

# Spain

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## Introduction

Spain, with its many Cenozoic continental basins, has one of the finest fossil records of mammals in the world. The presence of nearly continuous sections with mammal localities make some of these basins ideal for defining mammalian continental stages, such as the Ramblian, Aragonian, Vallesian and Turolian.

The first mention of fossils mammals in Spain, and one of the first scientific essays on fossil bones in the world, dates back to the beginning of the eighteenth century, when Benito Jerónimo Feijoo (1736) described the presence of bones near Conclud in "El Barranco de las Calaveras" (the valley of the skulls). Feijoo ascribed the numerous bones to a battle in antiquity.

More localities were discovered and classical localities like Los Mansuetos were already known early in the history of palaeontology. However, the systematic investigation of the fossil mammals from Spain started in the 1940s. The main driving force was Miquel Crusafont Pairó from Sabadell. Trained as a pharmacist, Crusafont was one of the leading palaeontologists of his days, becoming professor of Paleontology at the University of Barcelona, and founder director of the Institute of Paleontology in Sabadell that took his name after his death on 1983. Together with his co-workers Josep Villalta Comella and Jaume Truyols Santonja, Crusafont published a series of papers on mammals from the Vallès-Penedès area. The fossils they collected formed the basis of the Institute Miquel Crusafont. Crusafont's main field of interest were the carnivores, but in his publications he also gave the first descriptions of Spanish insectivores, such as the erinaceids *Lantanothereium sanmigueli* Villalta & Crusafont, 1944, *Palerinaceus vireti* Crusafont & Villalta, 1947, *Lantanothereium piveteaui* Crusafont, Villalta & Truyols, 1955 and *Mioechinus butleri* Crusafont, Villalta & Truyols, 1955.

The systematic study of micromammals started in Spain, as it did elsewhere in Europe, in the 1960s. The co-operation between Miquel Crusafont and Professor Ralph

von Koenigswald of the University of Utrecht was of great importance for initiating this type of research in Spain. As apes were known from Spanish localities such as Can Llobateres, Spain was a promising area for Von Koenigswald, who had built a reputation in palaeoanthropology. Von Koenigswald sent his Ph.D. students out to the Teruel Basin. Paul Sondaar studied *Hipparion* from the area, while Thijs Freudenthal and Hans de Bruijn set out to build a stratigraphical framework for the Daroca-Calatayud area using rodents. Their work demonstrated the richness of the Spanish micromammal record.

The continuing co-operation between Dutch and Spanish universities and museums lead to a series of Ph.D. theses on micromammals (e.g. Van de Weerd, 1976; Daams, 1981; Cuenca-Bescós, 1987; Álvarez-Sierra, 1987; Van Dam, 1997), and also to the definition of continental stages like the Ramblian (Daams *et al.*, 1987) and Aragonian (Daams *et al.*, 1977). This work primarily concentrated on the rodents of the various localities. Insectivores played a minor role. The only Ph.D. thesis that dealt exclusively with insectivores was the one of Gibert (1974). This thesis combined the insectivore data from the Vallès-Penedès Basin with those from the localities sampled by De Bruijn and Freudenthal. It gave the first overview of the Neogene insectivores from Spain and, as such, can be considered the direct precursor of the present article. However, collections in those days were small and Gibert did not have many large assemblages available.

The introduction of large wet washing sieves, nicknamed *La mesa holandesa* (the Dutch table), allowed sampling on a much larger scale. Such collecting campaigns were organised by Daams and Freudenthal in the Calatayud-Daroca sub-basin, as part of their project to define continental stages using micromammals. More to the south in the Teruel Basin, Van de Weerd made large collections from Upper Miocene and Pliocene localities. Since the aim of these projects was to refine the biostratigraphy, insectivores received relatively little attention. Erinaceomorpha and Soricomorpha are far less abundant than rodents, and at the time the taxonomy of many insectivore groups still needed to be elaborated. Therefore, insectivores were not considered suitable for biostratigraphical purposes. Rümke (1974) defined *Desmanella crusafonti* on the basis of the large talpid assemblage from Concud 3 and included material from various Spanish localities in her Ph.D. thesis, a review on desmanine moles (Rümke, 1985).

Apart from this last work, at the end of the 1970s, and during the 1980s, the Neogene insectivores from Spain appeared more often in faunal lists than in detailed faunal descriptions (e.g., Agustí & Galobart, 1986; Agustí & Gibert, 1979a, 1979b, 1982a, 1982b; Agustí *et al.*, 1979, 1981; López-Martínez, 1989; Sesé *et al.*, 1985, 1990). De Jong (1988) described the insectivores from the Upper Aragonian and Lower Vallesian as part of a volume dedicated to the Neogene faunas in the Daroca-Calamocha area (Freudenthal, 1988). De Jong's paper was an example of a new perspective on insectivores. Until that time, most fossil insectivores were published in monographs elaborating the taxonomy of various groups. However, as the focus of mammal palaeontology shifted from biostratigraphical to palaeoecological studies, the need to document the entire micromammal assemblage rather than just the rodents was recognised.

In the case of the study of the Aragonian type section the shift in focus towards palaeoecology also led to much denser sampling, resulting in a large number of new localities (Daams *et al.*, 1999). The insectivores of this project were offered for study by the late Remmert Daams to one of us (LHO), which was his introduction to Spanish insectivore palaeontology. At the same time Thijs Freudenthal offered the insectivores

from the area in the collections of Naturalis. Until now, papers have appeared on the genus *Desmanodon* (Van den Hoek Ostende, 1997), and the Ramblian insectivores (Van den Hoek Ostende, 2003a). The Spanish material was also included in a discussion on the distribution of the erinaceid *Galerix symeonidisi* (Van den Hoek Ostende & Doukas, 2003). Much of the material, however, has not yet been published and the preliminary results appear here for the first time.

A good example of how insectivores are used as an integral part of smaller mammal studies is the work of Jan van Dam (Utrecht University) on the faunas of the northern Teruel Basin. Insectivores were included in the faunal lists (Van Dam, 1997; Van Dam *et al.*, 2001), were used as humidity indicators and a study of the Anousoricini in the section showed how the temporal occurrence of these shrews in the area correlates with deep-sea isotope events (Van Dam, 2004). Such correlations are possible because of the presence of long continuous sections, which have been dated with the help of palaeomagnetism.

The insectivores from the Vallès-Penedès Basin had not been studied since Gibert. Here also, many new localities had been discovered, particularly through the work of Jordi Agustí of the Institut Miquel Crusafont, Sabadell, in collaboration with stratigraphers from the University of Barcelona, Lluís Cabrera and Miquel Garcès. Agustí enticed the other author of the present paper (MF) to work on the insectivores in the Sabadell collections for his studies, resulting in a number of papers (Casanovas-Vilar *et al.*, research in progress, Furió *et al.*, 2005a, b). Nowadays, the studies are focussed on the insectivores from some upper Miocene localities (i.e., Vallès-Penedès, Cerdanya, Empordà and Fortuna basins), as well as some others from the Pliocene (i.e., Guadix-Baza or Almenara-Casablanca karstic complex). Here, too, some of the faunal lists in the present paper are the result of still ongoing investigations.

While compiling the fossil record of Spanish insectivores for WINE, we learned that a lot of work has been done over the years. Our listing is by far longest of the WINE volume, which attests of the richness of the mammal record in Spain. At the same time, we learned that there is still a lot of material that needs to be studied. So far, relatively few detailed descriptions on Spanish insectivores have been published, compared to those of the rodents of the Iberian Peninsula or to insectivores in, e.g., Central Europe. Many of the identifications listed in the volume are preliminary, and often the taxonomy of listings retrieved from the literature was out-dated. Wherever possible we have tried to bring it up to date, but in many cases this is not possible without consulting the original material, and such studies are outside the scope of the present paper. They do, however, provide new challenges for future work.

The acronyms used in this article are:

CARB	Collection A. Ruiz-Bustos
DEPUG	Departamento de Estratigrafía y Paleontología, Universidad de Granada
DGA	Diputación General de Aragón
DGUV	Departamento de Geología de la Universitat de València
DPUCM	Departamento de Paleontología de la Universidad Complutense Madrid
FSL	Faculte Sciences Lyon, France
ILM	Sección de Paleontología de Vertebrados y Humana del Instituto Lucas Mal-lada
IVAU	Instituut voor Aardwetenschappen (Faculty of Geosciences) Utrecht, The Netherlands

IPMC	Institut de Paleontologia Miquel Crusafont de Sabadell, Barcelona
MdN	Museo de Navarra
MNCN	Museo Nacional de Ciencias Naturales, Madrid
MPUZ	Museo Paleontológico de la Universidad de Zaragoza
MPV	Museo Paleontológico Municipal de Valencia
NNM	Nationaal Natuurhistorisch Museum Naturalis, Leiden, The Netherlands.

### Insectivore faunas from the Neogene of Spain

#### MN 2

##### Cetina de Aragon

*Location* – Province of Zaragoza, Duero Basin.

*Stratigraphy* – Zone Y1.

*Literature* – Daams (1976), Morales & Soria (1984).

*Insectivores* – Talpidae: cf. *Paratalpa*. Soricidae: Soricidae indet, *Heterosorex* sp.

*Taxonomic descriptions* – The insectivores from Cetina de Aragon are here listed for the first time. The talpid genera *Paratalpa* and *Desmanodon* can only be identified on basis of the humeri (Van den Hoek Ostende, 1989). The identification cf. *Paratalpa* is based on the inferred stratigraphical range of the genus in Europe (Van den Hoek Ostende, 1997).

*Storage of material* – IVAU.

#### Fuenmayor 2

*Location* – Province of La Rioja, Ebro Basin [N 42°27'36" W 2°34'42"].

*Stratigraphy* – Zone Y.

*Literature* – Martínez-Salanova Sánchez (1987).

*Insectivores* – Soricidae: *Oligosorex* cf. *thauensis* (Crochet, 1975).

*Taxonomic descriptions* – Martínez-Salanova Sánchez (1987) described and discussed the material found as *Crocidosorex* cf. *thauensis*.

*Storage of material* – DPUCM.

#### Navarrette del Rio

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°93' W 1°25'].]

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams *et al.* (1987), Moyá-Solá (1987).

*Insectivores* – Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Soricella discrepans* Doben-Florin, 1964, *Clapasorex alvarezae* Van den Hoek Ostende, 2003, *Heterosorex* sp.

*Taxonomic descriptions* – Van den Hoek Ostende (1997) described the *Desmanodon*, and subsequently (2003a) gave descriptions for all of the insectivores except *Heterosorex*. *Heterosorex* was listed for Navarrette by Adrover (1972, 1975).

*Storage of material* – MNCN.

### MN 3

#### Agreda

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°85' W 1°93'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Oligosorex* aff. *thauensis* (Crochet, 1975).

*Taxonomic descriptions* – Van den Hoek Ostende (2003a) gave descriptions. In addition, the *Desmanodon* was also described in Van den Hoek Ostende (1997).

*Storage of material* – MNCN.

*Remarks* – The total absence of Erinaceomorpha in the quite sizable Agreda assemblage is considered remarkable (Van den Hoek Ostende, 2003a).

#### Alto de Ballester

*Location* – Rubielos de Mora Basin, Province of Teruel.

*Stratigraphy* – Ramblian, Zone A.

*Literature* – Montoya *et al.* (1996).

*Insectivores* – Talpidae: *Desmanella fejfari* Gibert, 1975, *Desmanodon daamsi* Van den Hoek Ostende, 1997, *Myxomygale* sp. Dimylidae: *Chainodus intercedens* (Müller, 1967). Soricidae: *Heterosorex* sp., Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Montoya *et al.* (1996) did not include the insectivores in their faunal list. The insectivores from Alto de Ballester are under study by LHO, and are herein presented for the first time.

*Storage of material* – MPUZ, MPV, DGUV.

*Remarks* – The absence of erinaceids in the locality is considered remarkable. Next to Agreda, Alto de Ballester is the only Spanish Ramblian locality in which apparently Erinaceomorpha are completely absent.

### Ateca 1

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°19' W 1°56'].

*Stratigraphy* – Ramblian.

*Literature* – De Bruijn (1967).

*Insectivores* – Erinaceidae: *Galerix* sp. Talpidae: *Desmanodon* sp. Soricidae: “*Oligosorex*” *bruijni* Gibert, 1975 (type locality).

*Taxonomic descriptions* – Gibert (1975a) described *Oligosorex bruijni* from Ateca I, a species that was considered to be of “unknown taxonomic affiliation” by Reumer (1994: 354). In his description of Ramblian insectivores from the Daroca-Calamocha area Van den Hoek Ostende (2003a) did not compare the shrews he encountered in the nearby Daroca-Calamocha area with this taxon. From the measurements given by Gibert (1975a), it is, however, clear that the species *bruijni* is not conspecific with either *Clapasorex alvarezae* or *Oligosorex* (aff.) *thauensis*. Gibert (1975b) also listed *Galerix exilis* and *Paratalpa micheli*. As *Galerix exilis* does not occur in the Ramblian (Van den Hoek Ostende, 2003a; Van den Hoek Ostende & Doukas, 2003), and the talpids are presumably represented by *Desmanodon*, a genus very similar to *Paratalpa*, the list has here been adjusted accordingly.

*Storage of material* – IVAU.

### Ateca 3

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°19' W 1°65'].

*Stratigraphy* – Ramblian.

*Literature* – De Bruijn (1967).

*Insectivores* – Erinaceidae: *Riddleria atecensis* van den Hoek Ostende, 2003 (type locality). Soricidae: “*Oligosorex*” *bruijni* Gibert, 1975.

*Taxonomic descriptions* – Gibert (1975b) listed *Oligosorex bruijni*, which according to Reumer (1994: 354) is of “unknown taxonomic affiliation”. López-Martínez (1989)

added *Galerix exilis* to the list, but the erinaceid fossils can certainly not be attributed to that species. Van den Hoek Ostende (2003b) described the peculiar erinaceid from Ateca in the new genus *Riddleria*.

*Storage of material* – IVAU.

### **Bañon 2**

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°50' W 1°11'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Oligosorex* aff. *thauensis* (Crochet, 1975).

*Taxonomic descriptions* – Van den Hoek Ostende (1997, 2003a) described the *Desmanodon* finds. The shrews were described in Van den Hoek Ostende (2003a).

*Storage of material* – NNM.

### **Bañon 5**

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°50' W 1°11'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix remmertii* Van den Hoek Ostende, 2003. Soricidae: Soricid gen. et sp. indet.

*Taxonomic descriptions* – The material of this locality was described by Van den Hoek Ostende (2003a).

*Storage of material* – NNM.

*Remarks* – The soricid is considered the same species as soricid gen. et sp. indet. from Moratilla 1 (Van den Hoek Ostende, 2003a).

### **Bañon 11**

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°50' W 1°11'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – The material was described by Van den Hoek Ostende (1997, 2003a).

*Storage of material* – NNM.

### **Barranco del Fraile**

*Location* – Province of Navarra, Ebro Basin [N 46°62' E 6°22'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Soricidae: *Oligosorex* cf. *thauensis* (Crochet, 1975).

*Taxonomic descriptions* – The material was described by Murelaga (2000) as cf. *Crocidosorex thauensis*.

*Storage of material* – MdN.

*Remarks* – The generic identification has been changed to *Oligosorex* for reasons given by Van den Hoek Ostende (2001a). *Oligosorex thauensis* and *O.* aff. *thauensis* are well known from co-eval localities in the Daroca-Calamocha area of the Teruel Basin (Van den Hoek Ostende, 2003a).

### **Barranco Tudela 3**

*Location* – Province of Navarra, Ebro Basin [N 46°61' E 6°22'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Erinaceidae: *Galerix* cf. *remmertii* Van den Hoek Ostende, 2003.

*Taxonomic descriptions* – A p2 or p3 and a p4 were described by Murelaga (2000).

*Storage of material* – MdN.

*Remarks* – Given the similarity of the *Galerix* material from the Ebro Basin to that from co-eval localities in the Teruel Basin (Van den Hoek Ostende, 2003a), the original identification of *Galerix* sp. has been tentatively changed to *G. remmertii*.



### **Cabezo Vaquero**

*Location* – Province of Navarra, Ebro Basin [N 46°61' E 6°28'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Soricidae: Soricidae indet.

*Taxonomic descriptions* – A single, damaged M1 of a soricid was described by Murelaga (2000).

*Storage of material* – MdN.

### **La Dahesa**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix remmertii* Van den Hoek Ostende, 2003.

*Taxonomic descriptions* – The two *Galerix* m3 from La Dahesa were included in the description of *G. remmertii* in Van den Hoek Ostende (2003a).

*Storage of material* – MNCN.

### **La Nasa 1**

*Location* – Province of Navarra, Ebro Basin [N 46°67' E 6°31'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Erinaceidae: *Galerix* cf. *remmertii* Van den Hoek Ostende, 2003. Soricidae: Soricidae indet.

*Taxonomic descriptions* – The insectivores of La Nasa 1 were described by Murelaga (2000).

*Storage of material* – MdN.

*Remarks* – Murelaga (2000) described the *Galerix* as *Galerix* sp. Since the material of this and other localities falls within the metrical and morphological variation of *G.*

*remmerti* from co-eval localities in the Teruel Basin as described by Van den Hoek Ostende (2003a), it is here tentatively placed in that species.

### **La Nasa 2**

*Location* – Province of Navarra, Ebro Basin [N 46°64' E 6°31'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Erinaceidae: *Galerix* cf. *remmerti* Van den Hoek Ostende, 2003.

*Taxonomic descriptions* – Murelaga (2000) described a P3 and a lower molar of *Galerix* sp. The material is here tentatively assigned to *Galerix remmerti*, a species well known from co-eval localities in the Teruel Basin (Van den Hoek Ostende, 2003a). Based on the description, the lower molar described by Murelaga is probably an m1.

*Storage of material* – MdN.

### **La Nasa 6**

*Location* – Province of Navarra, Ebro Basin [N 46°64' E 6°31'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Soricidae: Soricidae indet.

*Taxonomic descriptions* – A soricid m1 was described by Murelaga (2000).

*Storage of material* – MdN.

### **Mediavilla**

*Location* – Province of Navarra, Ebro Basin.

*Stratigraphy* – Ramblian, zone A.

*Literature* – Cuenca *et al.* (1992), Murelaga (2000).

*Insectivores* – Soricidae: Soricidae indet.

*Taxonomic descriptions* – The material was described by Murelaga (2000).

*Storage of material* – MPUZ.

### Moratilla 1

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°59' W 1°15'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Oligosorex* aff. *thauensis* (Crochet, 1975), Soricid gen. et sp. indet.

*Taxonomic descriptions* – The insectivores of Moratilla 1 were described by Van den Hoek Ostende (2003a). The *Desmanodon* from this locality was already discussed in Van den Hoek Ostende (1997).

*Storage of material* – NNM.

*Remarks* – The *Galerix* sp. from Moratilla 1 is the largest species in its genus. The soricid gen. et sp. indet. was also encountered in Bañon 5.

### Ramblar 1

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°56' W 1°15'].

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix remmertii* Van den Hoek Ostende, 2003 (type locality). Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997, *Myxomygale* sp. Soricidae: *Soricella discrepans* Doben-Florin, 1964, *Clapasorex alvarezae* Van den Hoek Ostende, 2003, *Oligosorex thauensis* (Crochet, 1975), *Heterosorex* sp.

*Taxonomic descriptions* – The insectivores from Ramblar 1 were described by Van den Hoek Ostende (2003a). The *Desmanodon* finds were also described in Van den Hoek Ostende (1997).

*Storage of material* – NNM.

*Remarks* – Ramblar 1 yielded the most diverse insectivore fauna of the Ramblian type section (Van den Hoek Ostende, 2003a).

### Ramblar 3

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°56' W 1°15'].

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix remmertii* Van den Hoek Ostende, 2003. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Clapasorex alvarezae* Van den Hoek Ostende, 2003 (type locality), *Oligosorex thauensis* (Crochet, 1975).

