

Greece

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Introduction

The Neogene insectivores from Greece span an interval from Early Miocene to Biharian but certainly do not represent a continuous succession.

The first reference of small mammals in Greece is by Dames (1883), who described *Mus* [= *Parapodemus*] *gaudryi* from the classical locality of Pikermi. The first report of an insectivore is again from Pikermi. Thenius (1952) described a fragmentary mandible with p2-m2 sin., plus an isolated p4 dex. as *Galerix exilis*. Doukas *et al.* (1995) referred the specimen to *Schizogalerix moedligensis*.

Credit should be given here to Hans de Bruijn (Utrecht University), who was instrumental in promoting small mammal research in Greece. The search and research for small mammals started in earnest in 1970, when De Bruijn started collecting in various localities. This is the reason why part of the Greek material is stored at the small mammal collections of Utrecht University and part at the small mammal collections of the Paleontology Museum of Athens University. De Bruijn, a dedicated "rodent man" himself, recognized the importance of insectivores in the study of small mammal assemblages, and enticed others, including the present author, to work on them.

An effort is made to include here yet unpublished faunas that are in preparation. We feel that this volume is an important work for future references and would be shame not to include faunas that will be published shortly. Therefore provisional fauna lists are given for the localities from Karydia and Komotini (NE Greece), and from the Florina-Ptolemais-Servia basin (NW Greece). The small mammal material of the latter localities, which span from MN13 to MN15, was collected during two campaigns. The first campaign (1976-1977), by a team of Utrecht University, visited only the Ptolemais lignite mines and refers to localities Ptolemais 1, Ptolemais 3 and Kardia. The second one (1994-1998), by the team of the CoMCoM program (Utrecht-Athens), includes except for the localities Vevi and Lava, the Ptolemais lignite field, which is subdivided into the Vorio, Notio, Komanos, and Tomea Eksi mines. Due to unprecedented time control achieved for the study area we can recognize the same strata on these subdivisions. Thus Ptolemais 1 and Kardia (van de Weerd, 1979), correspond to Vorio 1, Komanos 1L, 1H, whereas

Ptolemais 3 (van de Weerd, 1979) corresponds to Vorio 3/3a, Komanos 2 and Tomea Eksi 3. Therefore, the insectivores from the various localities have not been listed separately, but under the heading Ptolemais lignite mines.

The acquisition of the coordinates (GPS) of the small mammal localities was supported by a grant (70/4/6421) of ELKE (Special Research Fund) University of Athens. The acronyms used in this article are:

AMPG	University of Athens
CM	Carnegie Museum of Natural History, Pittsburgh (PA), United States of America
IVAU	Instituut voor Aardwetenschappen (Faculty of Geosciences) Utrecht, The Netherlands
LGPU	University of Thessaloniki.

Insectivore faunas from Greece

MN4

Aliveri

Location – Opencast lignite mine near the village of Aliveri in the Island of Evia [N 38°25' 30" E 24°02'20"].

Stratigraphy – Early Miocene.

Literature – De Bruijn *et al.* (1980), Doukas (1986).

Insectivores – Erinaceidae: *Galerix symeonidisi* Doukas, 1986 (type locality). Talpidae: *Myxomygale engesseri* Doukas, 1986 (type locality), *Desmanodon meuleni* Doukas, 1986 (type locality). Dimylidae: *Plesiodimylus chantrei* Gaillard, 1897. Soricidae: *Heterosorex ruemkeae* Doukas, 1986 (type locality), Crocidosoricinae gen. et sp. indet.

Taxonomic description – Doukas (1983) described in his thesis (in Greek) all the insectivores. In this paper *Plesiodimylus chantrei* was described as *P. huerzeleri*, *Heterosorex ruemkeae* as *Dinosorex huerzeleri* and Crocidosoricinae gen. et. sp. indet. as Soricidae gen. et. sp. indet. Later the emended description was published in English (Doukas, 1986). Reumer (1994) changed the identification of the small shrew to Crocidosoricinae gen. et sp. indet. The shrew was erroneously listed again as a crocidurine in Doukas (2003).

Storage of material – AMPG.

