probably reintroduced in the roman period (Schilling *et al.*, 1987).

We find the genus *Citellus* at the "Cova d'Olopte B", its last date appearance at the Iberian Peninsula is in the level of 15 Ky B.P. from the Arbreda Cave (Girona) (Alcalde & Brunet-Lecomte, 1985; Alcalde, 1986; Alcalde & Galobart, 2002).

It have a nowadays Central Europe distribution.

We can observe two big extinctions during the Iberian Peninsula Upper Pleistocene. The first one is *Pliomys lenki*, a species well represented in the Middle Pleistocene, and the first part of the Upper Pleistocene (128-35 Ky B.P.) in the north of Iberia. The last mention of its species is documented in Las Caldas (Cantabria) (17 Ky B.P.) (Laplana *et al.*, 2006), Amalda (Basc Country) (17 Ky B.P.) (Peman, 1990) and El Juyo (Cantabria) (14 Ky B.P.) (Pokines, 1998).

The second one, *Allocrietus bursae* is an abundant species at the Middle Pleistocene and early Upper Pleistocene of the Iberian Peninsula. We can find it at the Upper Pleistocene of "Cova Negra" (Alacant) (30 Ky B.P.) (Guillem 1995a; Guillem 1995b; Guillem, 2001) and Cueva Ambrosio (Granada, Andalusia) dated between 17-16 Ky B.P. (Sesé & Soto, 1988).

Finally, we can find in this paper species that appears in the Iberian Peninsula at the beginning of the Holocene period, as *Mus spretus*. A species, that we find its first mention in the ancient Neolithic levels of the Bolumini Cave (Alacant) (Guillem, 1995a; Guillem, 1995b; Guillem, 1999). Another one is *Rattus norvegicus* introduced at the Iberian Peninsula in the historic period (roman or Middle Age).

ACKNOWLEDGEMENTS

We want to thank Julio Gómez-Alba, curator of the Museu de Geologia de Barcelona for permitting us the study of the material in his care and for useful comments on the presentation of the manuscript. Juan Manuel López-García is beneficiary of a predoctoral research fellowship from the "Generalitat de Catalunya", aid financed by the Social European Fond. This paper is part of the project CGL2006.4548/BTE of the Spanish Ministry of Education and Science.

	Begur 1	Cau del Duc	Cova Olopte B	Montjuic	Palacio de la Sierra	Cova del Gegant	Cova dels Musclos	Cueva del Agua	Begur 3	Brecha de Begues	Cova del Toll	Cal Ferrer
Rodentia												
<i>Microtus arvalis</i>			*			*					*	
<i>Microtus agrestis</i>			*			*						
<i>M. arvalis-agrestis</i>			*									
<i>Microtus oeconomus</i>			*									
<i>Pliomys lenki</i>			*									
<i>I. brecciensis-cabrerae</i>			*		*	*	*					
<i>T. duodecimcostatus</i>		*	*			*	*					*
<i>T. pyrenaicus</i>		*					*				*	*
<i>Arvicola sapidus</i>		*	*									
<i>Apodemus sylvaticus</i>			*	*		*	*		*	*		*
<i>Apodemus flavicollis</i>			*									
<i>Mus spretus</i>						*	*		*			*
<i>Rattus norvegicus</i>						*						
<i>Eliomys quercinus</i>	*		*			*	*	*	*	*		
<i>Glis glis</i>			*				*					
<i>Allocricetus bursae</i>	*		*	*								
<i>Hystrix</i> sp.			*			*						
<i>Marmota</i> sp.			*									
<i>Citellus</i> sp.			*									
Eulipotyphla												
<i>Crocidura</i> sp.			*	*		*	*	*		*		
<i>Sorex</i> sp.			*					*				
<i>Talpa</i> sp.					*	*	*				*	
<i>Galemys pyrenaicus</i>			*									
<i>E. europaeus</i>				*	*	*					*	
Chiroptera												
<i>Myotis myotis</i>			*								*	
<i>M. myotis-blythi</i>						*						
<i>Myotis</i> sp.			*	*		*						
<i>Miniopterus shreibersi</i>						*	*					
<i>Pipistrellus</i> sp.											*	
<i>Pleoctus auritus</i>			*									
<i>R. ferrumequinum</i>			*									
<i>R. hipposideros</i>											*	
<i>Rhinolophus</i> sp.			*									

Table 1. Middle-Upper Pleistocene and Holocene micromammals material from the Museu de Geologia de Barcelona collection.