*Taxonomic descriptions* – The material was described by Van den Hoek Ostende (2003a). The *Desmanodon* finds were also discussed by Van den Hoek Ostende (1997).

*Storage of material* – MNCN.

#### **Ramblar 4**

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°56' W 1°15'].

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix* sp. Soricidae: *Oligosorex thauensis* (Crochet, 1975).

*Taxonomic descriptions* – The insectivores from Ramblar 4 were described by Van den Hoek Ostende (2003a).

*Storage of material* – MNCN.

*Remarks* – One large *Galerix* D3 was tentatively assigned to the same species as found in Moratilla 1 (Van den Hoek Ostende, 2003a).

#### **Ramblar 5**

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°56' W 1°15'].

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix remmertii* Van den Hoek Ostende, 2003. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – The *Desmanodon* finds were described by Van den Hoek Ostende (1997, 2003a), the *Galerix* by Van den Hoek Ostende (2003a).

*Storage of material* – MNCN.

### Ramblar 7

*Location* – Province of Zaragoza, northern Teruel Basin [N 40°56' W 1°15'].

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix remmertii* Van den Hoek Ostende, 2003. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Oligosorex thauensis* (Crochet, 1975).

*Taxonomic descriptions* – Van den Hoek Ostende (2003a) described the insectivores from Ramblar 7 in full, after having published the *Desmanodon* in an earlier paper (Van den Hoek Ostende, 1997).

*Storage of material* – MNCN.

### Rincón del Bu

*Location* – Province of Navarra, Ebro Basin [N 46°64' E 6°30'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Murelaga (2000).

*Insectivores* – Erinaceidae: *Galerix* cf. *remmertii* Van den Hoek Ostende, 2003. Soricidae: Soricidae indet.

*Taxonomic descriptions* – The fossils were described by Murelaga (2000).

*Storage of material* – MdN.

*Remarks* – The original identification *Galerix* sp. is here changed into *G.* cf. *remmertii*, since the material falls within the variation of that species.

### Rubielos de Mora 2

*Location* – Rubielos de Mora Basin, Province of Teruel.

*Stratigraphy* – Ramblian, Zone A.

*Literature* – De Bruijn & Moltzer (1974).

*Insectivores* – Erinaceidae: *Galerix* sp. Talpidae: *Desmanella fejfari* Gibert, 1975 (type locality), *Desmanodon daamsi* Van den Hoek Ostende, 1997 (type locality). Dimylidae: *Chainodus intercedens* (Müller, 1967). Soricidae: Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Gibert (1975a) described *Desmanella fejfari*. He listed for the locality *Galerix exilis*, *D. fejfari*, *Paratalpa micheli* and *Cordylodon intercedens*. Montoya *et al.* (1996) listed *Desmanella fejfari* and *Cordylodon intercedens* for Rubielos de Mora 2, and *Galerix* sp., *Sorex* sp. and Talpidae indet. for Rubielos de Mora 1. Van den Hoek Ostende (1997) described the material originally identified as *Paratalpa micheli* as a new species, *Desmanodon daamsi*. The species *intercedens* was transferred to the genus *Chainodus* by Ziegler (1990). The *Galerix* is herein listed as *Galerix* sp., as *G. exilis* is only known from clearly younger fauna's (Van den Hoek Ostende & Doukas, 2003).

*Storage of material* – IVAU.

#### San Roque 4A

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°12' W 1°30'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix remmerti* Van den Hoek Ostende, 2003. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Oligosorex* aff. *thauensis* (Crochet, 1975).

*Taxonomic descriptions* – The *Desmanodon* was first described by Van den Hoek Ostende (1997). The entire insectivore fauna was discussed in Van den Hoek Ostende (2003a).

*Storage of material* – MNCN.

#### San Roque 4B

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°12' W 1°30'].

*Stratigraphy* – Ramblian, zone A.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix remmerti* Van den Hoek Ostende, 2003, *G. cf. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – Descriptions of the insectivores were given by Van den Hoek Ostende (1997; *Desmanodon* only) and Van den Hoek Ostende (2003a).

*Storage of material* – MNCN.

*Remarks* – The presumed presence of *Galerix symeonidisi* in this locality was based on a single, small-sized M3 (Van den Hoek Ostende, 2003a).

### **Valhondo 1**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Ramblian, zone Z.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix remmerti* Van den Hoek Ostende, 2003. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Clapasorex alvarezae* Van den Hoek Ostende, 2003, *Oligosorex thauensis* (Crochet, 1975).

*Taxonomic descriptions* – The material was described by Van den Hoek Ostende (2003a); the *Desmanodon*-material was also documented in Van den Hoek Ostende (1997).

*Storage of material* – MNCN.

### **MN 4**

#### **Artesilla**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C.

*Literature* – Azanza *et al.* (1993).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986, cf. *Amphichinus*. Soricidae: Soricid 1, *Heterosorex* sp.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) commented on the presence of *Galerix symeonidisi* Doukas, 1986. The remaining insectivores are as yet unpublished.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **Buñol**

*Location* – Province of Valencia [N 39°25'40" E 0°47'40"].

*Stratigraphy* – Mid Orleanian (Adrover, 1968), Middle Aragonian (Daams, 1976).

*Literature* – Adrover (1968), Daams & Freudenthal (1974), Daams (1976), Belinchón & Robles (1984), Robles *et al.* (1991).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Galerix symeonidisi* Doukas, 1986, *Lantanotherium sansaniense* (Lartet, 1851), *Amphichinus baudelotae* Gibert, 1975.

Talpidae: *Desmanodon* sp. Soricidae: *Oligosorex collongensis* (Mein, 1958), *Heterosorex neu-mayrianus subsequens* (Doben-Florin, 1964), *Heterosorex ruemkeae* Doukas, 1986.

*Taxonomic descriptions* – Adrover (1968) gave a preliminary faunal list with *Galerix exilis*, *Heterosorex sansaniensis*, ?*Lantanotherium sansaniensis* and *Miosorex* sp., which was re-iterated by Belinchón & Robles (1984) and López-Martínez (1989). Dr. P. Mein (Lyon) gave new identifications for the insectivores for the faunal list Robles *et al.* (1991), listing *Galerix exilis*, *Amphichinus (Erinaceus) baudelotae*, ?*Lantanotherium sansaniensis*, cf. *Paratalpa*, *Heterosorex subsequens*, *H. ruemkeae*, *Oligosorex collongensis*. In the small collection from Buñol at the IVAU, we encountered *Galerix* P3 with a hypocone and some of the elements were relatively small. This suggests the presence of *G. symeonidisi* next to *G. exilis*, as has also been recorded in co-eval localities in the Teruel Basin (Van den Hoek Ostende & Doukas, 2003). As the common mole in Spanish MN 4 localities is *Desmanodon* (Van den Hoek Ostende, 1997), a genus with a dentition very similar to *Paratalpa*, Mein's identification of cf. *Paratalpa* has been changed to *Desmanodon* sp. The presence of two species of *Heterosorex* is highly remarkable, and should be re-evaluated.

*Storage of material* – IVAU.

### Can Cerdà (Papiol)

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°28'25" E 2°01'10"].

*Stratigraphy* – Burdigalian according to Crusafont *et al.* (1955); Mid-Orleanian according to López-Martínez (1989).

*Literature* – Crusafont *et al.* (1955), Golpe (1971).

*Insectivores* – Erinaceidae: *Lantanotherium piveteaui* Crusafont, Villalta & Truyols, 1955 (type locality)

*Taxonomic descriptions* – Crusafont *et al.* (1955) described *L. piveteaui*. The species is listed in Gibert (1974, 1975b) and López-Martínez (1989).

*Storage of material* – IPMC / Col·lecció Villalta.

*Remarks* – The original description by Crusafont *et al.* (1955) was given as *Lantanotherium (Rubitherium* nov. subgen.) *piveteaui* nova sp. *Rubitherium* was never reclassified as a genus (Casanovas-Cladellas, 1976). Given our still scanty knowledge on *Lantanotherium* the distinction of subgenera seems superfluous to say the least.

López-Martínez (1989) published this locality under the name Rubí-Papiol.

### El Canyet

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°27'15" E 1°59'50"].



*Stratigraphy* – Upper Burdigalian according to Crusafont *et al.* (1955). MN4b (Mid-Orleanian) according to López-Martínez (1989).

*Literature* – Crusafont *et al.* (1955).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839).

*Taxonomic descriptions* – *Galerix exilis* was cited in Gibert (1974, 1975b).

*Storage of material* – A small sample of El Canyet is stored at IPMC. However, no remains of *G. exilis* could be found there.

## Henares 2

*Location* – Province of Madrid, Madrid Basin.

*Stratigraphy* – Middle Aragonian, Zone C.

*Literature* – Alberdi *et al.* (1985).

*Insectivores* – Erinaceidae: *Galerix* sp., *Amphechinus* sp.

*Taxonomic descriptions* – Sesé *et al.* (1985) and Alberdi *et al.* (1985) listed the *Galerix*.

*Storage of material* – MNCN.

*Remarks* – Apart from the *Galerix* listed in literature, *Amphechinus* is also represented in the fauna of Henares 2, though only by fragmented material.

## Montalvos 2

*Location* – Teruel Basin, Province of Teruel.

*Stratigraphy* – Aragonian, Zone C.

*Literature* – Unpublished.

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986. Talpidae: cf. *Desmanella* sp., *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Heterosorex* cf. *neumayrianus* (Schlosser, 1887), Soricidae gen. et sp. indet.

*Taxonomic descriptions* – The insectivores from Montalvos 2 are under study by LHO.

*Remarks* – The locality of Montalvos 2 is by far the oldest locality in the direct vicinity of the city of Teruel. The presence of a uropsiline talpid (cf. *Desmanella*) is remarkable, as this taxon is not present in co-eval localities in the Daroca-Calamocha area.

*Storage of material* – IVAU.

### Munebrega I

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°15' W 2°00'].

*Stratigraphy* – Aragonian.

*Literature* – De Bruijn (1967).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986, cf. *Riddleria* sp. Talpidae: *Desmanodon* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Gibert (1975b) listed *Galerix exilis* and *Miosorex grivensis*. The study of the small assemblage in the IVAU revealed the presence of two species of *Galerix*, which are presumed to represent the same two species found in the vicinity of Daroca, viz. *G. exilis* and *G. symeonidisi* (Van den Hoek Ostende & Doukas, 2003). Some erinaceid fragments with very high cusps resemble *Riddleria*, a genus described from the nearby (but older) locality Ateca III (Van den Hoek Ostende, 2003a), but never found in co-eval localities in the Daroca area. The presence of a talpid in Munebrega I is noted for the first time herein.

*Storage of material* – IVAU.

### O'Donell

*Location* – Province of Madrid, Madrid Basin [N 40°26'34" W 3°35'25"].

*Stratigraphy* – Middle Aragonian, Zone C.

*Literature* – López-Martínez *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Ampechichinus* sp. Soricidae: *Heterosorex* sp., Soricidae indet.

*Taxonomic descriptions* – Alberdi *et al.* (1985) and López-Martínez *et al.* (1987) listed *Galerix* and an unidentified shrew for this locality, short descriptions of which can be found in Sesé *et al.* (1985).

*Storage of material* – MNCN.

*Remarks* – The presence of a small *Ampechichinus* and *Heterosorex* had not yet been noted in literature.

### Olmo Redondo 1

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986, cf. *Amphechinus*. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1.

*Taxonomic descriptions* – The presence of *Galerix symeonidisi* was noted by Van den Hoek Ostende & Doukas (2003). Olmo Redondo 1 was not included in the study on *Desmanodon* in the Daroca-Villafeliche area (Van den Hoek Ostende, 1997). The other insectivores are currently still under study.

*Storage of material* – NNM.

### **Olmo Redondo 2**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) commented on *Galerix*. Van den Hoek Ostende (1997) gave descriptions and measurements for *Desmanodon* / *Paratalpa* in the Daroca area (Olmo Redondo 2 was at the time not included in the study). This talpid was later shown to be referable to *Desmanodon* (Van den Hoek Ostende, 2003a). Preliminary identifications show the presence of two species of shrew.

*Storage of material* – NNM.

### **Olmo Redondo 3**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986. Soricidae: Soricid 1.

*Taxonomic descriptions* – The presence of *Galerix symeonidisi* was noted by Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

*Remarks* – The absence of talpids is considered a result of the small sample size, as *Desmanodon* is found in the other localities in the Olmo Redondo section.

#### **Olmo Redondo 4A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – *Galerix* and *Desmanodon* were discussed by Van den Hoek Ostende & Doukas (2003) and Van den Hoek Ostende (1997), respectively.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Olmo Redondo 5**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) commented on the Galericinae from the Aragonian section. Van den Hoek Ostende (1997) described the *Desmanodon* from the region, noting its presence in Olmo Redondo 5.

*Storage of material* – NNM.

#### **Olmo Redondo 8**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – The co-occurrence of *Galerix symeonidisi* and *G. exilis* was noted by Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

### San Marco

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986, cf. *Amphechinus*. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Miosorex* cf. *grivensis* (Depéret, 1892), Soricid 1, Soricid 2.

*Taxonomic descriptions* – The *Desmanodon* from the Daroca area was described by Van den Hoek Ostende (1997). The presence of *Galerix symeonidisi* was noted by Van den Hoek Ostende & Doukas (2003). Preliminary studies suggest the presence of three soricid species.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### San Roque 1

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986, cf. *Amphechinus*. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – The *Desmanodon* was described as *Desmanodon/Paratalpa* in Van den Hoek Ostende (1997); shown to be referable to *Desmanodon* in Van den Hoek Ostende (2003a). The presence of *Galerix symeonidisi* was noted by Van den Hoek Ostende & Doukas (2003). The other insectivores are currently still under study.

*Storage of material* – NNM.

### San Roque 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) discussed the presence of *Galerix symeonidisi*.

*Storage of material* – NNM.

### **San Roque 3**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986, cf. *Amphechinus*. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – *Galerix symeonidisi* was commented upon by Van den Hoek Ostende & Doukas (2003); Van den Hoek Ostende (1997) described the *Desmanodon*.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **San Roque 5**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone B.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) discussed *Galerix symeonidisi* from the Aragonian type section; Van den Hoek Ostende (1997) discussed the *Desmanodon* finds.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **Torralba 1**

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°25' W 2°00'].

*Stratigraphy* – Aragonian.

*Literature* – De Bruijn (1967).

*Insectivores* – Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The presence of this shrew was listed in Gibert (1975b).

*Storage of material* – IVAU.

### **Valtorres**

*Location* – Province of Zaragoza, northern Teruel Basin [N 41°17' W 1°58'].

*Stratigraphy* – Aragonian.

*Literature* – De Bruijn (1967).

*Insectivores* – Erinaceidae: *Galerix* sp., *Amphechinus* sp. Talpidae: *Desmanodon* sp. Soricidae: Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Gibert (1975b) listed *Galerix exilis*, *Amphechinus* sp. and *Paratalpa micheli*. As in the early Aragonian two species of *Galerix* occur in Spain (Van den Hoek Ostende & Doukas, 2003), the specific classification of the *Galerix* is here left open. Given the stratigraphical range of *Paratalpa* (Van den Hoek Ostende, 1997), the talpid from Valtorres most likely represents *Desmanodon*. A search in the collection of the IVAU showed the presence of a shrew, not indicated by Gibert (1975b). The *Amphechinus* was, however, not found.

*Storage of material* – IVAU.

### **Vargas 1A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C, C5Cn (Daams *et al.*, 1999).

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986, *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2, Allosoricinae indet., *Heterosorex* sp.

*Taxonomic descriptions* – The *Desmanodon* finds were measured and described by Van den Hoek Ostende (1997). The presence of two species of *Galerix* was noted by Van den Hoek Ostende & Doukas (2003). The other insectivores are still under study.

*Storage of material* – NNM.

*Remarks* – Vargas 1A shows one of the most diverse insectivore assemblages in the Daroca-Villafeliche area. Partly this is related to the large sample size.

### Vargas 2A

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C, C5Br (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986, *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) noted the presence of two species of *Galerix*. The remaining insectivore assemblage is still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Vargas 3

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C, C5Cn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Heterosorex* sp.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) noted the presence of two species of *Galerix*.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

*Remarks* – The *Heterosorex* from Vargas 3 represents the last record of the genus in the Daroca-Villafeliche area.



#### Vargas 4A

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C, C5Cn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1, Soricid 2, *Heterosorex* sp.

*Taxonomic descriptions* – The *Galerix* (Van den Hoek Ostende & Doukas, 2003) and the *Desmanodon* (Van den Hoek Ostende, 1997) have been commented upon. The remaining insectivore fauna is still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### Vargas 4B

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C, C5Cn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) and Van den Hoek Ostende (1997) commented upon *Galerix* and *Desmanodon*, respectively. The other insectivores are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### Vargas 4BB

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone C.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986, *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Heterosorex* sp., Soricid 1, Soricid 2.

*Taxonomic descriptions* – On the basis of a humerus from Vargas 4BB, Van den Hoek Ostende (2003a) decided that the material earlier described as *Desmanodon/Paratalpa* was referable to *D. aff. daamsi*. Van den Hoek Ostende & Doukas (2003) demonstrated the presence of *G. symeonidisi* Doukas, 1986.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Villafeliche 2A

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Lower Aragonian, zone B.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix symeonidisi* Doukas, 1986. Talpidae: *Desmanodon aff. daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) discussed the presence of *Galerix symeonidisi* Doukas, 1986; *Desmanodon* was not included in the listing by Van den Hoek Ostende (1997), as the presence of that talpid in Villafeliche 2A was noted only later.

*Storage of material* – IVAU.

### Vilueña

*Location* – Province of Zaragoza, Calatayud Basin [N 41°18'24" W 1°43'32"].

*Stratigraphy* – Lower/Middle Aragonian, zone C/D.

*Literature* – Sesé (2004).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839).

*Taxonomic descriptions* – Sesé (2004) described and figured the single M2 of *Galerix* from this locality.

*Storage of material* – The material is currently stored at MNCN, awaiting final deposition at DGA.

*Remarks* – Judging from the description and illustration, the M2 may also belong to *Galerix symeonidisi* Doukas, 1986, a species known to occur in co-eval localities in the nearby Daroca area (Van den Hoek Ostende & Doukas, 2003).

## MN 5

### Arroyo del Olivar

*Location* – Province of Madrid, Madrid Basin [N 40°23'10" W 3°39'00"].

*Stratigraphy* – Middle Aragonian, zone D.

*Literature* – Alberdi *et al.* (1985).

*Insectivores* – Erinaceidae: *Galerix* sp.

*Taxonomic descriptions* – Sesé *et al.* (1985), Alberdi *et al.* (1985) and López-Martínez *et al.* (1987) listed the species.

*Storage of material* – MNCN.

### Caseton 1A

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1.

*Taxonomic descriptions* – The presence of *Galerix exilis* was noted by Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

### Caseton 2B

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The presence of *Galerix exilis* was noted by Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

### Ciudad Pegaso

*Location* – Province of Madrid, Madrid Basin [N 40°26'35" W 3°36'00"].

*Stratigraphy* – Middle Aragonian, Zone D.

*Literature* – López-Martínez *et al.* (1987).

*Insectivores* – *Galerix* sp.

*Taxonomic descriptions* – Sesé *et al.* (1985) and López-Martínez *et al.* (1987) listed the species.

*Storage of material* – MNCN.

### Fuente Sierra 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da, C5Br (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) and Van den Hoek Ostende (1997) commented upon *Galerix* and *Desmanodon*, respectively. The soricids from the Daroca-Villafeliche area are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Fuente Sierra 3

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da, C5Br (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) commented upon *Galerix* and Van den Hoek Ostende (1997) described the *Desmanodon*. The Soricidae from the Daroca-Villafeliche area are still being studied.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### Fuente Sierra 4

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Db, C5Br (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Miosorex griven-sis* (Depéret, 1892).