Karydia

Location – Clay pit near (800 m.) the village of Karydia (NE of Komotini, Thrace) [N 40°08'26" E 25°26']

Stratigraphy – Early Miocene.

Literature – Theocharopoulos (2000).

Insectivores – Erinaceidae: *Galerix* sp. Talpidae: *Desmanodon* sp. Dimylidae: Dimyliidae gen. et sp. indet. Soricidae: *Dinosorex* sp., Soricidae gen. et sp. indet.

Taxonomic descriptions – Doukas (2003) gave a preliminary fauna list, but did not include the small shrew or the dimylid, which is represented by fragmentary material only. Van den Hoek Ostende & Doukas (2003) commented that “the galericine from this locality is remarkable in that it has a number of characters in common with *Schizogalerix*.... Further research is needed to determine in what genus the species should be placed.” A full study of the Karydia insectivores is in preparation by Doukas and Van den Hoek Ostende.

Storage of material – AMPG.

MN 5

Antonios

Location – Macedonia, Chalkidiki Peninsula, 26 km S of Thessaloniki.

Stratigraphy – Karstic fissure in Jurassic-Cretaceous limestones.

Literature – Syrides (1990), Koufos & Syrides (1997), Vassileiadou & Koufos (2005).

Insectivores – Erinaceidae: *Schizogalerix* sp. Talpidae: *Desmanodon* sp. Soricidae: cf. Crocidosoricinae gen. et sp. indet.

Taxonomic descriptions – The material was described by Vassileiadou & Koufos (2005). They listed the mole as *Paratalpa/Desmanodon*. As *Paratalpa* is not known any later than MN 2, the identification is here changed into *Desmanodon* sp.

Storage of material – LGPUT.

Remarks – According to Vassileiadou & Koufos (2005) the locality should be placed near the MN 4/MN 5 transition.

Komotini

Location – Thrace, clay pit 3 km. east of Komotini [N 41°06'37" E 25°21'30"].

Stratigraphy – Middle Miocene.

Literature – De Bruijn *et al.* (1993), Doukas (2003).

Insectivores – Erinaceidae: *Schizogalerix* sp.

Taxonomic descriptions – The Komotini material will be published together with that of Karydia (Doukas & Van den Hoek Ostende, research in progress).

Remarks – Komotini is, together with Antonios, the only known MN 5 smaller mammal fauna from Greece. The material is, however, scanty and not very well preserved.

Storage of material – AMPG.

MN 7/8

Chrissavgi 1

Location – Clay quarry, 2 km. N. of the village Chrissavgi (N. Greece).

Stratigraphy – Middle Miocene, Late Astaracian.

Literature – Koliadimou (1995).

Insectivores – Erinaceidae: cf. *Schizogalerix* sp. Talpidae: *Desmanodon minor* Engesser, 1980.

Taxonomic descriptions – The material was described by Koliadimou (1995) in her PhD thesis.

Storage of material – LGPUT.

MN 10

Kastellios Hill 1

Location – Central Crete, near the village of Kastelliana [N 35°02'42" E 25°15'12"].

Stratigraphy – Marl bed in a section of alternating continental, brackish and marine deposits, Early Tortonian, Late Vallesian.

Literature – De Bruijn *et al.* (1971), De Bruijn & Zachariasse (1979).

Insectivores – Erinaceidae: *Schizogalerix* sp.

Taxonomic descriptions – The presence of this insectivore in Kastellios Hill 1 was never published. It is based on an M2 and M3 in the collections of the IVAU (Van den Hoek Ostende, pers. comm.)

Storage of material – IVAU.

Biodrak

Location – On the left side of the national road Athens-Thessaloniki, 65 km N of Athens [N 38°33'32" E 23°59'59"].

Stratigraphy – Bedded sediments of lignitic clay, Middle Miocene, Vallesian.

Literature – De Bruijn (1976), Rümke (1976).

Insectivores – Erinaceidae: *Schizogalerix* sp. Soricidae: *Crusafontina* cf. *endemica* Gibert, 1975.

Taxonomic descriptions – Rümke (1976) described the fragmentary remains of galericines from Biodrak as *Galerix* sp. From her description and illustrations it is clear that the material is referable to *Schizogalerix*. Van Dam (2004) described an m1 of Anourosoricini that fits *Crusafontina endemica* in size and morphology.