Tabla 1. Micromamíferos del Pleistoceno Medio-Superior y Holoceno de la colección del Museu de Geologia de Barcelona.

REFERENCES

- Alcalde, G. 1986. *Les faunes de rongeurs du Pléistocène supérieur et de l'Holocène de Catalogne (Espagne) et leurs significations paléocéologiques et paléoclimatiques*. Diplôme E.P.H.E., Paris. 114 p.
- Alcalde, G. & Brunet – Lecomte, P. 1985. Contribució al coneixement del medi i el clima durant el Pleistocè superior i l'holocè a Catalunya, amb l'aplicació de l'anàlisi factorial de les correspondències a les associacions de rosegadors. *Paleontología i Evolució* **19**: 49 -55.
- Alcalde, G. & Galobart, A. 2002. Els petits mamífers del pleistocè superior. In: Maroto, J., Ramió, S. & Galobart, A (eds.), *Els vertebrats fòssils del Plà de l'Estany*, Banyoles, Quaderns, **23**: 141-154.
- Altuna, J., Cuenca Bescós, G., Elorza, M., García, J.C., Lobo, J., Mariezkurrena, K., Pérez, M., Sanchiz, B., González, M. & Guy, L. 2004. "Post - pleistocene faunas from the archaeological site of El Miron cave (Ramales de la Victoria, Cantabria, Spain). In: Baquedano, E. & Rubio Jara, S.(eds.), *Miscelánea en homenaje a Emiliano Aguirre*, **4**: 41-49.
- Blanco, J. C. 1998. *Mamíferos de España II. Cetáceos, Artiodáctilos, Roedores y Lagomorfos de la Península Ibérica, Baleares y Canarias*. Madrid: Planeta. 383 p.
- Borrás, J., Miñarro, J.M. & Talavera, F. 1978. *Catàleg espeleològic de Catalunya (l'Alt Urgell i la Cerdanya)*. Barcelona: Poliglota, Tècnica i Documentació. 166 p.
- Cabrera, M., López Martínez, N. & Michaux, J. 1982. Un exemple de lignée endémique iberocitane, les campagnols *Microtus brecciensis* et *Microtus cabreræ* (Mammalia, Rodentia): étude phylogénétique et contexte écologique d'un phénomène évolutif récent. In: G.Cuvier (Ed.), *Actes du symposium paléontologique*, Montbeliard: 69-83.
- Chaline, J. 1972. *Les Rongeurs du Pléistocène Moyen et Supérieur de France. (Systématique, Biostratigraphie, Paléoclimatologie)*. Paris: C.N.R.S. 410 p.
- Cuenca Bescós, G., Canudo, J.I., & Laplana, C. 2001. La séquence des rongeurs (Mammalia) des sites du Pléistocène inférieur et moyen d'Atapuerca (Burgos, Espagne). *L'Anthropologie*, **105**: 115-130.
- Cuenca Bescós, G., Galindo Pellicena, Díez, C. & López-García, J.M. 2006. Los microvertebrados del Pleistoceno Medio de la Covacha de los Zarpazos (TZ, Atapuerca, Burgos). In: Fernández-Martínez, E. (ed.), *Libro de resúmenes XXII Jornadas de la Sociedad Española de Paleontología*: 21-23.
- Ferrer, A. 1966. Las Caves de Sitges. *Cavernas*, **7**: 216-219.
- Guillem, P. 1995a. Paleontología continental: microfauna. In: *El Cuaternario del País Valenciano*, Universidad de Valencia: 227-233.
- Guillem, P. 1995b. Bioestratigrafía de los micromamíferos (*Rodentia*, Mammalia) del Pleistoceno Medio, Superior y Holoceno del País Valenciano. *Saguntum* **38**: 11-18.