*Taxonomic descriptions* – Fuente Sierra 4 is the youngest assemblage in the Daroca-Villafeliche area containing *Galerix symeonidisi* (Van den Hoek Ostende & Doukas, 2003). Van den Hoek Ostende (1997) described the *Desmanodon*. The shrews from the Daroca-Villafeliche area are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### La Col A

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997.

*Taxonomic descriptions* – The small assemblage from La Col A is still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

*Remarks* – The occurrence of *Galerix symeonidisi* in La Col A is based on a small-sized M3.

#### La Col B

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Soricidae: Soricid 1.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) noted the presence of two species of *Galerix*. The soricids from the Daroca-Villafeliche area are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### La Col C

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986, *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1, Soricid 2.

*Taxonomic descriptions* – The relatively large talpid assemblage from La Col C was described in detail as *Desmanodon* / *Paratalpa* by Van den Hoek Ostende (1997). Later this identification was changed into *Desmanodon* aff. *daamsi* (Van den Hoek Ostende, 2003a). Van den Hoek Ostende & Doukas (2003) noted the presence of two species of *Galerix*. The preliminary study of the soricids suggests the presence of three species of shrew.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### La Col D

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Db.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986, *Amphechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The talpids were discussed in Van den Hoek Ostende (1997). According to Van den Hoek Ostende & Doukas (2003), two species of *Galerix* are present. The shrews from the locality are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Las Planas 4A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E.

*Literature* – De Bruijn (1967), Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: "*Limnoecus*" *truyolsi* Gibert, 1975, *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from Las Planas 4A were described by Gibert (1974) in his unpublished thesis. *Limnoecus tuyolsi* was considered a species of "unknown taxonomic affiliation" by Reumer (1994: 354). Gibert (1975b) gave a faunal list.

*Storage of material* – NNM, IVAU.

#### **Las Planas 4B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E.

*Literature* – De Bruijn (1967), Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Gibert (1974) described the insectivores in his unpublished thesis, and subsequently listed them (1975b), without, however, mentioning the presence of *Amphechinus*.

*Storage of material* – MNCN, IVAU.

#### **Las Umbrias 1**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) indicated the presence of *Galerix exilis* in the locality.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The presence of *Galerix exilis* in Las Umbrias 2 was indicated by Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 3

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) noted the presence of *Galerix exilis*.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 4

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).



*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – *Galerix exilis* is present according to the graphs in Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Las Umbrias 5**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphexinus* sp.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) noted the presence of *Galerix exilis*.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Las Umbrias 7**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ACr (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The material is under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Las Umbrias 8**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ACr (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) used data on the *Galerix* from Las Umbrias 8 in their diagrams.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 9

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ACr (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The material is under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 10

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The material is currently being studied by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 11

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex griven-sis* (Depéret, 1892).

*Taxonomic descriptions* – Data on *Galerix* from Las Umbrias 11 appeared in the diagrams of Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Las Umbrias 12**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex griven-sis* (Depéret, 1892).

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) used data on *Galerix* from Las Umbrias 12 in their diagrams.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Las Umbrias 14**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex griven-sis* (Depéret, 1892), Soricid 1.

*Taxonomic descriptions* – The material from this locality is still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 16

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Data on *Galerix* from Las Umbrias 16 was used in the diagrams of Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 17

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores of Las Umbrias 17 are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 18

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) used data on *Galerix* from Las Umbrias 18 in their diagrams.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 19

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 20

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone E, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from this locality have not yet been published.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Moratilla 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Db.

*Literature* – Unpublished.

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Talpidae: *Proscapanus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2, *Allosoricinae* indet.

*Taxonomic descriptions* – The data from *Galerix exilis* were used in the diagrams of Van den Hoek Ostende & Doukas (2003). The other insectivores are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **Moratilla 3**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Db.

*Literature* – Unpublished.

*Insectivores* – Erinaceidae: *Ampechinus* sp. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Allosoricinae indet.

*Taxonomic descriptions* – The insectivores from Moratilla 3 are still under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **Olmo Redondo 9**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) commented upon the *Galerix*. The *Desmanodon* from Olmo Redondo 9 was not included in Van den Hoek Ostende (1997), as the material was not available at the time. The other insectivores are still under study.

*Storage of material* – NNM.

### **Paracuellos 3**

*Location* – Province of Madrid, Madrid Basin.

*Stratigraphy* – Middle Aragonian, Zone D.

*Literature* – Alberdi *et al.* (1985).

*Insectivores* – Erinaceidae: *Galerix* sp., *Amphechinus* cf. *intermedius* (Gaillard, 1899).

*Taxonomic descriptions* – Alberdi *et al.* (1985) listed the species; Sesé *et al.* (1985) gave short descriptions.

*Storage of material* – MNCN.

## Regajo 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Data on the *Galerix* from Regajo 2 appear in the diagrams of Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

*Remarks* – The name Regajo 2 is also in use for a Turolian locality in the Teruel Basin (Adrover *et al.*, 1984).

## San Isidro

*Location* – Province of Madrid, Madrid Basin [N 40°24'15" W 3°44'00"].

*Stratigraphy* – Middle Aragonian, Zone D.

*Literature* – López-Martínez *et al.* (1987).

*Insectivores* – Erinaceidae: *Galerix* sp. Soricidae: Crocidosoricinae indet.

*Taxonomic descriptions* – Alberdi *et al.* (1985) listed the species. López-Martínez *et al.* (1987) adscribed the Soricidae indet. into the subfamily Crocidurinae on the basis of the reduced talonid of the m3 from San Isidro.

*Storage of material* –

*Remarks* – Although López-Martínez *et al.* (1987) placed the soricid from this locality in the Crocidurinae, the most probable adscription of the material is the Crocidosoricinae, based on the description and age.

### Sant Mamet

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°29'51" E 2°02'45"].

*Stratigraphy* – Upper Burdigalian according to Crusafont *et al.* (1955). Garcès (1995) suggested the locality predates MN 5 based on the lithostratigraphy in combination with magnetostratigraphic data. This is in line with Agustí *et al.* (1984), who placed the locality in MN 4.

*Literature* – Crusafont *et al.* (1955), Agustí *et al.* (1984).

*Insectivores* – Erinaceidae: *Atelerix butleri* (Crusafont, Villalta & Truyols, 1955) (type locality).

*Taxonomic descriptions* – Crusafont *et al.* (1955) described *Mioechinus butleri*, which was also listed in Gibert (1974, 1975b) and López-Martínez (1989). As the genus *Mioechinus* was synonymised with *Atelerix* by Mein & Ginsburg (2002), we list the species here as *A. butleri*. However, the allocation of this species to *Atelerix* still needs to be ascertained.

*Storage of material* – IPMC.

### Somosaguas-Sur

*Location* – Pozuelo de Alarcón, Province of Madrid, Madrid Basin.

*Stratigraphy* – Middle Aragonian, Zone E.

*Literature* – López-Martínez *et al.* (2000), Mínguez-Gandú (2000).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex cf. grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Luis & Hernando (2000) described the material.

*Storage of material* – DPUCM.

### Torralba de Ribota 8

*Location* – Province of Zaragoza, Calatayud Basin [N 41°26'19" W 1°41'04"].

*Stratigraphy* – Middle Aragonian, Zone D.

*Literature* – Sesé (2003).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. cf. symeonidisi* Doukas, 1986.



*Taxonomic descriptions* – Sesé (2003) described the *Galerix* finds from Torralba de Ribota 8, figuring one of the m2.

*Storage of material* – The material is currently stored at MNCN, awaiting final deposition at DGA.

*Remarks* – Sesé (2003) noted the presence of two species of *Galerix*, *G. exilis* and the somewhat smaller *Galerix* sp. 1. Two species of this genus are also known from the Daroca area, in which, besides *G. exilis*, *G. symeonidisi* is found (Van den Hoek Ostende & Doukas, 2003). Therefore Sesé's *Galerix* sp. 1 is tentatively assigned to *G. symeonidisi*.

### **Valdemoros 1A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5Adn (Daams *et al.*, 1999).

*Literature* – Freudenthal (1963), De Bruijn (1967).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Gibert (1974) described the material and listed it in an overview of Spanish insectivores (Gibert, 1975b).

*Storage of material* – IVAU.

### **Valdemoros 3B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc, C5Bn.1n (Daams *et al.*, 1999).

*Literature* – Freudenthal (1963), De Bruijn (1967).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus baudelotae* (Gibert, 1975). Soricidae: *Miosorex grivensis* (Depéret, 1892), "*Limnoecus*" *truyolsi* Gibert, 1975.

*Taxonomic descriptions* – Gibert (1974) described the material. In his overview of Spanish insectivores (Gibert, 1975b), he provided a list. Reumer (1994: 354) regarded *Limnoecus tuyolsi* as a 'taxon of unknown taxonomic affiliation'.

*Storage of material* – IVAU.

### **Valdemoros 3D**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc, C5Bn.1n (Daams *et al.*, 1999).

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The presence of *Galerix exilis* was noted in Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

### **Valdemoros 3E**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Ampechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The presence of *Galerix exilis* was noted in Van den Hoek Ostende & Doukas (2003).

*Storage of material* – NNM.

### **Valdemoros 3F**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) used data on *Galerix exilis* from Valdemoros 3F in their diagrams.

*Storage of material* – MNCN.

*Remarks* – Valdemoros 3F is remarkably rich in insectivores compared to other faunas from zone Dd in the Daroca-Calamocha area.

### **Valdemoros 6A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – *Galerix exilis* from Valdemoros 6A appears in the graphs of Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **Valdemoros 6B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Allosoricinae gen. et sp. indet.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) used data of *Galerix exilis* from Valdemoros 6B in their graphs.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### **Valdemoros 7A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADr (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1, Soricid 2.

*Taxonomic descriptions* – The insectivore assemblage is under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 7B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The presence of *Galerix exilis* was noted by Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 7C**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Data on *Galerix exilis* from the locality appeared in the graphs of Van den Hoek Ostende & Doukas (2003).

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 7D**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores are currently under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 7E**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores are under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 7F**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores are under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 7G**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 8A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Db.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997, *Proscapanus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) commented upon *Galerix* from the Daroca-Villafeliche area. Data from Valdemoros 8A were, however, not included in this study, nor in the *Desmanodon* study by Van den Hoek Ostende (1997). Valdemoros 8A represents the last occurrence of *Desmanodon* aff. *daamsi* in the section. The insectivore assemblage is under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 8B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd , C5ADr (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The insectivore assemblage is under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valdemoros 8C**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd, C5ADr (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivore assemblage is under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Vargas 2B

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Da, C5Br (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *G. symeonidisi* Doukas, 1986. Talpidae: *Desmanodon* aff. *daamsi* Van den Hoek Ostende, 1997. Soricidae: Soricid 1, Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) and Van den Hoek Ostende (1997) commented upon *Galerix* and *Desmanodon*, respectively. The other insectivores are still under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Vargas 5

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 1.

*Taxonomic descriptions* – The insectivores are from Vargas 5 are under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Vargas 6

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Amphexinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from Vargas 6 are under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

*Remarks* – The absence of the otherwise common erinaceid *Galerix* is probably related to the small sample size.

### Vargas 7

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphexinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Allosoricinae indet.

*Taxonomic descriptions* – The insectivores from Vargas 7 are under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Vargas 8B

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The insectivores from the locality are under study by LHO.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.



### Vargas 11

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dd.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The insectivores from Vargas 11 are still under study.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Villafeliche 4A

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc.

*Literature* – De Bruijn (1967), Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: “*Limnoecus*” *truyolsi* Gibert, 1975 (type locality), *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – The insectivores from Villafeliche 4 were described by Gibert (1974) in his unpublished thesis. Gibert (1975a) defined *Limnoecus tuyolsi*, a species that was considered to be of “unknown taxonomic affiliation” by Reumer (1994: 354). López-Martínez (1989) gave a faunal list.

*Storage of material* – NNM. The type of *Limnoecus tuyolsi* is stored at the IPMC.

### Villafeliche 4B

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone Dc.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839).

*Taxonomic descriptions* – The scanty material of Villafeliche 4B has not been published.

*Storage of material* – IVAU, MNCN.

**MN 6****Arroyo del Val 6**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian.

*Literature* – Freudenthal (1963).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Ampechinus robinsoni* Gibert, 1975. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Gibert (1975b) gave a listing of the insectivores. López-Martínez (1989) also listed *Limnoecus truyolsi* for the locality, but as this was not indicated by Gibert (1975b), it is not included in our faunal list.

*Storage of material* – IVAU.

**Bañón**

*Location* – Province of Teruel, Montalbán Basin.

*Stratigraphy* – Aragonian.

*Literature* – Mazo *et al.* (2002), Sesé (2004).

*Insectivores* – Erinaceidae: *Galerix* cf. *exilis* (Blainville, 1839), *Ampechinus* sp. Soricidae: *Miosorex* cf. *grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The fossils were described and discussed in Sesé (2004).

*Storage of material* – Currently stored in MNCN, waiting for its final deposition at DGA.

**Borjas**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G2.

*Literature* – De Bruijn (1967), Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic description* – Gibert (1975b) listed the insectivores. López-Martínez (1989) also listed *Ampechinus* and *Limnoecus truyolsi*, but these were not encountered in the collections. The material was fully described by De Jong (1988).

*Storage of material* – NNM, IVAU.

#### **Las Planas 5B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G1, C5ABn (Daams *et al.*, 1999).

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – De Jong (1988) gave descriptions and measurements of the material.

*Storage of material* – NNM.

#### **Las Planas 5C**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G1, C5ABn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores are herein listed for the first time.

*Storage of material* – NNM, MNCN awaiting final deposition at the DGA.

#### **Las Planas 5K**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G2, C5AAn (Daams *et al.*, 1999).

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – De Jong (1988) described the insectivores from Las Planas 5K.

*Storage of material* – NNM.

### Las Umbrias 21

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone F, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricid 2.

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) included this locality in their diagrams on *Galerix*.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Las Umbrias 22

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Aragonian, zone F, C5ACn (Daams *et al.*, 1999).

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Ampechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Van den Hoek Ostende & Doukas (2003) included Las Umbrias 22 in their diagrams on *Galerix*.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

### Manchones

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G2.

*Literature* – De Bruijn (1967), Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Ampechinus robinsoni* Gibert, 1975 (type locality). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Gibert (1974) described the insectivores in his unpublished thesis. The official description of *Ampechinus robinsoni* followed a year after (Gibert,

1975a), as well as a listing of all the insectivores (Gibert, 1975b). López- Martínez (1989) also listed *Limnoecus truyolsi* for the locality, but as it was not mentioned in the original study of Gibert, it is not included above.

*Storage of material* – IVAU, the type of *Amphechinus robinsoni* is stored at IPMC.

#### **Valalto 1A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G1.

*Literature* – Daams *et al.* (1999).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores have not yet been published.

*Storage of material* – The material is currently stored at the MNCN, awaiting final deposition at the DGA.

#### **Valalto 1B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G1.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores had not yet been published.

*Storage of material* – NNM, MNCN (awaiting final deposition at the DGA).

*Remarks* – The locality was called Valalto 1 in Daams & Freudenthal (1988).

#### **Valalto 2C**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone F.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores of Valalto 2C were discussed by De Jong (1988).

*Storage of material* – NNM.

#### **MN 7/8**

#### **Alcocer 2**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – De Jong (1988) described the material.

*Storage of material* – NNM.

#### **Can Feliu**

*Location* – Province of Barcelona, Vallès-Penedès Basin.

*Stratigraphy* – Upper Aragonian.

*Literature* – Crusafont & Golpe (1972b), Agustí & Gibert (1979a).

*Insectivores* – Talpidae: *Desmanella stehlini* Engesser, 1972.

*Taxonomic descriptions* – Agustí & Gibert (1979a) only mentioned the presence of this talpid.

*Storage of material* – IPMC.

#### **Can Missert**

*Location* – Province of Barcelona, Vallès-Penedès Basin.

*Stratigraphy* – Upper Aragonian.

*Literature* – Agustí *et al.* (in press).

*Insectivores* – Talpidae: *Desmanella* sp., Talpidae indet. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Agustí *et al.* (in press) described the teeth found.

*Storage of material* – IPMC.

### Castell de Barberà

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°31'30" E 2°08'30"].

*Stratigraphy* – Upper Aragonian. Vindobonian according to Crusafont & Truyols (1951).

*Literature* – Crusafont & Golpe (1972b).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865, *Amphechinus golpeae* Gibert, 1975. Talpidae: *Desmanella stehlini* Engesser, 1972, *Proscapanus lehmani* (Gibert, 1975), *Talpa minuta* Blainville, 1838, ?*Domninooides santafei* Gibert, 1975 (type locality). Dimylidae: *Metacordylodon schlosseri* (Andreae, 1904), *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Crusafontina endemica* Gibert, 1975, *Dinosorex sansaniensis* (Lartet, 1851).

*Taxonomic descriptions* – Crusafont & Golpe (1972b) listed *Talpa vallesensis*, *Proscapanus sansaniensis*, *Heterosorex sansaniensis*, *Galerix* indet., and *Metacordylodon schlosseri*. Gibert (1974) described *Heterosorex* [= *Dinosorex*] *sansaniensis*, *Crusafontina endemica*, *Desmanella stehlini*, *Alloscapanus lehmani*, *Domninooides santafei*, *Galerix* [= *Parasorex*] *socialis*, *Amphechinus golpeae* and *Metacordylodon schlosseri* in his unpublished thesis. He also cited *Talpa minuta* and *Plesiodimylus chantrei*. Gibert (1975a) gave the first valid descriptions of *A. lehmani* and *D. santafei*. As Hutchison (1974) pointed out, the genus *Alloscapanus* is invalid, because the type of *Mygale* [= *Proscapanus*] *sansaniensis* Lartet, 1851 was included in its type species. As *Alloscapanus* is thus per definition a junior synonym of *Proscapanus*, we here tentatively place the species *lehmani* in the latter genus. *Domninooides* is an American genus, and its presence in Europe is highly unlikely. Gibert (1975b), Agustí & Gibert (1982a) and López-Martínez (1989) listed all the species.

*Storage of material* – IPMC.

*Remarks* – The age of the site has been referred always in literature as MN 9, because of the assumed presence of *Hipparion* fossils. However, these appear not to have been found *in situ*, but are surface finds washed down from higher levels.

### Escobosa de Calatañazor

*Location* – Province of Soria [N 41°36'50" W 0°51'11"].

*Stratigraphy* – Late Aragonian.

*Literature* – Sesé & López-Martínez (1975), López-Martínez *et al.* (1977a, 1977b), Sesé (1980).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* cf. *intermedius* (Gaillard, 1899), *Amphechinus golpeae* Gibert, 1975. Soricidae: *Miosorex grivensis* (Depéret, 1892), Crocidosoricinae indet.

*Taxonomic descriptions* – López-Martínez *et al.* (1977a, 1977b) listed the species, identifying the *Amphechinus* as *A. cf. ginsburgi* Baudelot, 1972. Sesé (1980) described all the material, identifying the two species listed above in the *Amphechinus* material. In her Ph.D. thesis, she proposed a new subspecies for *M. grivensis* (*lopezae*), which was, however, never officially published. López-Martínez *et al.* (1977a, b) cited a big-sized “Talpidae indet.” (cf. *Talpa* sp.). Sesé (1986) ascribed these remains to the bat *Megaderma gaillardi*. The second shrew in the locality, apart from *Miosorex*, was originally listed as Crocidurinae indet, but given the age of the fauna must represent another crocidosoricine.

*Storage of material* – ILM.

*Remarks* – Escobosa de Calatañazor is a fissure filling. The age of the fauna is open to debate, and the fissure filling might also contain a mixture of material of different ages. In literature (e.g., De Bruijn *et al.*, 1992) the fauna is placed in MN 7/8, but according to Casanovas-Vilar (pers. comm.) it could also be MN 6.