Storage of material – IVAU.

Lefkon

Location – Sand and marls with occasional lignites section, 2 km NW of the Lefkon village (Serrai, N. Greece) [N 41°12'28" E 23°45'57"].

Stratigraphy – Lefkon Formation, Late Vallesian.

Literature – Doukas (1989).

Insectivores – Erinaceidae: *Schizogalerix* sp. Talpidae: *Desmanella* sp. Soricidae: *Crusafontina* cf. *kormosi* Bachmayer & Wilson, 1970.

Taxonomic descriptions – Doukas (1989) listed the small insectivore assemblage. Van Dam (2004) describes *Crusafontina* cf. *kormosi* Bachmayer & Wilson, 1970, instead of *Amblyoptus* sp. as listed by Doukas (1989).

Storage of material – IVAU.

MN 12

Pikermi

Location – Attica, lignitic clay pit (Chomateri), about 12 km W of Athens [N 38°01'10" E 23°59'30"]

Stratigraphy – Bedded sediments 12 m above the lens containing large mammals, Late Miocene, Turolian.

Literature – Marinos & Symeonidis (1974), De Bruijn (1976), Rümke (1976).

Insectivores – Erinaceidae: *Schizogalerix moedligensis* (Rabeder, 1973), *Schizogalerix zapfei* (Bachmayer & Wilson, 1970). Talpidae: *Desmanella dubia* Rümke, 1976.

Taxonomic descriptions – The first description of an insectivore from Pikermi was by Thenius (1952), who described a galericine mandible as *Galerix exilis*. This specimen was referred to *Schizogalerix moedligensis* by Doukas *et al.* (1995). All insectivores were described by Rümke (1976), who assigned the galericines to *Galerix moedligensis* and *G. atticus*, for which Pikermi is the type locality. Engesser (1980) transferred the Pikermi species to the new genus *Schizogalerix*, and considered *G. atticus* a junior synonym of *Schizogalerix zapfei*.

It appears that the Greek *Schizogalerix* follow the “Austrian” rather than the “Turkish” lineage (Engesser, 1980; Doukas *et al.* 1995).

Storage of material – AMPG.

Samos

Location – Silt and clay beds in the Mytilinii formation of the E. Basin of the island of Samos.

Stratigraphy – Fossiliferous sediments of the local section S3, Mytilinii formation of the E. Basin, Turolian.

Literature – Black *et al.* (1980).

Insectivores – Erinaceidae: *Schizogalerix zapfei* (Bachmayer & Wilson, 1970).

Taxonomic descriptions – Black *et al.* (1980) described and illustrated three galericine molars, and referred them to *Galerix atticus* Rümke, 1976, which is a junior synonym of *Schizogalerix zapfei* (Bachmayer & Wilson, 1970) according to Engesser (1980).

Storage of material – CM.

MN 13

Lava

Location – Macedonia (N. Greece), lignite quarry 10 km S of the village of Servia [N 40°14'40" E 22°00'59"].

Stratigraphy – Open pit lignite mine, Turolian.

Literature – Steenbrink *et al.* (2000).

Insectivores – Erinaceidae: Galericini indet. Soricidae: *Amblycoptus* sp.

Taxonomic descriptions – The insectivores of the various Florina-Ptolemais-Servia sites are under study by Doukas.

Storage of material – AMPG.

Maramena

Location – Strymon Basin, north of Serrai (Macedonia, N. Greece) [N 41°17'43" E 23°48'38"'].

Stratigraphy – Lignite pit, Turolian.

Literature – Armour Brown *et al.* (1977), De Bruijn (1989), Schmidt-Kittler *et al.* (1995).

Insectivores – Erinaceidae: *Erinaceus samsonowiczii* Sulimski, 1959, *Schizogalerix macedonica* Doukas, 1995 (type locality). Talpidae: *Archaeodesmana getica* (Terzea, 1980), *Desmanella dubia* Rümke, 1976, *Urotrichus* sp., *Talpa fossilis* Petényi, 1864. Soricidae: *Amblycoptus jessiae* Doukas, 1995 (type locality), *Asoriculus gibberodon* Petényi, 1864, *Sorex* sp., *Petenya hungarica* Kormos, 1934, *Deinsdorfia kerkhoffi* Reumer, 1995.