- Guillem, P. 1999. Los micromamíferos (Rodentia, Insectivora y Chiroptera) de la Secuencia Holocena de la Cova de les Cendres y Cova Bolumini. *II Congrès de Neolític a la Península Ibérica, SAGUNTUM-PLAV, Extra-2*: 31-36.
- Guillem, P. 2001. Los micromamíferos y la secuencia climática del Pleistoceno Medio, Pleistoceno Superior y Holoceno, en la fachada central mediterránea. In: Villaverde, V. (ed), *De Neandertales a Cromañones. El inicio del poblamiento humano en las tierras valencianas*: 57-449.
- Laplana, C., Sevilla García, P., López Martínez, N., & Corchón Rodríguez, M.S. 2006. Primeros datos sobre los micromamíferos (Roedores, Insectívoros, Quirópteros y Lagomorfos) del Solutrense (Pleistoceno Superior final) de la Cueva de las Caldas (Oviedo, Asturias). In: Fernández-Martínez, E. (ed.), *Libro de resúmenes XXII Jornadas de la Sociedad Española de Paleontología*: 137-139.
- López, N., Michaux, J. & Villalta, J.F. 1976. Rongeurs et lagomorphes de Bagur-2 (Province de Gérone, Espagne). Nouveau remplissage de fissure du début du Pléistocène moyen. *Acta Geologica Hispanica*, **11**: 46-54.
- López-García, J.M. & Morales-Hidalgo J.I. 2007. Análisis preliminar de los roedores (Mammalia) del nivel Nb del Abric Romaní (Capellades, Barcelona). In: Almècija, S., Casanovas-Vilar, I., Furió, M., Madurell, J., Marmi, J. & Vila, B. (eds.), *Actas del III Encuentro de Jóvenes Investigadores en Paleontología*: 95-103.
- Monzonis, F. 1975. Resumen de las campañas paleontológicas en la Cueva "B" de Olopte (Pirineos Orientales). *Speleon, Monografía 1*: 77-79.
- Peman, E. 1990. Los micromamíferos de la cueva de Amalda y su significado. Comentarios sobre *Pliomys lenki* (Heller, 1930) (Rodentia, Mammalia). In: Altuna, J., Baldeón, A. & Mariezkurrena, K (eds), *La cueva de Amalda (Zestoa, País Vasco). Ocupaciones paleolíticas y postpaleolíticas*, San Sebastián, Colección Barandiarán. Sociedad de Estudios Vascos, **4**: 225-238.
- Pokines, J. 1998. *The Paleoeology of Lower Magdalenian Cantabrian Spain*. BAR International Series 713, Oxford. 189 p.
- Schilling, D., Singer, D. & Diller, H. 1987. *Guía de los Mamíferos de Europa*. Omega: Barcelona. 294 p.
- Sesé, C. & Soto, E. 1988. Los micromamíferos (Rodentia, Insectívora y Lagomorpha). In: Ripoll López, S. (ed), *La Cueva de Ambrosio (Almería, Spain) y su posición cronoestratigráfica en el Mediterráneo Occidental*. BAR International Series 462: 157-168.
- Villalta, J.F. de. 1974. Presencia de la marmota y otros elementos de la fauna estépica en el pleistoceno catalán. *Speleon*, **21**: 119-124.
- Viñas, R. & Villalta, J.F. de. 1975. El depósito cuaternario de la "Cova del Gegant". *Speleon, Monografía 1, V Symposium de Espeleología*: 19-33.