### Hostalets de Pierola Inferior

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°30' / 41°32' E 1°46'40" / 1°48'50"].

*Stratigraphy* – Astaracian according to López-Martínez (1989).

*Literature* – Bataller (1938), Golpe (1974).

*Insectivores* – Erinaceidae: *Amphechinus golpeae* Gibert, 1975 (type locality), *Parasorex socialis* von Meyer, 1865. Talpidae: *Talpa minuta* Blainville, 1838, *Talpa vallesensis* Villalta & Crusafont, 1944, ?*Scalopoides* sp. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Miosorex grivensis* (Depéret, 1892), *Dinosorex sansaniensis* (Lartet, 1851).

*Taxonomic descriptions* – Villalta & Crusafont (1943a) listed *Talpa* (?) *minuta*, *Crociodura* (*Trimylus*) *schlosseri*, *Sorex pusillus grivensis* and *Pseudogalerix stehlini*, and subsequently (1943b) gave descriptions of these taxons while adding *Erinaceus* sp. to the faunal list. The latter identification was changed to ?*Palerinaceus intermedius* in a later publication (Villalta & Crusafont, 1944), in which *Plesiodimylus chantrei* was added with a description of “its humerus”. According to Hutchison (1974: 228), this type of humerus does not belong to *Plesiodimylus*, but to a talpid, which he classified provisionally as cf. *Scalopoides* sp. However, preliminary results from new excavations



show that *P. chantrei* is indeed present at Hostalets de Pierola Inferior. Gibert (1974) changed *P. intermedius* to *Amphechinus golpeae* nov. sp., *S. pusillus grivensis* to *Miosorex grivensis* and added *Heterosorex sansaniensis* to the list. Gibert (1975a) gave the first valid description of *A. golpeae*, and Gibert (1975b) listed all the species. Agustí & Gibert (1982a) described the humeri of *T. minuta*, *T. vallesensis* and *Scalopoides*, added *Galerix* [= *Parasorex*] *socialis* to the list and changing *Heterosorex sansaniensis* to *Dinosorex sansaniensis*. Agustí & Gibert (1982b) and López-Martínez (1989) listed all the known species.

*Storage of material* – IPMC.

*Remarks* – Hostalets de Pierola Inferior represents a group of sites (Can Mata I, Can Vila, Font d'Ocata). The origin for most of the specimens cannot be deduced from the published data. The micromammal collections will be revised by MF, once new material has been extracted from the localities.

### Las Planas 5H

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3, C5An.2r (Daams *et al.*, 1999).

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – De Jong (1988) described the insectivores from Las Planas 5H.

*Storage of material* – NNM.

### Lupiana

*Location* – Province of Guadalajara, Madrid Basin [N 40°35'55" W 3°03'45"].

*Stratigraphy* – Upper Aragonian, Zone G3.

*Literature* – Sesé *et al.* (1990).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: Soricidae indet.

*Taxonomic descriptions* – Sesé *et al.* (1990) listed the species and gave a short description of the material.

*Storage of material* – MNCN.

### Nombrevilla 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Van der Meulen *et al.* (2003).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Parasorex socialis* von Meyer, 1865. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from the locality are under study by LHO.

*Storage of material* – Currently stored in the MNCN, awaiting final deposition at the DGA.

*Remarks* – Nombrevilla 2 is the oldest locality in the Daroca-Villafeliche area in which *Galerix* co-occurs with *Parasorex*.

### Paje 1

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Van der Meulen *et al.* (2003).

*Insectivores* – Erinaceidae: *Galerix* sp., *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892), Soricidae gen. et sp. indet.

*Taxonomic descriptions* – The insectivores from Paje 1 are under study by LHO.

*Storage of material* – Currently stored in the MNCN, awaiting final deposition at the DGA.

*Remarks* – The erinaceids are represented by a fragmentary m1 and a totally worn M1. The presumed presence of two taxa is based on the size of these elements.

### Paje 2

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Van der Meulen *et al.* (2003).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from Paje 2 are under study by LHO.

*Storage of material* – Currently stored in the MNCN, awaiting final deposition at the DGA.

*Remarks* – The small mammal assemblage from Paje 2 stands out by the large number of mandibles preserved.

### Sant Quirze

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°31'30" E 2°05'10"].

*Stratigraphy* – Upper Aragonian. Upper Vindobonian according to Villalta & Crusafont (1933); Upper Astaracian according to López-Martínez (1989).

*Literature* – Villalta & Crusafont (1933), Bataller (1938), Villalta & Crusafont (1943b).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865. Talpidae: *Proscapanus lehmani* (Gibert, 1975) (type locality), *Talpa minuta* Blainville, 1838, *Talpa vallesensis* Villalta & Crusafont, 1944, *Desmanella stehlini* Engesser, 1972. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: Soricid gen. et sp. indet., *Dinosorex sansaniensis* (Lartet, 1851).

*Taxonomical descriptions* – Bataller (1938) listed *Talpa* sp., *Sorex* sp., *Erinaceus* sp., and *Trimylus schlosseri*. *Erinaceus* was not mentioned in later lists, nor is it present in the material stored at IPMC. We assume therefore, that this refers to the galericine. Villalta & Crusafont (1943a) initially identified it as *Galerix exilis*, and added *Proscapanus sansaniensis* and *Plesiodimylus chantrei* to the list. They changed *Trimylus schlosseri* to *Crocidura (Trimylus) schlosseri* and *Talpa* sp. to *Talpa (?) minuta*. Villalta & Crusafont (1943b) described all of the material and subsequently listed all species (Villalta & Crusafont, 1944). Gibert (1974) described the heterosoricid, previously listed as *Trimylus schlosseri* as *Heterosorex [= Dinosorex] sansaniensis* and also gave descriptions of *Talpa (?) minuta*. He added *T. vallesensis* and *Desmanella stehlini* to the faunal list and changed *Proscapanus sansaniensis* to *Alloscapanus lehmani*. However, as Hutchison (1974: 228) pointed out, *Alloscapanus* is not a valid genus. Gibert (1975c) listed all the species known until then. Agustí & Gibert (1982) reclassified *Galerix exilis* as *G. [= Parasorex] socialis*. López-Martínez (1989) listed all the species. Peculiarly enough, *Sorex* sp. was not mentioned in any paper after Villalta & Crusafont (1944). Nevertheless, it is included here in our list as Soricid gen. et sp. indet.

*Storage of material* – IPMC.

*Remarks* – The locality is also known as San Quirico.

### Solera

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – De Jong (1988) described the insectivore fossils from Solera.

*Storage of material* – NNM.

*Remarks* – Molars described by De Jong (1988) as intermediate between *Galerix exilis* and *G. [= Parasorex] socialis* are referable to *G. exilis* on the basis of the characters given in Van den Hoek Ostende (2001b).

### **Toril 1**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – Measurements and descriptions were given by De Jong (1988).

*Storage of material* – NNM.

*Remarks* – In Daams & Freudenthal (1988), this locality was named Toril; the numbering has been added later as more assemblages from the area were sampled. De Jong (1988) described an M2 of intermediate form between *Galerix exilis* and *G. [= Parasorex] socialis* from Toril. This molar is referable to *G. exilis* based on the characters discussed in Van den Hoek Ostende (2001b).

### **Toril 2**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Van der Meulen *et al.* (2003).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Amphechinus* sp. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from Toril 2 are here listed for the first time.

*Storage of material* – NNM.

### **Toril 3B**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Van der Meulen *et al.* (2003).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores from Toril 3B are here listed for the first time.

*Storage of material* – Currently stored in the MNCN, awaiting final deposition at the DGA.

### **Villafeliche 9**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone G3.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839). Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores of Villafeliche 9 were discussed by De Jong (1988).

*Storage of material* – NNM.

### **MN 9**

#### **Can Petit**

*Location* – Province of Girona, Seu d'Urgell Basin.

*Stratigraphy* – Lower Vallesian.

*Literature* – Agustí *et al.* (1979).

*Insectivores* – Erinaceidae: Erinaceinae indet. Talpidae: *Talpa* cf. *vallesensis* Villalta & Crusafont, 1944. Soricidae: *Dinosorex* cf. *pachygnathus* Engesser, 1972.

*Taxonomic descriptions* – Agustí *et al.* (1979) gave measurements of the material found.

*Storage of material* – IPMC, Col·lecció Villalta-Cabrera (Institut Jaume Almera, C.S.I.C.).

*Remarks* – According to Agustí *et al.* (1979), this was the first citation of *D. pachygnathus* in the Iberian Peninsula, as well as the last occurrence of this species in the fossil record.

### Can Ponsic I

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°32'20" E 2°04'25"].

*Stratigraphy* – Lower Vallesian.

*Literature* – Golpe (1971), Crusafont & Harterberger (1975).

*Insectivores* – Erinaceidae: *Lantanotherium sanmigueli* Villalta & Crusafont, 1944, *Parasorex socialis* von Meyer, 1865, *Postpalerinaceus vireti* (Crusafont & Villalta, 1947). Talpidae: *Talpa minuta* Blainville, 1838, *Talpa vallesensis* Villalta & Crusafont, 1944. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Miosorex grivensis* (Depéret, 1892), *Dinosorex sansaniensis* (Lartet, 1851).

*Taxonomic descriptions* – Gibert (1974) described *Miosorex grivensis* and *Galerix* [= *Parasorex*] *socialis*, and cited *T. vallesensis*, *L. sanmigueli* and *P. vireti*. Crusafont & Gibert (1974) described new material of *P. vireti* found in this locality. López-Martínez (1989) listed all the species.

*Storage of material* – IPMC.

### Can Llobateres 1 (Inferior)

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°31'56" E 2°08'28"].

*Stratigraphy* – Lower Vallesian, C4Ar.3r (Agustí *et al.*, 1996).

*Literature* – Golpe (1971).

*Insectivores* – Erinaceidae: *Lantanotherium sanmigueli* Villalta & Crusafont, 1944, *Parasorex socialis* von Meyer, 1865, *Postpalerinaceus vireti* (Crusafont & Villalta, 1947). Talpidae: *Talpa vallesensis* Villalta & Crusafont, 1944. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Crusafontina endemica* Gibert, 1975 (type locality), *Dinosorex sansaniensis* (Lartet, 1851).

*Taxonomic descriptions* – Crusafont & Truyols (1951) discussed some remains of *Plesiodimylus chantrei* from Can Llobateres Inferior. They also gave measurements and figured a mandible. Gibert (1974) described "*Heterosorex*" *sansaniensis*, *Crusafontina endemica*, *Talpa vallesensis* and cited "*Galerix socialis*" and *Plesiodimylus chantrei*. Crusafont & Gibert (1974) described new material of *P. vireti* found in this locality. Gibert (1975a) described *Crusafontina endemica*. Gibert (1975b) listed all the species.

*Storage of material* – IPMC.

*Remarks* – Gibert (1974) gave an emended diagnosis for *Talpa vallesensis*, and suggested that Can Llobateres inferior should be considered the type locality. However, the type of *T. vallesensis* originates from Viladecaballs (Villalta & Crusafont, 1944). Can Llobateres is the reference locality for MN 9.

### Carrilanga 1

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Upper Aragonian, zone H.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Galerix exilis* (Blainville, 1839), *Parasorex socialis* von Meyer, 1865. Soricidae: *Miosorex grivensis* (Depéret, 1892), "*Crusafontina endemica* Gibert 1975".

*Taxonomic descriptions* – The insectivores were described by De Jong (1988).

*Remarks* – The material described by De Jong (1988) as *Crusafontina endemica* is not referable to that genus (Van Dam, pers. comm. 2004).

*Storage of material* – NNM.

### Creu Conill 20

*Location* – Province of Barcelona, Vallès-Penedès Basin.

*Stratigraphy* – Lower Vallesian, at the base of the stratotype for the Vallesian, C5r.1n (Garcès, 1995; Garcès *et al.* 1996, 1997).

*Literature* – Unpublished.

*Insectivores* – Talpidae: *Talpa* cf. *minuta* Blainville, 1838. Dimylidae: *Plesiodimylus* sp.

*Taxonomic descriptions* – The material is being described by Casanovas-Vilar *et al.* (research in progress).

*Storage of material* – IPMC.

*Remarks* – The locality corresponds to the FAD of *Hipparion* in Eurasia.

### **Creu Conill 22**

*Location* – Province of Barcelona, Vallès-Penedès Basin.

*Stratigraphy* – Lower Vallesian. C5r.1r (Garcès, 1995; Garcès *et al.* 1996, 1997).

*Literature* – Unpublished.

*Insectivores* – Erinaceidae: *Parasorex* cf. *socialis* von Meyer, 1865. Soricidae: *Miosorex* sp.

*Taxonomic descriptions* – The material found is being described by Casanovas-Vilar *et al.* (research in progress).

*Storage of material* – IPMC.

### **Hostalets de Pierola Superior**

*Location* – Province of Barcelona [N 41°30' / 41°32' E 1°46'40" / 1°48'50"].

*Stratigraphy* – Lower Vallesian according to López-Martínez (1989).

*Literature* – Bataller (1938), Golpe (1974).

*Insectivores* – Erinaceidae: *Amphexinus golpeae* Gibert, 1975 (type locality), *Parasorex socialis* von Meyer, 1865. Talpidae: *Talpa minuta* Blainville, 1838, *Talpa vallesensis* Villalta & Crusafont, 1944, ?*Scalopoides* sp. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Miosorex grivensis* (Depéret, 1892), *Dinosorex sansaniensis* (Lartet, 1851).

*Taxonomic descriptions* – The first faunal list was given by Villalta & Crusafont (1943a), and contained *Talpa* (?) *minuta*, *Crocidura schlosseri*, *Sorex pusillus grivensis* and *Pseudogalerix stehlini*. Descriptions of this material were given by Villalta & Crusafont (1943b), who also cited *Erinaceus* sp. Villalta & Crusafont (1944) changed *Erinaceus* sp. to ?*Palerinaceus intermedius*, added *Plesiodimylus chantrei* to the list and described “its humerus”. According to Hutchison (1974: 228) this type of humerus, also known from La Grive-St.-Alban (France) belonged to a scalopine talpid, ?*Scalopoides* sp. In his thesis, Gibert (1974) changed *P. intermedius* to *Amphexinus golpeae* sp. nov., and *Crocidura schlosseri* to *Heterosorex sansaniensis*. Gibert (1975a) re-described *A. golpeae*. Since the 1974 thesis was never published, this was the first valid description of the species. Gibert (1975b) listed all the species. Agustí & Gibert (1982a) described the humeri of *T. minuta*, *T. vallesensis* and *Scalopoides*, changed *Pseudogalerix stehlini* to *Galerix* [= *Parasorex*] *socialis* and placed *Heterosorex sansaniensis* in the genus *Dinosorex*, following Engesser (1975). Agustí & Gibert (1982b) and López-Martínez (1989) listed all the known species.



*Storage of material* – IPMC.

*Remarks* – This area includes several micromammal levels, such as Can Mata II, Can Flaquer, Mas d'Ocata and Can Mas. Most of the material comes from Can Flaquer, but some is from Can Mata II, which is also quite rich. The first remains collected by Crusafont and Villalta were picked up from the surface along the fossiliferous area. Since the provenance is not clear for all the specimens, it has been decided to group all species under the heading of Hostalets de Pierola Superior.

### **La Bisbal 2**

*Location* – Province of Girona, Empordà Basin.

*Stratigraphy* – Vallesian.

*Literature* – Gibert *et al.* (1980).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865.

*Taxonomic descriptions* – Gibert *et al.* (1980) described the material found as *Galerix socialis*.

*Storage of material* – IPMC.

### **Ledanca**

*Location* – Province of Guadalajara, Madrid Basin [N 40°51'46" W 2°50'].

*Stratigraphy* – Lower Vallesian. Zone H.

*Literature* – Sesé *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – Sesé *et al.* (1990) listed *Galerix* sp. on the basis of a single m3 and a fragment of an m3. Based on the age of the locality, it is probable that the material represents *Parasorex*, which was reinstated as a separate genus by Van den Hoek Ostende (2001b). However, this cannot be determined on the basis of the m3.

*Storage of material* –

### **Los Valles de Fuentidueña**

*Location* – Province of Segovia, Duero Basin.

*Stratigraphy* – Lower Vallesian.

*Literature* – Villalta (1952), Sesé & López-Martínez (1981), Alberdi *et al.* (1981).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et sp. indet. Soricidae: Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Sesé & López-Martínez (1981) described the material. The presence of a large erinaceid is indicated by a fragmentary M1 and an unicuspid.

*Storage of material* –

### **Masia de la Roma 3**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone I.

*Literature* – Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et sp. indet. Soricidae: *Miosorex* sp.

*Taxonomic descriptions* – Van Dam (1997) listed the material.

*Storage of material* – IVAU.

### **Pedregueras 2A**

*Location* – Province of Zaragoza, northern Teruel Basin.

*Stratigraphy* – Lower Vallesian, zone I, C5n.1n-C5n.2r boundary.

*Literature* – Daams & Freudenthal (1988).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865. Talpidae: *Desmanella crusafonti* Rümke, 1974. Soricidae: *Miosorex grivensis* (Depéret, 1892).

*Taxonomic descriptions* – The insectivores of Pedregueras 2A were described by De Jong (1988).

*Storage of material* – NNM.

### **Peralejos 5**

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°02'].

*Stratigraphy* – Vallesian, Zone I.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., soricid gen. et sp. 1.

*Taxonomic descriptions* – The material was listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Riu Ripoll**

*Location* – Sabadell, Province of Barcelona, Vallès-Penedès Basin.

*Stratigraphy* – Lower Vallesian.

*Literature* – Agustí & Gibert (1979a).

*Insectivores* – Erinaceidae: *Parasorex socialis* Von Meyer, 1865. Soricidae: *Crusafontina endemica* Gibert, 1975.

*Taxonomic descriptions* – Agustí & Gibert (1979a) gave a faunal list.

*Storage of material* – IPMC.

*Remarks* – Apart from the insectivores, only one rodent, *Hispanomys thaleri*, was listed for the locality.

### **Santiga (Sabadell)**

*Location* – Province of Barcelona, Vallès-Penedès Basin.

*Stratigraphy* – Lower Vallesian.

*Literature* – Crusafont & Golpe (1972a), Agustí & Gibert (1979a).

*Insectivores* – Erinaceidae: *Galerix* sp., *Lantanotherium sanmigueli* Villalta & Crusafont, 1944. Talpidae: *Talpa minuta* Blainville, 1838. Dimylidae: *Plesiodimylus* sp. Soricidae: *Dinosorex* sp.

*Taxonomic descriptions* – Crusafont & Golpe (1972a) gave a faunal list only, listing *Galerix*, *Talpa minuta* and Soricidae indet. Agustí & Gibert (1979a) added to these the *Lantanotherium*. The other taxa are listed here from personal observation in the IPMC. Since it is not clear whether or not Soricidae indet. *in* Crusafont & Golpe (1972a) is the same as *Dinosorex* sp., only the latter name has been listed

*Storage of material* – IPMC.

**MN 10****Belmonte**

*Location* – Province of Zaragoza, Calatayud Basin [N 41°18'43" W 1°32'32"].

*Stratigraphy* – Upper Vallesian, zone J.

*Literature* – Sesé (2004).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – Sesé (2004) described and figured the galericine P4 and M2 from this locality as *Galerix exilis*. Judging from her description and illustration, the M2 corresponds to *Parasorex* rather than to a *Galerix*, which is in line with the known stratigraphical ranges of these genera.

*Storage of material* – The material is currently stored at MNCN, awaiting final deposition at DGA.

**Can Casablanques**

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°33'16" E 1°58'15"].

*Stratigraphy* – Upper Vallesian.

*Literature* – Santafé (1978), Agustí & Gibert (1979a).

*Insectivores* – Erinaceidae: Erinaceidae gen. et sp. indet., *Lantanotherium* sp. Dimyliidae: *Plesiodimylos chantrei* Gaillard, 1897.

*Taxonomic descriptions* – Agustí & Gibert (1979a) gave a list of the taxa, and subsequently discussed an erinaceid p4, which they found to be comparable to *Plesiosorex*. Since plesiosoricids have to date not been found in the Spanish Neogene, we prefer to classify this molar as Erinaceidae gen. et sp. indet.

*Storage of material* – IPMC.

*Remarks* – Agustí & Gibert (1979a) place the locality either in topmost MN 9 or lower MN 10. Because of the presence of *Rotundomys* we prefer to place Can Casablanques in MN 10.

**Can Purull**

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°33'16" E 1°58'15"].

*Stratigraphy* – Upper Vallesian.

*Literature* – Golpe (1974).

*Insectivores* – Erinaceidae: *Lantanothereium sanmigueli* Villalta & Crusafont, 1944 (type locality). Talpidae: *Talpa vallesensis* Villalta & Crusafont, 1944 (type locality), *Talpa* sp.

*Taxonomic descriptions* – Villalta & Crusafont (1944) gave descriptions for the various taxa, including the first descriptions of *Lantanothereium sanmigueli* and *Talpa vallesensis*. New diagnoses for these species were given by Crusafont & Villalta (1951).

*Storage of material* – IPMC.

### Can Trullàs

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°33' E 1°58'].

*Stratigraphy* – Upper Vallesian.

*Literature* – Crusafont & Villalta (1947).

*Insectivores* – Erinaceidae: *Postpalerinaceus vireti* (Crusafont & Villalta, 1947) (type locality).

*Taxonomic descriptions* – The species was originally described as *Palerinaceus (Postpalerinaceus) vireti* by Crusafont & Villalta (1947). Crusafont & Villalta (1951) gave a diagnosis, which was not given in the first description.

*Storage of material* – IPMC.

*Remarks* – The subgenus *Postpalerinaceus* was elevated to the genus level by Butler (1956).

### Cerro de los Batallones 1

*Location* – Torrejón de Velasco, Province of Madrid, Madrid Basin.

*Stratigraphy* – Vallesian.

*Literature* – Morales *et al.* (1992, 2004).

*Insectivores* – Erinaceidae: *Postpalerinaceus vireti* (Crusafont & Villalta, 1947), *Parasorex ibericus* (Mein & Martín-Suárez, 1993). Soricidae: Soricidae indet.

*Taxonomic descriptions* – Morales *et al.* (1992) cited *Galerix* sp. Mein & Martín-Suárez (1993) ascribed this material to *Galerix iberica* [*Parasorex ibericus*]. A complete faunal list was given by Morales *et al.* (2004), in which the *Parasorex* was listed as *Galerix* sp., and *Postpalerinaceus vireti* as an unidentified erinaceine.

*Storage of material* – MNCN.

*Remarks* – The material from Cerro de Batallones is excellently preserved, and includes skulls of both Erinaceidae.

### La Cantera

*Location* – Province of Teruel, Teruel Basin [N 40°4' W 1°1'].

*Stratigraphy* – Vallesian, Zone J3.

*Literature* – Alcalá *et al.* (1986).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865.

*Taxonomic descriptions* – Alcalá *et al.* (1986) listed the species and gave measurements of the material.

*Storage of material* –

### La Cantera 2

*Location* – Province of Teruel, Teruel Basin [N 40°4' W 1°1'].

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – This occurrence was listed in Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* –

### La Gloria 11

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4'].

*Stratigraphy* – Vallesian, Zone J3, C4An (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Crusafontina* cf. *fastigata* Van Dam, 2004, *Paenelimnoecus* sp.

*Taxonomic descriptions* – Van Dam (2004) described the *Crusafontina*. The other insectivores were listed in Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **La Gloria 14 A/B**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4'].

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Crusafontina endemica* Gibert, 1975, *Paenelimoecus* sp.

*Taxonomic descriptions* – Van Dam (2004) discussed the *Crusafontina* from La Gloria 14 A/B. The remainder of the insectivores were first listed in Van Dam (1997); Van Dam *et al.* (2001) added the *Desmanella*.

*Storage of material* – IVAU.

#### **La Roma 1**

*Location* – Province of Teruel, Teruel Basin [N 40°40' W 1°01'].

*Stratigraphy* – Vallesian, Zone J3.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimoecus* sp., Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Van Dam (1997) gave a faunal list. The shrews from La Roma 1 were added by Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **La Roma 2**

*Location* – Province of Teruel, Teruel Basin [N 40°40' W 1°01'].

*Stratigraphy* – Vallesian, Zone J3.

*Literature* – Adrover *et al.* (1982b), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp.

*Taxonomic descriptions* – The small insectivore assemblage of La Roma 2, consisting of two M3 of *Parasorex* and a *Desmanella* m1, was described in Adrover *et al.* (1982b).

*Storage of material* – FSL.

### La Salle

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Adrover *et al.* (1982a).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865. Soricidae: *Crusafontina endemica* Gibert, 1975.

*Taxonomic descriptions* – Adrover *et al.* (1982a) listed the insectivores, including the measurements and illustrations. The *Crusafontina* was also discussed by Van Dam (2004).

*Storage of material* – FSL.

### La Tarumba I

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°33'16" E 1°58'15"].

*Stratigraphy* – Upper Vallesian, C4Ar.2r (Garcès, 1995; Garcès *et al.*, 1996).

*Literature* – Golpe (1974).

*Insectivores* – Erinaceidae: *Lantanotherium sanmigueli* Villalta & Crusafont, 1944, *Postpalerinaceus vireti* (Crusafont & Villalta, 1947). Talpidae: *Talpa vallesensis* Villalta & Crusafont, 1944.

*Taxonomic descriptions* – Villalta & Crusafont (1944) described the species from Viladecavalls. Golpe (1974) listed *L. sanmigueli*. López-Martínez (1989) listed also *P. vireti* and *T. vallesensis*.

*Storage of material* –

### Los Aguanaces 4

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Vallesian, Zone J3, C4An (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).



*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – The presence of *Parasorex* in Los Aguanaces 4 was noted by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Los Aguanaces 5A**

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Vallesian, Zone J3, C4An (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Crusafontina fastigata* Van Dam, 2004 (type locality), *Paenelimmoecus* sp., Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Van Dam (2004) described *Crusafontina fastigata* on the basis of the material from Los Aguanaces 5A. The presence of *Desmanella* was noted in Van Dam (1997); the other insectivores were listed in Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Los Aguanaces 5B**

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Vallesian, Zone J3, C4An (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Talpidae: *Desmanella* sp. Soricidae: Soricidae gen. et sp. indet.

*Taxonomic descriptions* – Faunal listings were given in Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masada Ruea**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J3, C4Ar.1n.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimoecus* sp.

*Taxonomic descriptions* – The talpid and erinaceid were listed in Van Dam (1997). Van Dam *et al.* (2001) added *Paenelimoecus*.

*Storage of material* – IVAU.

#### **Masia de la Roma 4B**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J1, top C5n.

*Literature* – Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., Soricid gen. et sp. indet. 1.

*Taxonomic descriptions* – Van Dam (1997) listed the material. Van Dam *et al.* (2001) added Soricid gen. et sp. indet. 1.

*Storage of material* – IVAU.

#### **Masia de la Roma 4C**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J1, top C5n.

*Literature* – Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., Soricid gen. et sp. indet. 1.

*Taxonomic descriptions* – Van Dam *et al.* (2001) listed the material.

*Storage of material* –

#### **Masia de la Roma 5**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J1, top C5n.

*Literature* – Van Dam (1997).

*Insectivores* – Soricidae: *Miosorex* sp.

*Taxonomic descriptions* – Although Van Dam (1997) listed the material, no insectivores were listed for Masia de la Roma 5 in Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masia de la Roma 7**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J1, top C5n / base C4Ar.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et. sp. indet. Soricidae: *Miosorex* sp., Soricidae gen. et sp. 1.

*Taxonomic descriptions* – Van Dam (1997) listed the material. *Miosorex* sp. appeared on a later list only (Van Dam *et al.*, 2001).

*Storage of material* – IVAU.

#### **Masia de la Roma 8**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J1, top C5n / base C4Ar.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: Soricid gen. et sp. indet. 1.

*Taxonomic descriptions* – Van Dam (1997) listed the shrew as *Miosorex* sp., but this was changed into Soricid gen. et sp. indet. 1 by Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masia de la Roma 9**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J1, top C5n/base C4Ar.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., *Crusafontina endemica* Gibert, 1975, Soricid gen. et sp. indet 1.

*Taxonomic descriptions* – Van Dam (2004) described *Crusafontina* from Masia de la Roma 9, the other insectivores were listed in Van Dam (1997). Soricid gen. et sp. indet. 1 was listed in Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masia de la Roma 11**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Vallesian, Zone J2, C4Ar (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., Soricidae gen. et sp. 1, *Paenelimnoecus* sp.

*Taxonomic descriptions* – Faunal lists were given in Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masia del Barbo 2A**

*Location* – Province of Teruel, Teruel Basin [N 40°4' W 1°1'].

*Stratigraphy* – Vallesian, Zone J1, C4Ar (Van Dam *et al.*, 2001).

*Literature* – Van de Weerd (1976).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., Soricid gen. et sp. 1, *Crusafontina endemica* Gibert, 1975, *Paenelimnoecus* sp.

*Taxonomic descriptions* – Only the *Crusafontina* was hitherto described (Van Dam, 2004); the remainder of the insectivore fauna was listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masia del Barbo 2B**

*Location* – Province of Teruel, Teruel Basin [N 40°4' W 1°1'].

*Stratigraphy* – Vallesian, Zone J2, C4Ar (Van Dam *et al.*, 2001).

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et sp. indet. Soricidae: *Miosorex* sp., *Crusafontina endemica* Gibert, 1975, *Paenelimnoecus* sp.

*Taxonomic descriptions* – Only the *Crusafontina* was hitherto described (Van Dam, 2004); the remainder of the insectivore fauna was listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Peralejos 4**

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°02'].

*Stratigraphy* – Vallesian, Zone J2, C4Ar (Van Dam *et al.*, 2001).

*Literature* – Van de Weerd (1976).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Miosorex* sp., Soricid gen. et sp. 1.

*Taxonomic descriptions* – The insectivore fauna was listed by Van Dam (1997). Soricid gen. et sp. indet 1 was not listed in Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Peralejos A**

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°02'].

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865. Talpidae: *Desmanella* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997).

*Storage of material* – IVAU.

#### **Peralejos C**

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°02'].

*Stratigraphy* – Vallesian, Zone J3.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – These species were listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Puente Minero 2**

*Location* – Province of Teruel, Teruel Basin [N 40°22' W 1°5'].

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Crusafontina endemica* Gibert, 1975, *Paenelimnoecus* sp.

*Taxonomic descriptions* – Van Dam (2004) discussed the *Crusafontina* from Puente Minero 2. The remainder of the insectivores was listed in Van Dam (1997) and Van Dam *et al.* (2001). The latter list did not feature *Paenelimnoecus* sp.

*Storage of material* – IVAU.

### **Puente Minero 8**

*Location* – Province of Teruel, Teruel Basin [N 40°22' W 1°5'].

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Crusafontina endemica* Gibert, 1975, *Miosorex* sp., *Paenelimnoecus* sp.

*Taxonomic descriptions* – Van Dam (2004) described the *Crusafontina* finds. The other insectivores were listed in Van Dam *et al.* (2001).

*Storage of material* –

### **Puente Minero 10**

*Location* – Province of Teruel, Teruel Basin [N 40°22' W 1°5'].

*Stratigraphy* – Vallesian, Zone J2.

*Literature* – Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Crusafontina endemica* Gibert, 1975, *Miosorex* sp.

*Taxonomic descriptions* – Van Dam (2004) described the *Crusafontina* finds. The other insectivores were listed in Van Dam *et al.* (2001).

*Storage of material* –

*Remarks* – Puente Minero 10 is the latest occurrence of *Miosorex* in the Late Miocene of the Teruel Basin.

### San Miquel de Taudell

*Location* – Province of Barcelona, Vallès-Penedès Basin [N 41°33'05" E 1°58'20"]

*Stratigraphy* – Upper Vallesian.

*Literature* – Golpe (1974).

*Insectivores* – Erinaceidae: *Lantanotherium sanmigueli* Villalta & Crusafont, 1944. Talpidae: *Talpa vallesensis* Villalta & Crusafont, 1944, *Talpa* sp.

*Taxonomic descriptions* – López-Martínez (1989) listed the species.

*Storage of material* – IPMC.

### Torrent de Febulines 3

*Location* – Terrassa. Province of Barcelona, Vallès-Penedès Basin [N 42°32'50" E 5°43'20"].

*Stratigraphy* – Upper Vallesian, C4An (Garcès, 1995; Garcès *et al.*, 1996).

*Literature* – Golpe-Posse *et al.* (1979).

*Insectivores* – Erinaceidae: *Postpalerinaceus vireti* (Crusafont & Villalta, 1947), *Lantanotherium sanmigueli* Villalta & Crusafont, 1944, *Parasorex socialis* von Meyer, 1865. Talpidae: *Talpa vallesensis* Villalta & Crusafont, 1944. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Miosorex grivensis* (Depéret, 1892), *Crusafontina endemica* Gibert, 1975.

*Taxonomic descriptions* – Agustí & Gibert (1979b) listed and gave measurements of *Galerix* [= *Parasorex*] *socialis* and *Postpalerinaceus vireti*. Agustí & Gibert (1982a) only listed the species.

*Storage of material* – IPMC.

*Remarks* – Agustí & Gibert (1979b) noticed that the same species of insectivores in this locality had bigger dimensions than those of Can Llobateres.

### Trinchera norte Autopista

*Location* – Terrassa. Province of Barcelona, Vallès-Penedès Basin [N 42°32'50" E 5°43'20"].

*Stratigraphy* – Upper Vallesian, C4Ar.1r (Garcès, 1995; Garcès *et al.*, 1996).

*Literature* – Golpe-Posse *et al.* (1979).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865. Talpidae: *Talpa vallesensis* Villalta & Crusafont, 1944, *Scalopoides* sp. Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Miosorex grivensis* (Depéret, 1892), *Crusafontina endemica* Gibert, 1975.

*Taxonomic descriptions* – Agustí & Gibert (1979b) cited and gave measurements of *Miosorex grivensis* and *Talpa vallesensis*. Agustí & Gibert (1982a) listed the species.

*Storage of material* – IPMC.

### Trinchera sur Autopista II

*Location* – Terrassa. Province of Barcelona, Vallès-Penedès Basin [N 42°32'50" E 5°43'20"].

*Stratigraphy* – Upper Vallesian, C4Ar.1r (Garcès, 1995; Garcès *et al.*, 1996).

*Literature* – Golpe-Posse *et al.* (1979).

*Insectivores* – Erinaceidae: *Parasorex socialis* von Meyer, 1865. Soricidae: *Miosorex grivensis* (Depéret, 1892), *Crusafontina endemica* Gibert, 1975.

*Taxonomic descriptions* – Agustí & Gibert (1979b) cited and gave measurements of *Galerix* [= *Parasorex*] *socialis* and *Miosorex grivensis*. Agustí & Gibert (1982a) published a faunal list only.

*Storage of material* – IPMC.

## MN 11

### Alfambra

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°03'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van de Weerd (1976).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.



*Taxonomic descriptions* – Van Dam (1997) listed *Parasorex* and *Desmanella*. *Paenelimnoecus* was added to the list by Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Crevillente 2**

*Location* – Province of Alicante, Fortuna Basin.

*Stratigraphy* – Turolian, *sondaari* biozone of Martín-Suárez & Freudenthal (1998).

*Literature* – De Bruijn *et al.* (1975), Martín-Suárez & Freudenthal (1993, 1998), Freudenthal *et al.* (1991a, b).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993), *Postpalerincaceus* cf. *vireti* (Crusafont & Villalta, 1947). Talpidae: *Desmanella* sp.

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited *Galerix iberica*. A complete faunal list of the locality was provided by Martín-Suárez & Freudenthal (1998) and Mazo & Montoya (2003).

*Storage of material* – NNM.

*Remarks* – Crevillente 2 has been designated the reference locality for MN 11 (e.g., De Bruijn *et al.*, 1992).

### **La Gloria 10**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4'].

*Stratigraphy* – Turolian, Zone K, C4r (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997), but the presence of *Paenelimnoecus* was only noted by Van Dam *et al.* (2001) in their faunal list.

*Storage of material* – IVAU.

### **Los Aguanaces**

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Turolian, Zone K, C4r (Van Dam *et al.*, 2001).

*Literature* – Adrover (1986).

*Insectivores* – Erinaceidae: *Parasorex* sp., *Postpalerinaceus vireti* (Crusafont & Villalta, 1947). Talpidae: *Desmanella* cf. *crusafonti* Rümke, 1974.

*Taxonomic descriptions* – Adrover (1986) gave only a faunal list for the insectivores.

*Storage of material* –

### Los Aguanaces 1

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Turolian, Zone K, C4r (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### Los Aguanaces 3

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Turolian, Zone K, C4r (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – *Parasorex* and *Desmanella* were listed by Van Dam (1997). Van Dam *et al.* (2001) added *Paenelimnoecus* to the list.

*Storage of material* – IVAU.

### Los Aguanaces 7

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Turolian, Zone K, top C4An/base C4r (Van Dam *et al.*, 2001).

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – The presence of *Parasorex* in the assemblages was noted by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

## **Masada Ruea 2**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimoecus* sp., *Petenyia* sp.

*Taxonomic descriptions* – Van Dam *et al.* (2001) listed the insectivores, *Blarinella* sp. is changed into *Petenyia* sp. herein.

*Storage of material* –

## **Peralejos D**

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°02'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimoecus* sp.

*Taxonomic descriptions* – The shrew and erinacid were listed by Van Dam (1997). Van Dam *et al.* (2001) added *Desmanella* to the list.

*Storage of material* – IVAU.

## **Puente Minero**

*Location* – Province of Teruel, Teruel Basin [N 40°22' W 1°5'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Alcalá *et al.* (1991).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993), *Amphelichinus* cf. *robinsoni* Gibert, 1975. Talpidae: *Desmanella crusafonti* Rümke, 1974. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – Descriptions were provided by Alcalá *et al.* (1991). They did not include the *Paenelimnoecus*, the presence of which in the assemblage was noted by Van Dam (1997) and Van Dam *et al.* (2001). Mein & Martín Suárez (1993) changed the identification of the *Parasorex* from *socialis* to *ibericus*.

*Storage of material* – MNCN.

### **Puente Minero 3**

*Location* – Province of Teruel, Teruel Basin [N 40°22' W 1°5'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997), but without any shrews. *Paenelimnoecus* was added by Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Puente Minero 5A/B**

*Location* – Province of Teruel, Teruel Basin [N 40°22' W 1°5'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Regajo 2**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone K.

*Literature* – Adrover *et al.* (1984).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – The presence of *Parasorex* was noted by Van Dam (1997) and Van Dam *et al.* (2001). Adrover *et al.* (1984) did not mention that genus in Regajo 2, although they did recognise it in younger levels.

*Storage of material* –

*Remarks* – The name Regajo 2 is also in use for an Aragonian locality in the Daroca-Calamocho area (province of Zaragoza).

### **Tortajada A**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°1'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997), with the exception of *Paenelimnoecus*, which was added by Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Vivero de Pinos**

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Turolian, Zone K.

*Literature* – Van de Weerd (1976), Adrover (1986).

*Insectivores* – Erinaceidae: *Parasorex* sp., *Postpalerinaceus vireti* (Crusafont & Villalta, 1947). Talpidae: *Archaeodesmana* sp., *Desmanella crusafonti* Rümke, 1974, *Talpa* sp. Soricidae: *Paenelimnoecus repenningi* (Bachmayer & Wilson, 1970), *Petenyia dubia* Bachmayer & Wilson, 1970.

*Taxonomic descriptions* – Adrover (1986) gave a faunal list of the insectivores only, as did Van Dam (1997). The latter changed the identification of *Desmana* [= *Archaeodesmana*] *pontica* into *Archaeodesmana* sp., which is sensible since *A. pontica* is known from MN 13 of Hungary only, whereas various other species have been described from the Teruel

Basin (Rümke, 1985). Van Dam (1997) had placed the species *dubia* in the genus *Blarinella* following Reumer (1984). However, according to Storch (1995) the species is better placed in *Petenya*. We conclude that the name *dubia* is well chosen and that the generic assignment of the species is still open for discussion. Pending the outcome, we hold on to the original generic assignment by Bachmayer & Wilson (1970).

*Storage of material* – IVAU. The Utrecht collection only has a small sample from Vive-ro de Pinos. No reference could be found to the storage of the material described and listed by Adrover (1986).

## MN 12

### Aljezar B

*Location* – Province of Teruel, Teruel Basin [N 40°20' W 1°05'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Adrover (1986).

*Insectivores* – Erinaceidae: *Parasorex* sp., *Erinaceus* sp. Talpidae: *Archaeodesmana adroveri* (Rümke, 1985) (type locality), *Desmanella* sp., *Talpa* sp. Soricidae: *Paenelimnoecus repenningi* (Bachmayer & Wilson, 1970), *Petenya dubia* Bachmayer & Wilson, 1970.

*Taxonomic descriptions* – The *Archaeodesmana* was described under the genus *Dibolia* by Rümke (1985). The other insectivores were listed by Adrover (1986), Van Dam (1997) and Van Dam *et al.* (2001). *Paenelimnoecus* was not included in the lists by the latter author, but this was due to a printing error (Van Dam, pers. comm.). Both Adrover and Van Dam listed the *Erinaceus* as *E. europaeus*. It seems, however, unlikely to have the Recent species in an Upper Miocene, so the species is here listed as *Erinaceus* sp. pending further research.

*Storage of material* – According to Rümke (1985), the holotype of *Dibolia adroveri* is at the IPMC.

## Casa del Acero

*Location* – Province of Murcia, Fortuna Basin.

*Stratigraphy* – Middle Turolian.

*Literature* – Agustí *et al.* (1981).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993), *Parasorex* sp. Soricidae: *Paenelimnoecus repenningi* (Bachmayer & Wilson, 1970).

*Taxonomic descriptions* – Agustí *et al.* (1981) described three Galericinae from Casa del Acero; *Schizogalerix* sp. I, *Schizogalerix* sp. II, and Echinisoricinae indet. However, *Schizogalerix* seems never to have reached Spain (Van den Hoek Ostende, 2001) and the material most likely represents *Parasorex*, a genus that shares a number of characteristics with *Schizogalerix* and was very common in Spain during the Late Miocene. Mein & Martín-Suárez (1993) ascribed *Schizogalerix* sp. I to *Galerix iberica*, a species that was transferred to *Parasorex* by Van den Hoek Ostende (2001b). Based on the measurements given for the single M2 ascribed to “*Schizogalerix* II”, it seems likely that it represents a second species of *Parasorex* in the locality. Possibly the single p4 classified as “Echinisoricinae indet.” is referable to one of the other two galericines, but this cannot be decided from the description given by Agustí *et al.* (1981). Pending further research, we have decided not to list it separately. The soricid from the locality was originally described under the name *Petenyiella repenningi*.

*Storage of material* – IPMC.

### Concud

*Location* – Province of Teruel, Teruel Basin [N 40°24' W 1°8'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Talpa* sp. Soricidae: *Amblycoptus* sp.

*Taxonomic descriptions* – Van Dam (1997) listed the erinaceid and talpid. Van Dam *et al.* (2001) added the shrew. The presence of ‘*Amblycoptus* seu *Kordosia*’ was based on a damaged M2 (Van Dam, 2004), which was discovered at a recent excavation at Concud.

*Storage of material* – IVAU.

### Concud 2

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°3']

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp., *Talpa* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The insectivore assemblage was listed by Van Dam (1997) and Van Dam *et al.* (2001). The shrew listed as *Blarinella* sp. is here listed as *Petenyia* sp.

*Storage of material* – IVAU.

### Concud 3

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°3'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et sp. indet. Talpidae: *Archaeodesmana* sp., *Desmanella crusafonti* Rümke, 1974 (type locality), *Talpa* sp. Soricidae: *Petenyia* sp., Soricidae indet.

*Taxonomic descriptions* – Rümke (1974) based *Desmanella crusafonti* on the large assemblage of this species found in Concud 3. The other insectivores were listed in Van Dam (1997) and Van Dam *et al.* (2001). *Blarinella* sp. is here listed as *Petenyia* sp.

*Storage of material* – IVAU. The holotype of *D. crusafonti* is, together with a representative series of molars, stored at IPMC.

### Concud B

*Location* – Province of Teruel, Teruel Basin [N 40°24' W 1°1'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp., *Talpa* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – A listing of the insectivores was provided by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

*Remarks* – Concud B is a fossiliferous level close to the classical macromammal locality Concud.

### Concud Barranco

*Location* – Province of Teruel, Teruel Basin [N 40°24' W 1°1'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp. Soricidae: *Paenelimnoecus* sp.



*Taxonomic descriptions* – The various species were listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Crevillente 5**

*Location* – Province of Alicante, Fortuna Basin.

*Stratigraphy* – Turolian, *turoliensis* biozone of Martín-Suárez & Freudenthal (1998).

*Literature* – De Bruijn *et al.* (1975), Martín-Suárez & Freudenthal (1993), Freudenthal *et al.* (1991a, b).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: Soricidae indet.

*Taxonomic descriptions* – The insectivores from Crevillente 5 are represented only by scarce and fragmented remains.

*Storage of material* – IVAU.

### **Crevillente 7**

*Location* – Province of Alicante, Fortuna Basin.

*Stratigraphy* – Turolian, *meini* biozone of Martín-Suárez & Freudenthal (1998).

*Literature* – Martín-Suárez & Freudenthal (1993, 1998), Freudenthal *et al.* (1991a, b).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993).

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited the presence of *Galerix iberica*. A full faunal list was given by Martín-Suárez & Freudenthal (1998).

*Storage of material* – NNM.

*Remarks* – According to Martín-Suárez & Freudenthal (1998), the *meini* biozone is not comparable to any MN unit. The localities from this zone, Crevillente 7, 8 and 17, are here tentatively placed in MN 12, since Freudenthal & Martín-Suárez (1999) indicated the *Apodemus meini* is restricted to that MN-zone.

### **Crevillente 8**

*Location* – Province of Alicante, Fortuna Basin.

*Stratigraphy* – Turolian, *meini* biozone of Martín-Suárez & Freudenthal (1998).

*Literature* – Martín-Suárez & Freudenthal (1993, 1998), Freudenthal *et al.* (1991a, b).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993). Soricidae: Soricid gen. et. sp. indet.

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited *Galerix iberica*. Martín-Suárez & Freudenthal (1998) gave a full faunal list.

*Storage of material* – NNM.

*Remarks* – See Crevillente 7.

### Crevillente 15

*Location* – Province of Alicante, Fortuna Basin.

*Stratigraphy* – Turolian, *turoliensis* biozone of Martín-Suárez & Freudenthal (1998).

*Literature* – De Bruijn *et al.* (1975), Martín-Suárez & Freudenthal (1993), Freudenthal *et al.* (1991a, b).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993). Talpidae: Talpidae indet. Soricid gen. et sp. indet. 1, Soricid gen. et sp. indet. 2.

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited *Galerix* [= *Parasorex*] *iberica*. Montoya & Alberdi (1995) noted the presence of talpids and soricids. Martín-Suárez & Freudenthal (1998) and Mazo & Montoya (2003) gave a complete faunal list of the locality. Based on the fragments in the collections of the NNM, it is clear that at least two species of shrew are present.

*Storage of material* – NNM.

### Crevillente 17

*Location* – Province of Alicante, Fortuna Basin.

*Stratigraphy* – Turolian, *meini* biozone of Martín-Suárez & Freudenthal (1998).

*Literature* – Martín-Suárez & Freudenthal (1993, 1998), Freudenthal *et al.* (1991a, b).

*Insectivores* – Erinaceidae: Erinaceide gen. et sp. indet., *Parasorex ibericus* (Mein & Martín-Suárez, 1993). Talpidae: Desmaninae indet. Soricidae: Soricid gen. et sp. indet. 1, Soricid gen. et sp. indet. 2.

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited *Galerix iberica*. The presence of two species of soricid and a large erinaceid is based on fragmentary material in

the collections of Naturalis. According to the catalogue of that museum an unidentified desman is also present. As the material is out on loan, this could not be verified.

*Storage of material* – NNM.

*Remarks* – See Crevillente 7.

### Fuente Podrida

*Location* – Province of Albacete, Cabriel Basin.

*Stratigraphy* – Middle Turolian.

*Literature* – Mein *et al.* (1978).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Paenelimnoecus* cf. *repenningi* (Bachmayer & Wilson, 1970).

*Taxonomic descriptions* – Mein *et al.* (1978) gave a faunal list with short descriptions and measurements. Both insectivore species are represented by a single element only. *Galerix* sp. has been changed here into *Parasorex* sp. for reasons given by Van den Hoek Ostende (2001b).

*Storage of material* – FSL.

### Los Mansuetos

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°07'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et sp. indet. Talpidae: *Archaeodesmana turolense* (Rümke, 1985), *Desmanella crusafonti* Rümke, 1974, *Talpa* sp., Soricidae: *Paenelimnoecus repenningi* (Bachmayer & Wilson, 1970), *Petenya dubia* Bachmayer & Wilson, 1970.

*Taxonomic descriptions* – Rümke (1974, 1985) described the *Desmanella* and *Archaeodesmana* finds. A faunal list was given by Van Dam (1997), Van Dam *et al.* (2001) and De Bruijn *et al.* (1992). The latter erroneously listed *A. major* in stead of *A. turolense*. Van Dam *et al.* (2001) listed *Archaeodesmana* sp. next to *Archeodesmana turolense*, presumably also in error. *Blarinella dubia* appears on the list of De Bruijn *et al.* but was not listed by Van Dam (1997) nor by Van Dam *et al.* (2001). The generic assignment of *dubia* is changed here for reasons given at Vivero de Pinos.

*Storage of material* – IVAU.

*Remarks* – Los Mansuetos is the reference locality of MN-zone 12.

### **Los Mansuetos 2**

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°07'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997).

*Storage of material* – IVAU.

### **Masada del Valle 2**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°26'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp., Erinaceinae gen. et sp. indet. Talpidae: *Archaeodesmana turolense* (Rümke, 1985) (type locality), *Desmanella* sp. Soricidae: *Paenelinnoecus* sp., *Petenyia* sp.

*Taxonomic descriptions* – The *Archaeodesmana* was described by Rümke (1985). The remaining insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001). Their *Blarinella* sp. is here classified as *Petenyia* sp.

*Storage of material* – IVAU.

### **Masada del Valle 3**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°26'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001). Their *Blarinella* is here listed as *Petenyia*.

*Storage of material* – IVAU.

#### **Masada del Valle 4**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°26'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The insectivore assemblage was listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

#### **Masada del Valle 5**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°26'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana turolense* (Rümke, 1985), *Desmanella* sp., *Talpa* sp. Soricidae: *Paenelimnoecus* sp., *Petenyia* sp.

*Taxonomic descriptions* – The *Archaeodesmana* was described by Rümke (1985), the other insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001). Their *Blarinella* sp. is here listed as *Petenyia*.

*Storage of material* – IVAU.

#### **Masada Ruea 3**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – Van Dam *et al.* (2001) listed the insectivores. *Blarinella* sp. is here listed as *Petenyia* sp.

*Storage of material* –

#### **Masada Ruea 4**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – Van Dam *et al.* (2001) listed the fauna from Masada Ruea 4.

*Storage of material* –

#### **Regajo 3**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone L.

*Literature* – Adrover *et al.* (1984).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: Talpidae gen. et sp. indet.

*Taxonomic descriptions* – These taxa were listed by Adrover *et al.* (1984) and by Van Dam *et al.* (2001).

*Storage of material* –

#### **Regajo 4**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone L.

*Literature* – Adrover *et al.* (1984).

*Insectivores* – Talpidae: *Archaeodesmana* sp., *Desmanella crusafonti* Rümke, 1974.

*Taxonomic descriptions* – The insectivores were listed by Adrover *et al.* (1984), who gave both illustrations and measurements. We concur with Van Dam (1997) that the desman material originally listed as *Desmana pontica* is, in view of the limited material,

better classified as *Archaeodesmana* sp. Van Dam (1997) and Van Dam *et al.* (2001) listed the *Desmanella* as *Desmanella* sp.

*Storage of material* –

### **Tortajada**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°5'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp. Soricidae: *Petenya* sp.

*Taxonomic descriptions* – The insectivore assemblage was listed by Van Dam (1997) and Van Dam *et al.* (2001). *Blarinella* sp. from their lists is here classified as *Petenya* sp.

*Storage of material* – IVAU.

### **Tortajada B**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°5'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Tortajada C**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°5'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Crusafontina vandeweerti* (type locality), Soricidae gen. et sp. indet.

*Taxonomic descriptions* – The *Crusafontina* was described by Van Dam (2004). The remaining insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Tortajada D**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°5'].

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp. Soricidae: *Petenyia* sp., Soricidae gen. et sp. indet.

*Taxonomic descriptions* – The insectivore assemblage was listed by Van Dam (1997) and Van Dam *et al.* (2001). *Blarinella* sp. from those lists is here listed as *Petenyia* sp.

*Storage of material* – IVAU.

### **Villalba Baja 2B/2C**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone L.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The insectivores were listed in Van Dam (1997) and Van Dam *et al.* (2001). The *Blarinella* sp. listed there is here classified as *Petenyia* sp.

*Storage of material* – IVAU.

### **MN 13**

#### **Almenara-Casablanca M**

*Location* – Province of Castellón.

*Stratigraphy* – Upper Turolian.

*Literature* – Agustí & Galobart (1986), Agustí (1990), Köhler *et al.* (2000), Furió *et al.* (2005a).



*Insectivores* – Erinaceidae: *Parasorex* cf. *ibericus* Mein & Martín-Suárez, 1993. Soricidae: *Alloblarinella europaea* (Reumer, 1984), Crocidurinae sp.

*Taxonomic descriptions* – Agustí & Galobart (1986) cited Erinaceidae indet. Furió *et al.* (2005a) adscribed Erinaceidae indet. to a member of the tribe Galericini, and listed *Blarinella dubia* and *Crocidura* sp. Furió (2005b) listed all the insectivores, changing *Blarinella dubia* into *Alloblarinella europaea*, and *Crocidura* sp. into Crocidurinae indet.

*Storage of material* – IPMC.

*Remarks* – Karstic site. Almenara-Casablanca M may represent the earliest record of a real Crocidurinae species for the Iberian Peninsula, as Asian and African faunal elements arrived during of Messinian Salinity Crisis.

### Botardo 3

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Turolian.

*Literature* – Martín-Suárez (1988).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – Martín-Suárez (1988) described *Galerix* sp., which is changed here into *Parasorex* sp. following the revision of the Galericini by Van den Hoek Ostende (2001b).

*Storage of material* – DEPUG.

### Botardo C

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Turolian.

*Literature* – Martín-Suárez (1988).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana getica* (Terzea, 1980).

*Taxonomic descriptions* – Martín-Suárez (1988) described *Galerix* sp. and *Dibolia dekkersi*. Based on the age, the galericine is probably *Parasorex*. As Rzebik-Kowalska (2005) pointed out, Van den Hoek Ostende *et al.* (1989) placed the type material of *Desmana getica* Terzea, 1980 from Ciuperчени 1 (Romania) in *Dibolia dekkersi* Rümke, 1985. Thus, the name *getica* has priority.

*Storage of material* – DEPUG.

### **Búnker de Valdecebro**

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°3'].

*Stratigraphy* – Turolian, Zone M1, C3An (Van Dam, 1997; Van Dam *et al.* 2001).

*Literature* – Adrover *et al.* (1982b), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – The only insectivore fossil from the locality, an erinaceid milk molar, was described by Adrover *et al.* (1982b).

*Storage of material* –

*Remarks* – Though Adrover *et al.* (1982b) described the milk molar as a d4, their illustration suggests that it is in fact a d3.

### **Búnker de Valdecebro 4/5**

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°3'].

*Stratigraphy* – Turolian, Zone M1, C3An (Van Dam, 1997, Van Dam *et al.* 2001).

*Literature* – Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp., *Amblycoptus jessiae* Doukas, 1995.

*Taxonomic descriptions* – Van Dam (1997) only noted the presence of *Galerix* [= *Parasorex*] sp., but the *Amblycoptus* was added in Van Dam *et al.* (2001). Van Dam (2004) described *Amblycoptus jessiae* from Bunker de Valdecebro 5.

*Storage of material* – IVAU.

### **Cacín 1**

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Upper Turolian (“Ventian”).

*Literature* – Ruiz-Bustos *et al.* (1992a).

*Insectivores* – Talpidae: *Archaeodesmana getica* (Terzea, 1980). Soricidae: *Sorex* sp.

*Taxonomic descriptions* – Ruiz-Bustos *et al.* (1992a) gave a faunal list, in which the desman was identified as *Dibolia dekkersi*. However, as Rzebik-Kowalska (2005) pointed out, the correct name for this taxon is *Archaeodesmana getica*.

*Storage of material* –

### **Can Vilella**

*Location* – Province of Girona, Cerdanya Basin.

*Stratigraphy* – Turolian.

*Literature* – Agustí *et al.* (in press)

*Insectivores* – Erinaceidae: Galericini indet. Talpidae: *Archaeodesmana* sp., *Desmanella dubia* Rümke, 1976, *Talpa* cf. *minuta* Blainville, 1838, *Talpa* sp. Soricidae: Soricini indet., *Petenya dubia* Bachmayer & Wilson, 1970, *Amblycoptus jessiae* Doukas, 1995.

*Taxonomic descriptions* – The species are listed in Agustí *et al.* (in press).

*Storage of material* – IPMC.

### **Celadas 2**

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°09'].

*Stratigraphy* – Turolian, Zone M.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Blarinella* sp.

*Taxonomic descriptions* – A faunal list was given by Adrover *et al.* (1993).

*Storage of material* – FSL.

### **Cortijo de la Piedra**

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Turolian (Vallesian according to Mein & Martín-Suárez, 1993).

*Literature* – Sesé (1989).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993).

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited *Galerix iberica*.

*Storage of material* –

### Curva

*Location* – Granada Province of Granada, Granada Basin.

*Stratigraphy* – Upper Turolian (“Ventian”).

*Literature* – Ruiz-Bustos *et al.* (1992b).

*Insectivores* – Talpidae: *Archaeodesmana getica* (Terzea, 1980).

*Taxonomic descriptions* – Ruiz-Bustos *et al.* (1992b) and Ruiz-Bustos (2002) listed *Archaeodesmana dekkersi*. According to Rzebik-Kowalska (2005) the correct name for this taxon is *A. getica*.

*Storage of material* –

### El Arquillo 1

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°03'].

*Stratigraphy* – Turolian, Zone M2.

*Literature* – Van de Weerd (1976), Adrover *et al.* (1993).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana luteijni* (Rümke, 1985), *Desmanella* sp., *Talpa* sp. Soricidae: *Petenyia dubia* Bachmayer & Wilson, 1970.

*Taxonomic descriptions* – The *Archaeodesmana* was described by Rümke (1985). De Bruijn *et al.* (1992) listed *Galerix* sp., *Desmanella crusafonti* and *Blarinella dubia*. Van Dam (1997) and Van Dam *et al.* (2001) listed the *Desmanella* as *Desmanella* sp., and added *Talpa* sp. The galericine is here placed in *Parasorex* (see Van den Hoek Ostende, 2001b) and the species *dubia* in *Petenyia*. For a discussion on the generic assignment of this species, see Vivero de Pinos.

*Storage of material* – IVAU.

*Remarks* – El Arquillo 1 is the reference locality for MN 13. The locality appears in literature also under the name La Fontana.

### El Arquillo 4

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°03'].

*Stratigraphy* – Turolian, Zone M2.

*Literature* – Mein *et al.* (1990), Adrover *et al.* (1993).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Talpa* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The insectivores from El Arquillo 4 were listed by Mein *et al.* (1990), Adrover *et al.* (1993), Van Dam (1997), and Van Dam *et al.* (2001). The faunal lists from Mein *et al.* (1990) and Adrover *et al.* (1993) differ considerably. Like Van Dam (1997), we follow the latter publication. *Blarinella* sp. has here been change into *Petenyia* sp., as the named species found in the Turolian of Spain, *Blarinella dubia*, was transferred to *Petenyia* for reasons given at Vivero de Pinos.

*Storage of material* – FSL.

### **El Capon 2**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone M.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Talpidae: *Archaeodesmana* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The insectivores were listed in Van Dam (1997) and Van Dam *et al.* (2001). The identification *Blarinella* sp. has here been changed to *Petenyia* sp.

*Storage of material* – IVAU.

### **El Capon 3**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone M.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Talpidae: *Archaeodesmana* sp., *Desmanella crusafonti* Rümke, 1974.

*Taxonomic descriptions* – The insectivores were listed in Van Dam (1997). *Desmanella* sp. from that list was changed into *D. crusafonti* by Van Dam *et al.* (2001).

*Storage of material* – IVAU.

### **Fuente del Viso**

*Location* – Province of Granada province, Cabriel Basin.

*Stratigraphy* – Alfambrian, C3n.3r (Martín-Suárez *et al.*, 1998).

*Literature* – Martín-Suárez *et al.* (1998).

*Insectivores* – Talpidae: *Archaeodesmana getica* (Terzea, 1980). Soricidae: *Asoriculus gibberodon* (Petényi, 1864).

*Taxonomic descriptions* – Martín-Suárez *et al.* (1998) gave faunal list. Their identification of *Archaeodesmana dekkersi* has been changed into *A. getica* for reasons given by Rzebik-Kowalska (2005).

*Storage of material* – DEPUG.

### La Gloria 1

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4].

*Stratigraphy* – Turolian, Zone M1.

*Literature* – Mein *et al.* (1983).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp.

*Taxonomic descriptions* – A faunal list was given by Adrover *et al.* (1993). Van Dam (1997) and Van Dam *et al.* (2001) also gave a listing, adding the *Talpa* sp. to the earlier list.

*Storage of material* – FSL.

### La Gloria 5

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4].

*Stratigraphy* – Turolian, Zone M2.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – The erinaceids and talpids were listed by Van Dam (1997). Van Dam *et al.* (2001) added *Blarinella* sp. to the list, which is here classified as *Petenyia* sp.

*Storage of material* – FSL.

### La Gloria 6

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4'].

*Stratigraphy* – Turolian, Zone M1.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana adroveri* (Rümke, 1985), *Desmanella crusafonti* Rümke, 1974. Soricidae: *Petenyia dubia* Bachmayer & Wilson, 1970, *Paenelimnoecus repenningi* (Bachmayer & Wilson, 1970).

*Taxonomic descriptions* – A faunal list was given by Mein *et al.* (1990). Van Dam (1997) and Van Dam *et al.* (2001) gave the same list, but changed the identification *D. crusafonti* to *Desmanella* sp. The species *Blarinella dubia* is here placed in the genus *Petenyia* (see Vivero de Pinos).

*Storage of material* – FSL.

### La Hoya

*Location* – North of La Puebla de Don Fadrique at the boundary between the provinces of Granada and Albacete, Guadix-Baza Basin.

*Stratigraphy* – Turolian.

*Literature* – Unpublished.

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993).

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited *Galerix iberica*.

*Storage of material* –

*Remarks* – La Hoya is a fissure filling, which yielded a fauna rich in squirrels (Freudenthal, pers. comm.)

### Las Casiones

*Location* – Province of Teruel, Teruel Basin [N 40°26' W 1°7'].

*Stratigraphy* – Turolian, Zone M2.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp. *Desmanella* sp., *Talpa* sp. Soricidae: *Paenelimnoecus* sp., *Petenyia* sp., *Amblycoptus jessiae* Doukas, 1995.

*Taxonomic descriptions* – The insectivores were listed by Van Dam (1997). The only insectivore from Las Casiones described in detail is *Amblycoptus jessiae* (Van Dam, 2004).

*Storage of material* – IVAU.

### Las Casiones superior

*Location* – Province of Teruel, Teruel Basin [N 40°26' W 1°7'].

*Stratigraphy* – Turolian, Zone M2.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Paenelimnoecus* sp., *Petenyia* sp., *Amblycoptus jessiae* Doukas, 1995.

*Taxonomic descriptions* – The insectivore assemblage was listed in Van Dam (1997). *Amblycoptus* was added to the list by Van Dam *et al.* (2001), and later described by Van Dam (2004).

*Storage of material* – IVAU.

### Masada del Valle 6

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°26'].

*Stratigraphy* – Turolian, Zone M1.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana luteijni* (Rümke, 1985), *Desmanella* sp., *Talpa* sp.

*Taxonomic descriptions* – The *Archaeodesmana* was described by Rümke (1985), the other insectivores were listed by Van Dam (1997) and Van Dam *et al.* (2001). The latter publications also list *Archaeodesmana* sp., but Rümke (1985) did not mention the presence of a second desman in the locality.

*Storage of material* – IVAU.

### Masada del Valle 7

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 0°26'].

*Stratigraphy* – Turolian, Zone M1.



*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana major* (Rümke, 1985) (type locality), *Desmanella* sp., *Talpa* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – Rümke (1985) described the *Archaeodesmana* fossils. The rest of the insectivore assemblage was listed by Van Dam (1997) and Van Dam *et al.* (2001). *Blarinella* sp. is here listed as *Petenyia* sp.

*Storage of material* – IVAU.

### **Modorras**

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone M.

*Literature* – Van Dam (1997), Van Dam *et al.* (2001).

*Insectivores* – Talpidae: *Archaeodesmana* sp., *Desmanella crusafonti* Rümke, 1974.

*Taxonomic descriptions* – The insectivores were listed in Van Dam (1997), who listed *Desmanella* sp. Van Dam *et al.* (2001) changed the identification to *D. crusafonti*.

*Storage of material* – IVAU.

### **Nívar**

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Upper Turolian (“Ventian”).

*Literature* – Ruiz-Bustos *et al.* (1992b).

*Insectivores* – Talpidae: *Archaeodesmana getica* (Terzea, 1980).

*Taxonomic descriptions* – The *Archaeodesmana* species was listed by Ruiz-Bustos *et al.* (1992b) and Ruiz-Bustos (2002) as *A. dekkersi* (Rümke, 1985). Rzebik-Kowalska (2005) argued that the correct name for this taxon is *A. getica*.

*Storage of material* –

### **Otura 1**

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Turolian.

*Literature* – Mein & Martín-Suárez (1993).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993) (type locality). Soricidae: *Paenelimoecus pannonicus* (Kormos, 1934).

*Taxonomic descriptions* – Otura 1 is the type locality of *Galerix iberica*. With their description of the new taxon, Mein & Martín-Suárez (1993) presented a faunal list of the locality.

*Storage of material* – DEPUG.

*Remarks* – The locality Otura 1 is here tentatively placed in MN 13. In their article, the only reference to the locality, Mein & Martín-Suárez (1993) only referred to the age as 'Late Miocene'.

#### Purcal 4

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Mio-Pliocene boundary, C3r (Martín-Suárez *et al.*, 1998).

*Literature* – Castillo *et al.* (1990), Ruiz-Bustos *et al.* (1992b), Martín-Suárez *et al.* (1998).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993). Talpidae: *Archaeodesmana baetica* Martín-Suárez, Bendala & Freudenthal, 2001 (type locality). Soricidae: *Asoriculus gibberodon* (Petényi, 1864).

*Taxonomic descriptions* – Castillo *et al.* (1990) cited *Galerix* sp., *Dibolia* cf. *dekkersi* and *Sorex prearaneus*. Mein & Martín-Suárez (1993) ascribed *Galerix* sp. to *G. iberica* [= *Parasorex ibericus*]. Martín-Suárez *et al.* (1998) changed *Sorex* (*Drepanosorex*) *prearaneus* to *Episoriculus gibberodon*. Martín-Suárez *et al.* (2001) described the teeth and humerus of *Archaeodesmana baetica*.

*Storage of material* – DEPUG.

#### Regajo 5

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Turolian, Zone M.

*Literature* – Adrover *et al.* (1984).

*Insectivores* – Talpidae: *Archaeodesmana* sp.

*Taxonomic descriptions* – Adrover *et al.* (1984) listed the desman of Regajo 5 as *Desmana pontica* giving both measurements and an illustration. Van Dam (1997) and Van Dam *et al.* (2001) changed the identification to *Archaeodesmana* sp.

*Storage of material* –

### **Romanyà d'Empordà**

*Location* – Province of Girona, Empordà Basin.

*Stratigraphy* – Turolian.

*Literature* – Llenas *et al.* (2002).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* cf. *dubia* Rümke, 1976. Soricidae: *Petenya dubia* Bachmayer & Wilson, 1970, *Amblycoptus* sp.

*Taxonomic descriptions* – The locality is currently under study by MF. The current list should therefore be considered preliminary.

*Storage of material* – IPMC.

### **Tolosa**

*Location* – Province of Albacete, Júgar Basin.

*Stratigraphy* – Turolian.

*Literature* – Mein *et al.* (1978).

*Insectivores* – Talpidae: *Desmanella crusafonti* Rümke, 1974.

*Taxonomic descriptions* – Mein *et al.* (1978) briefly commented upon the identification of the species and figured some dental elements.

*Storage of material* – FSL.

### **Valdecebro 3**

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°05'].

*Stratigraphy* – Turolian, Zone M1.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana major* (Rümke, 1985), *Talpa* sp. Soricidae: *Blarinella* sp., *Amblycoptus jessiae* Doukas, 1995.

*Taxonomic descriptions* – Rümke (1985) described the *Archaeodesmana*; Van Dam (2004) described the *Amblycoptus*. The other insectivores were listed by Adrover *et al.*

(1993), Van Dam (1997), and Van Dam *et al.* (2001). In the latter two lists, *Archaeodesmana* sp. appears next to *A. major*, but we assume that the same taxon is implied, as Rümke (1985) did not indicate the presence of a second desman in Valdecebro 3 in her revision.

*Storage of material* – IVAU.

### Valdecebro 6

*Location* – Province of Teruel, Teruel Basin [N 40°21' W 1°05'].

*Stratigraphy* – Turolian, Zone M1.

*Literature* – Adrover *et al.* (1993), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Petenya* sp.

*Taxonomic descriptions* – The insectivore assemblage was listed by Adrover *et al.* (1993), Van Dam (1997) and Van Dam *et al.* (2001).

*Storage of material* – FSL.

### Villalba Baja 1

*Location* – Province of Teruel, Teruel Basin [N 40°35' W 1°05'].

*Stratigraphy* – Turolian, Zone M.

*Literature* – Van de Weerd (1976), Van Dam (1997).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana luteijni* (Rümke, 1985) (type locality).

*Taxonomic descriptions* – Rümke (1985) described the *Archaeodesmana* from Villalba Baja 1. Van Dam (1997) and Van Dam *et al.* (2001) also listed *Galerix* [= *Parasorex*].

*Storage of material* – IVAU.

### Villastar

*Location* – Province of Teruel, Teruel Basin [N 40°1' W 1°1'].

*Stratigraphy* – Turolian, Zone M.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Petenyia* sp.

*Taxonomic descriptions* – Faunal lists were given by Mein *et al.* (1990) and Adrover *et al.* (1993), two articles with the same group of authors. In the older paper, specific names were given to the *Archaeodesmana* (*adroveri*), *Desmanella* (*crusafonti*), and *Blarinella* (*dubia*). Furthermore, this listing also featured *Amblycoptus* sp. The listing given here follows that from Adrover *et al.* (1993), except for the shrew, which is here listed as *Petenyia*.

*Storage of material* – FSL.

### Zorreras-3a

*Location* – Province of Almería, Granada Basin.

*Stratigraphy* – Upper Turolian, close to Mio-pliocene transition, C3 r (“Ventian” according to Ruiz-Bustos (2002).

*Literature* – Martín-Suárez *et al.* (2000).

*Insectivores* – Soricidae: Soricidae indet.

*Taxonomic descriptions* – Martín-Suárez *et al.* (2000) cited an upper incisor of a ‘*Croci-durinae* or “Soricini” indet.’

*Storage of material* –

### MN 14

### Celadas 1

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°09'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Talpidae: *Archaeodesmana* sp. Soricidae: *Paenelimnoecus* sp.

*Taxonomic descriptions* – A faunal list was given by Adrover *et al.* (1993).

*Storage of material* – FSL.

*Remarks* – The correlation of Celades 1 with localities such as La Gloria 4 and Celades 9 is tentative, since the stratigraphically important taxon *Promimomys* had not yet been found in the locality (Mein *et al.*, 1990).

### Celadas 9

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°09'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp. Soricidae: *Blarinella* sp.

*Taxonomic descriptions* – A faunal list was given by Adrover *et al.* (1993).

*Storage of material* – FSL.

### Cuzo 1

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – Guerra-Merchán & Ruiz-Bustos (1991).

*Insectivores* – Erinaceidae: *Parasorex* sp. Soricidae: *Asoriculus gibberodon* (Petényi, 1864).

*Taxonomic descriptions* – Guerra-Merchán & Ruiz-Bustos (1991) gave faunal list. Their identification of *Galerix* sp. has been changed into *Parasorex* sp. and *Episoriculus gibberodon* into *A. gibberodon*.

*Storage of material* –

### Cuzo 3

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – Guerra-Merchán & Ruiz-Bustos (1991).

*Insectivores* – Erinaceidae: *Parasorex* sp.

*Taxonomic descriptions* – Guerra-Merchán & Ruiz-Bustos (1991) gave a faunal list.

*Storage of material* –

*Remarks* – Guerra-Merchán & Ruiz-Bustos (1991) listed *Galerix* sp. However, since according to Van den Hoek Ostende (2001b), *Parasorex* is the only genus of Galericipini

existing in Western Europe near the Mio-Pliocene boundary, the identification has been changed herein.

### Gorafe 1

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – De Bruijn (1974).

*Insectivores* – Erinaceidae: Erinaceinae gen. et sp. indet. Talpidae: *Archaeodesmana getica* (Terzea, 1980). Soricidae: *Paenelimnocens* sp., *Asoriculus* sp., Soricini gen. et sp. indet.

*Taxonomic descriptions* – Rümke (1985) described the desman under the name *Dibolia dekkersi*. As Rzebik-Kowalska (2005) pointed out, the correct name for this species is *Archaeodesmana getica*. The other insectivores are here listed for the first time.

*Storage of material* – IVAU.

### Gorafe 2

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – De Bruijn (1974).

*Insectivores* – Talpidae: *Archaeodesmana brailloni* (Rümke, 1985). Soricidae: Soricid gen. et sp. indet.

*Taxonomic descriptions* – Rümke (1985) described the desman from Gorafe 2. The presence of shrews is only indicated by a M1 fragment in the collection of the IVAU.

*Storage of material* – IVAU.

### Gorafe 3

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – Martín-Suárez (1988).

*Insectivores* – Soricidae: *Sorex* sp.

*Taxonomic descriptions* – Ruiz-Bustos (2002) listed the species.

*Storage of material* – DEPUG, IVAU.

#### **Gorafe 4**

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – Martín-Suárez (1988).

*Insectivores* – Talpidae: *Archaeodesmana getica* (Terzea, 1980).

*Taxonomic descriptions* – Martín-Suárez (1988) described the material under the name *Dibolia dekkersi*. This is here changed into *Archaeodesmana getica* for reasons given above at Gorafe 1.

*Storage of material* – DEPUG, IVAU.

#### **Gorafe 5**

*Location* – Guadix-Baza Basin. Granada province.

*Stratigraphy* – Upper Ruscinian according to Ruiz-Bustos (2002).

*Literature* – Martín-Suárez (1988).

*Insectivores* – Soricidae: Soricid gen. et sp. indet.

*Taxonomic descriptions* – Ruiz-Bustos (2002) listed the species *Sorex* sp. As no description was given, and since there is a large diversity of Pliocene shrew genera, the use of *Sorex* is considered as a ‘dustbin’ taxon, and the classification is here changed to soricid gen. et sp. indet.

*Storage of material* – IVAU.

#### **La Dehesa 1**

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Alfambrian (Ruscinian).

*Literature* – Mein & Martín-Suárez (1993).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993).

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) cited the presence of *Galerix iberica*.



*Storage of material* – DEPUG.

*Remarks* – The localities La Dehesa 1, 4 and 16 have only been mentioned in Mein & Martín-Suárez (1993) for the presence of *Parasorex ibericus*, and have as yet not been mentioned in any other publications.

#### **La Dehesa 4**

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Alfambrian (Ruscinian).

*Literature* – Mein & Martín-Suárez (1993).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993).

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) noted the presence *Galerix iberica*.

*Storage of material* – DEPUG.

#### **La Dehesa 16**

*Location* – Province of Granada, Granada Basin.

*Stratigraphy* – Alfambrian (Ruscinian).

*Literature* – Mein & Martín-Suárez (1993).

*Insectivores* – Erinaceidae: *Parasorex ibericus* (Mein & Martín-Suárez, 1993).

*Taxonomic descriptions* – Mein & Martín-Suárez (1993) listed *Galerix iberica*.

*Storage of material* – DEPUG.

#### **La Gloria 4**

*Location* – Province of Teruel, Teruel Basin [N 40°23' W 1°4'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp., *Erinaceus* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Blarinella* sp., *Paenelimoecus* sp.

*Taxonomic descriptions* – The listing given here is taken from Adrover *et al.* (1993), who placed the species *gibberodon* in *Episoriculus*. An earlier faunal list in Mein *et al.* (1990) gave specific names to the *Parasorex (depereti)*, *Archaeodesmana (brailloni)*, *Blarinella (europaea)* and *Paenelimnoecus (pannonicus)*, and also included *Myosorex*. However, since both papers feature the same authors, we assume that the later one gives the better representation of the material.

*Storage of material* – FSL.

### Peralejos E

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°02'].

*Stratigraphy* – Early Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex depereti* (Crochet, 1986). Talpidae: *Archaeodesmana brailloni* (Rümke, 1985), *Desmanella* sp., *Talpa minor* Freudenberg, 1914. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Paenelimnoecus pannonicus* (Kormos, 1934), *Amblycoptus* sp.

*Taxonomic descriptions* – Mein *et al.* (1990) gave a faunal list only.

*Storage of material* – FSL.

### Villalta Alba Rio 1

*Location* – Province of Teruel, Teruel Basin [N 40°55' E 0°9'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex depereti* (Crochet, 1986). Talpidae: *Archaeodesmana brailloni* (Rümke, 1985), *Desmanella* sp., *Talpa minor* Freudenberg, 1914. Soricidae: *Asoriculus gibberodon* (Petényi, 1864).

*Taxonomic descriptions* – Mein *et al.* (1990) gave a faunal list.

*Storage of material* – FSL.

### Yeguas

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Lower Ruscinian.

*Literature* – Soria-Mingorance & Ruiz-Bustos (1991).

*Insectivores* – Erinaceidae: Erinaceidae indet. Soricidae: *Crocidura* sp.

*Taxonomic descriptions* – Soria-Mingorance & Ruiz-Bustos (1991) gave a faunal list.

*Storage of material* – CARB.

### MN 15

#### Asta Regia

*Location* – Province of Cadiz, Jerez Basin.

*Stratigraphy* – Upper Ruscinian.

*Literature* – Aguirre *et al.* (1995), Castillo & Agustí (1996).

*Insectivores* – Soricidae: *Asoriculus gibberodon* (Petényi, 1864), Soricidae indet.

*Taxonomic descriptions* – Aguirre *et al.* (1995) cited the presence of *Episoriculus gibberodon* and Soricidae indet. in a faunal list.

*Storage of material* –

#### Cañada del Castaño 1

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Upper Ruscinian.

*Literature* – Martín-Suárez (1988), Ruiz-Bustos (2002).

*Insectivores* – Soricidae: Soricini indet. Talpidae: Desmaninae indet.

*Taxonomic descriptions* – Martín-Suárez (1988) listed *Dibolia* sp. and Soricini indet. Since *Dibolia* [= *Archaeodesmana*] is not the only desman genus in MN 15, we have changed the identification to Desmaninae indet. Ruiz-Bustos (2002) listed *Sorex* sp., but since it is not clear what this identification is based on, we prefer the original identification by Martín-Suárez (1988).

*Storage of material* –

#### El Arquillo 3

*Location* – Province of Teruel, Teruel Basin [N 40°21'20" W 1°05'15"].

*Stratigraphy* – Alfambrian.

*Literature* – Mein & Adrover (1977), Adrover (1986).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmanella* sp., *Talpa minor* Freudenberg, 1914. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Paenelimnoecus pannonicus* (Kormos, 1934).

*Taxonomic descriptions* – Mein & Adrover (1977) gave a faunal list. They considered the age of the site similar to that of Sète (France). Adrover (1986) repeated the list of species, adding *T. minor*, adscribing the species *gibberodon* to *Asoriculus* and *gracilis* to *Petenyiella*. According to Reumer (1984), *P. gracilis* is a synonym of *Paenelimnoecus pannonicus*. In contrast to Mein & Adrover (1977), *Desmanella* was not listed by Adrover (1986).

*Storage of material* –

### Escorihuela B

*Location* – Province of Teruel, Teruel Basin [N 40°5' W 0°95'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Talpidae: *Archaeodesmana* sp., *Talpa* sp. Soricidae: *Asoriculus* sp, *Blarinoides* sp., *Sorex subminutus* Sulimski, 1962.

*Taxonomic descriptions* – Mein *et al.* (1990) gave a faunal list for Escorihuela B. His *Episoriculus* sp. is here changed into *Asoriculus* sp.

*Storage of material* – FSL.

### La Calera

*Location* – Province of Teruel, Teruel Basin.

*Stratigraphy* – Alfambrian.

*Literature* – Pérez & Soria (1990).

*Insectivores* – Erinaceidae: *Parasorex* sp. Talpidae: *Desmana* sp., *Desmanella* sp., *Talpa* sp. Soricidae: *Asoriculus gibberodon* (Petényi, 1864).

*Taxonomic descriptions* – Adrover (1986) identified the species, which were also listed by Pérez & Soria (1990).

*Storage of material* –

*Remarks* – Adrover (1986) published this locality under the name Aldehuela. Mein *et al.* (1990) placed the locality in the uppermost part of MN 14.

### Layna

*Location* – Province of Soria [N 41°05' W 2°19'].

*Stratigraphy* – Alfambrian, Lower Villafranchian according to Crusafont *et al.* (1969). Upper Ruscinian, according to Mein (1975). Lower Ruscinian according to Van de Weerd (1976).

*Literature* – Aguirre *et al.* (1981), Pérez & Soria (1990).

*Insectivores* – Erinaceidae: *Erinaceus* sp. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), cf. *Paenelimnoecus pannonicus* (Kormos, 1934).

*Taxonomic descriptions* – Crusafont & Sondaar (1971) cited *Episoriculus* [= *Asoriculus*] *gibberodon* and *Erinaceus* sp. Jammot (1977) cited and described *Episoriculus* cf. *gibberodon*, comparing it to the specimens from Sète and Balaruc (France). Aguirre *et al.* (1981), Pérez & Soria (1990) and López-Martínez (1989) gave faunal lists. Crochet (1986) was the only one to mention the presence of cf. *Paenelimnoecus pannonicus* in the locality, figuring a mandible of the species.

*Storage of material* – CUM, IVAU, IPMC, NNM.

*Remarks* – Karstic site. The *Asoriculus* species is stored at the IPMC as *A. castellarini*.

### Lomas de Casares 1

*Location* – Province of Teruel, Teruel Basin [N 40°29' W 1°05'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex depereti* (Crochet, 1986). Talpidae: *Archaeodesmana brailloni* (Rümke, 1985), *Desmanella* sp. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Paenelimnoecus pannonicus* (Kormos, 1934).

*Taxonomic descriptions* – These insectivores appeared in a faunal list by Mein *et al.* (1990).

*Storage of material* – FSL.

### Orrios 7

*Location* – Province of Teruel, Teruel Basin [N 40°35' W 1°0'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Talpidae: *Archaeodesmana brailloni* (Rümke, 1985), *Talpa minor* Freudenberg, 1914. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Sorex ex gr. minutus* Linnaeus, 1766.

*Taxonomic descriptions* – A faunal list was given by Mein *et al.* (1990).

*Storage of material* – FSL.

### Sarrión

*Location* – Province of Teruel [N 40°07'40" W 0°47'30"].

*Stratigraphy* – Ruscinian.

*Literature* – Adrover (1974, 1986).

*Insectivores* – Erinaceidae: *Erinaceus* sp. Soricidae: *Asoriculus* sp., *Paenelimnoecus* sp.

*Taxonomic descriptions* – Adrover (1974) listed *Erinaceus* sp. Adrover (1986) added *Episoriculus* indet. and *Petenyiella* indet. to the faunal list, which are here listed as *Asoriculus* sp. and *Paenelimnoecus* sp., respectively.

*Storage of material* –

*Remarks* – Sarrión is a fissure filling.

### Tollo de Chiclana 1 and 1B

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Ruscinian.

*Literature* – Minwer-Barakat *et al.* (2005), Minwer-Barakat *et al.* (in press).

*Insectivores* – Talpidae: Talpidae indet. Soricidae: Soricidae indet.

*Taxonomic descriptions* – The presence of these two insectivore families was noted by Minwer-Barakat (2005).

*Storage of material* – DEPUG.

*Remarks* – Although Tollo de Chiclana 1 and 1B are two different localities, we have placed them here under one heading, as the insectivores have been identified at the family level only for both localities.

### **Villalba Alta 1**

*Location* – Province of Teruel, Teruel Basin [N 40°55' E 0°9'].

*Stratigraphy* – Alfambrian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Parasorex depereti* (Crochet, 1986), Talpidae: *Archaeodesmana brailloni* (Rümke, 1985), *Desmanella* sp. Soricidae: *Paenelimnoecus pannonicus* (Kormos, 1934).

*Taxonomic descriptions* – Mein *et al.* (1990) gave a faunal list only.

*Storage of material* – FSL.

### **MN 16**

#### **Barranco del Monte 1**

*Location* – Province of Teruel, Concud Basin.

*Stratigraphy* – early Late Pliocene.

*Literature* – Laplana Conesa *et al.* (2004).

*Insectivores* – Talpidae: *Galemys kormosi* (Schreuder, 1940), *Talpa?* sp. Soricidae: *Bere-mendia fissidens* (Petényi, 1864), *Deinsdorfia* cf. *hibbardi* (Sulimski, 1962), *Paenelimnoecus pannonicus* (Kormos, 1934), *Sorex minutus* Linnaeus, 1766.

*Taxonomic descriptions* – Laplana Conesa *et al.* (2004) listed the species.

*Storage of material* – MPUZ.

*Remarks* – The material is still under study, and so the adscription must be taken as preliminary.

### **Baza**

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Villanyian.

*Literature* – De Bruijn (1974).

*Insectivores* – Talpidae: *Galemys kormosi* (Schreuder, 1940).

*Taxonomic descriptions* – Rümke (1985) described the material.

*Storage of material* – IVAU.

*Remarks* – The locality is also known under the name Zújar 10.

### **Escorihuela**

*Location* – Province of Teruel, Teruel Basin [N 40°5' W 0°95'].

*Stratigraphy* – Villanyian.

*Literature* – Mein *et al.* (1990).

*Insectivores* – Erinaceidae: *Erinaceus* sp. Talpidae: *Archaeodesmana* sp., *Desmanella* sp.  
Soricidae: *Blarinoides mariae* Sulimski, 1959, *Sorex subminutus* Sulimski, 1962.

*Taxonomic descriptions* – The insectivores were listed in Mein *et al.* (1990).

*Storage of material* – FSL.

### **Galera 2**

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy*: Upper Villafranchian (MN 16/17).

*Literature* – Martín-Suárez (1988).

*Insectivores* – Talpidae: *Galemys kormosi* (Schreuder, 1940). Soricidae: *Crocidura kornfeldi* Kormos, 1934, *Sorex (Drepanosorex) praeearaneus* Kormos, 1934.

*Taxonomic descriptions* – Martín-Suárez (1988) described the insectivores from Galera 2.

*Storage of material* – DEPUG.

### **Islas Medas**

*Location* – Province of Girona.



*Stratigraphy* – Villanyian.

*Literature* – Villalta (1965).

*Insectivores* – Talpidae: *Talpa fossilis* Petényi, 1864, *Talpa minor* Freudenberg, 1914. Soricidae: *Myosorex? meini* Jammot, 1977, *Asoriculus adroveri* (Jammot, 1977) (type locality).

*Taxonomic descriptions* – Villalta (1965) listed *Sorex* sp. and *Talpa gracilis*. Jammot (1977) described “*Myosorex*” *meini* and *Episoriculus adroveri*. Crochet (1986) cited *Talpa fossilis*, *Episoriculus adroveri* and “*Myosorex*” *meini*, and changed *T. gracilis* to *T. minor*.

*Storage of material* –

*Remarks* – Karstic locality. Jammot (1977) emended the diagnosis for “*Myosorex*” given by Gray in 1838, partly based on material from this locality. As “*Myosorex*” is an African living genus of crocidurines (crocidosoricines?), the adscription of the species to it should be revised. Rzebik-Kowalska (1998) preferred to keep the *Asoriculus* species as sp.

### Moreda

*Location* – Province of Granada, Guadix-Baza Basin [N 37°26' W 3°2'].

*Stratigraphy* – Upper Ruscinian.

*Literature* – De Bruijn (1974), Ruiz-Bustos & Sesé (1985).

*Insectivores* – Talpidae: *Archaeodesmana* sp. Soricidae: *Beremendia* sp., *Asoriculus gibberodon* (Petényi, 1864), Soricidae indet.

*Taxonomic descriptions* – The insectivores were listed by Ruiz-Bustos (2002). The desman from Moreda was described as *Dibolia* sp. by Rümke (1985).

*Storage of material* – IVAU.

*Remarks* – Moreda is a fissure filling.

### Orrios 3

*Location* – Province of Teruel, Teruel Basin [N 40°35'50" W 0°59'30"].

*Stratigraphy* – Villafranchian.

*Literature* – Adrover (1986).

*Insectivores* – Talpidae: *Galemys kormosi* (Schreuder, 1940), *Desmanella* sp. Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Beremendia fissidens* (Petényi, 1864).

*Taxonomic descriptions* – A faunal list was given by Adrover (1986).

*Storage of material* –

### **Tollo de Chiclana 3 and 13**

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Villafranchian.

*Literature* – Minwer-Barakat *et al.* (2005, in press).

*Insectivores* – Talpidae: Talpidae indet. Soricidae: Soricidae indet.

*Taxonomic descriptions* – The presence of moles and shrews was noted by Minwer-Barakat (2005).

*Storage of material* – DEPUG.

*Remarks* – Although Tollo de Chiclana 3 and 13 are two separate localities, they are placed here under one heading, since the insectivores have been identified at the family level only for both localities.

### **Valdeganga 1**

*Location* – Province of Albacete, Júcar Basin.

*Stratigraphy* – Lower Villafranchian.

*Literature* – Mein *et al.* (1978).

*Insectivores* – Talpidae: *Desmana inflata* Rümke, 1985. Soricidae: *Sorex subminutus* Sulimski, 1962, *Deinsdorfia hibbardi* (Sulimski, 1962).

*Taxonomic descriptions* – Mein *et al.* (1978) listed *Desmana nehringi*, *Sorex subminutus* and *Parapetenya hibbardi*, and figured dental elements of *D. nehringi*. Sesé (1994) listed the species again. Rümke (1985) reclassified the *D. nehringi* finds as *D. inflata*.

*Storage of material* – FSL.

### **Valdeganga 2**

*Location* – Province of Albacete, Júcar Basin.

*Stratigraphy* – Lower Villafranchian.

*Literature* – Mein *et al.* (1978).

*Insectivores* – Talpidae: *Desmana inflata* Rümke, 1985 (type locality). Soricidae: *Sorex subminutus* Sulimksi, 1962, *Beremendia fissidens* (Petényi, 1864), *Myosorex* sp.

*Taxonomic descriptions* – Mein *et al.* (1978) gave the first faunal list for the locality. Rümke (1985) described the new species *D. inflata* based on the material originally adscribed to *D. nehringi*.

*Storage of material* – FSL.

## MN 17

### Almenara-Casablanca 1

*Location* – Province of Castellón.

*Stratigraphy* – Lower Villafranchian.

*Literature* – Gil & Sesé (1984), Agustí & Galobart (1986), Esteban-Aenlle & López-Martínez (1987), Furió *et al.* (2005a).

*Insectivores* – Talpidae: *Talpa* sp., *Desmana inflata* Rümke, 1985. Soricidae: *Sorex minutus* Linnaeus, 1766, *Sorex* sp., “*Myosorex meini*” Jammot, 1977, *Petenyia hungarica* Kormos, 1934, *Beremendia fissidens* (Petényi, 1864).

*Taxonomic descriptions* – Agustí & Galobart (1986) listed *Talpa* sp. Esteban-Aenlle & López-Martínez (1987) listed *Desmana inflata*, Soricidae indet. and Crocidurinae indet. Furió *et al.* (2005a) listed *Sorex minutus*, *Sorex* sp. and *Petenyia hungarica* instead of Soricidae indet. and *Crocidura* sp. instead of Crocidurinae indet. Furió *et al.* (2005b) again listed the species, changing the designation of *Crocidura* sp. into “*Myosorex meini*” and adding *Beremendia fissidens* to the list.

*Storage of material* – IPMC.

*Remarks* – Karstic site. The crocidurine species “*Myosorex*” *meini* described by Jammot (1977) is considered a *nomen nudum* (Reumer, 1994: 349; Rzebik-Kowalska, 1998: 39).

### Almenara-Casablanca 4

*Location* – Province of Castellón.

*Stratigraphy* – Lower Villafranchian.

*Literature* – Gil & Sesé (1985), Furió *et al.* (2005a).

*Insectivores* – Talpidae: Desmaninae indet. Soricidae: *Deinsdorfia* aff. *kordosi* Reumer, 1984, “*Myosorex meini*” Jammot, 1977, *Crocidura kornfeldi* Kormos, 1934.

*Taxonomic descriptions* – Gil & Sesé (1985) only cited *Crocidura* sp. Furió et al. (2005b) listed the insectivores, ascribing *Crocidura* sp. to *Crocidura kornfeldi* and adding “*Myosorex meini*”, *Deinsdorfia* aff. *kordosi* and Desmaninae indet.

*Storage of material* – IPMC.

*Remarks* – Fissure infilling. Gil & Sesé (1985) referred the site as “Casablanca B”, therein considered to be uppermost Pliocene. Preliminary new results on the rodent fauna suggest a rather earlier age, probably MN 16 (Agustí, pers. comm.).

### Alqueria

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Villafranchian.

*Literature* – Martín-Suárez (1988).

*Insectivores* – Talpidae: *Galemys kormosi* (Schreuder, 1940). Soricidae: *Sorex* sp.

*Taxonomic descriptions* – Martín-Suárez (1988) described *Galemys kormosi*. Sesé (1994) listed Soricini/Soriculini indet. Ruiz-Bustos (2002) listed *Sorex* sp.

*Storage of material* – DEPUG.

### Cap Farrutx

*Location* – Province of Mallorca, Balearic Islands.

*Stratigraphy* – Upper Pliocene (see remarks).

*Literature* – Pons-Moyà (1977).

*Insectivores* – Soricidae: *Nesiotites ponsi* Reumer, 1979 (type locality).

*Taxonomic descriptions* – Reumer (1979) described, figured and gave a diagnosis for the new species.

*Storage of material* – IPMC.

*Remarks* – Reumer (1979) refers the age of the locality as Early Pleistocene with a certain doubt. The exact age is still unclear, due to the lack of criteria to differentiate Pliocene and Pleistocene sediments on the Balearic Islands. Nevertheless, preliminary results of paleomagnetism studies suggest an Upper Pliocene rather than a Lower Pleistocene age.

### **Sa Pedrera de S'Onix**

*Location* – Province of Mallorca, Balearic Islands.

*Stratigraphy* – Upper Pliocene.

*Literature* – Alcover & Roca (1975).

*Insectivores* – Soricidae: *Nesiotites* ex. interc. *ponsi-hidalgo*.

*Taxonomic descriptions* – Reumer (1981) described and discussed an intermediate form between the two well-differentiated species *N. hidalgo* Bate, 1944 and *N. ponsi* Reumer, 1979.

*Storage of material* – IPMC.

*Remarks* – Reumer (1981) suggests an Early Pleistocene age according to the intermediate evolutionary stage of *Nesiotites*. New data based on the associated fauna indicate an older age, probably close to the Plio-Pleistocene boundary.

### **Tollo de Chiclana 10/ 10B**

*Location* – Province of Granada, Guadix-Baza Basin.

*Stratigraphy* – Villafranchian.

*Literature* – Minwer-Barakat *et al.* (2005, in press).

*Insectivores* – Talpidae: Talpidae indet. Soricidae: Soricidae indet.

*Taxonomic descriptions* – The presence of these two insectivore families was noted by Minwer-Barakat (2005).

*Storage of material* – DEPUG.

*Remarks* – Minwer-Barakat *et al.* (2005) commented on the scarcity of insectivores in these localities (2% for Tollo de Chiclana, 10,4% for Tollo de Chiclana 10B).

### **Toyo**

*Location* – Province of Granada, Guadix-Baza basin.

*Stratigraphy* – Upper Villafranchian.

*Literature* – Soria-Mingorance & Ruiz-Bustos (1991).

*Insectivores* – Talpidae: Talpidae indet. Soricidae: *Sorex (Drepanosorex) praeareaneus* Kormos, 1934, *Sorex minutus* Linnaeus, 1766.

*Taxonomic descriptions* – Soria-Mingorance & Ruiz-Bustos (1991) gave a faunal list.

*Storage of material* –

### Valdeganga 3

*Location* – Province of Albacete, Júcar Basin.

*Stratigraphy* – Upper Villafranchian.

*Literature* – Mein *et al.* (1978).

*Insectivores* – Talpidae: *Desmana inflata* Rümke, 1985. Soricidae: *Sorex subminutus* Sulimski, 1962, *Deinsdorfia hibbari* (Sulimski, 1962).

*Taxonomic descriptions* – The species were listed and discussed by Mein *et al.* (1978) and listed again by Sesé (1994). Rümke (1985) changed *D. nehringi* to *D. inflata* in her description of that species.

*Storage of material* – FSL.

### Valdeganga 4

*Location* – Province of Albacete, Júcar Basin.

*Stratigraphy* – Upper Villafranchian.

*Literature* – Mein *et al.* (1978).

*Insectivores* – Talpidae: *Desmana inflata* Rümke, 1985. Soricidae: *Sorex subminutus* Sulimski, 1962.

*Taxonomic descriptions* – The species were listed by Mein *et al.* (1978) and Sesé (1994). Rümke (1985) changed *D. nehringi* to *D. inflata*, while describing this species.

*Storage of material* – FSL.

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