Taxonomic descriptions – Doukas *et al.* (1995) described the whole insectivore assemblage. The desman was already described by Rümke (1985) under the name *Dibolia dekkersi*. Rzebik-Kowalska (2005) argued that the correct name for this species is *Archaeodesmana getica* (Terzea, 1980). Meszaros (1997) introduced the genus *Kordosia*, which differs from *Amblycoptus* in the absence of an A3. He suggested that *A. jessiae* should be included in *Kordosia*. However, this character cannot be ascertained in the Maramena *Amblycoptus* material, to our knowledge the largest collection so far available. Therefore, although we do not contest the genus *Kordosia*, we refrain from the suggested generic name change.

Remarks – The Maramena insectivore fauna includes the assemblage collected from and referred to as Ano Metochi (Doukas, 1989). The Ano Metochi locality is meters away of the Maramena excavation site and the faunas are considered identical.

Storage of material – AMPG.

Maritsa

Location – Fissure filling in a limestone quarry, 2.5 km. SW of the village of Maritsa (island of Rhodos) [N 36°20' E 28°06'30"'].

Stratigraphy – Deposit in a fissure in Mesozoic limestone.

Literature – De Bruijn *et al.* (1970).

Insectivores – Soricidae: *Asoriculus gibberodon* (Petényi, 1864), *Blarinella* sp.

Taxonomic descriptions – All insectivores have been described by De Bruijn *et al.* (1970).

Remarks – The Maritsa small mammal fauna was originally assigned to the Ruscian (De Bruijn *et al.*, 1970). However, based on our current knowledge of Late Miocene

faunas, the rodent assemblage (*Calomyscus*, *Pelomys*) would rather suggest a Late Miocene (Turolian, MN 13) age.

Storage of material – IVAU.

Monasteri

Location – Strymon Basin, north of Serrai (Macedonia, N. Greece).

Stratigraphy – Late Turolian.

Literature – De Bruijn (1989), Doukas (1989).

Insectivores – Soricidae: Soricid gen. et sp. indet.

Taxonomic descriptions – The presence of a shrew in the Monasteri assemblage was noted by Doukas (1989).

Storage of material – IVAU.

Silata

Location – Fluvial lacustrine sediments, 1.5 km. NE. of the Nea Silata village (Chalkidiki, N. Greece).

Stratigraphy – Successive layers of sands, silts, clays and marls of the Silata Member (Gonia Formation), Late Miocene/Early Pliocene (MN 13/14).

Literature – Syrides (1990), Vassileiadou *et al.* (2003).

Insectivores – Erinaceidae: *Erinaceus* sp. Soricidae: *Amblycoptus* cf. *jessiae* Doukas 1995, *Asoriculus gibberodon* (Petényi, 1864), *Deinsdorfia kerkhoffi* Reumer, 1995.

Taxonomic descriptions – The small mammals from Silata, including the insectivores, were described by Vassileiadou *et al.* (2003).

Storage of material – LGPUT.

Tomea Eksi Mine 1, 2

Location – Lignite mine Tomea Eksi, within the lignite fields of Ptolemais [N 40°45'16" E 21°78'45"].

Literature – Unpublished.

Stratigraphy – Lignite open pit, Turolian.

Insectivores – Talpidae: *Archaeodesmana getica* (Terzea, 1980), *Talpa fossilis* Petényi 1864. Soricidae: *Blarinella dubia* (Bachmayer & Wilson, 1970).

Taxonomic descriptions – The insectivores of the whole Florina-Ptolemais-Servia, sites, are under study by Doukas. The desman from Pliocene sites in the Ptolemais lignite mines (Kardia, Ptolemais) was described by Rümke (1985) under the name *Dibolia dekkersi*. Rzebik-Kowalska (2005) argued that the correct name for this species is *Archaeodesmana getica*.

Storage of material – AMPG.

MN 14

Ptolemais lignite mines

Location – Lignite mines Komanos, Vorio, Ptolemais 1, and Kardia within the lignite fields of Ptolemais [N 40°48'28" E 21°76'59"].

Stratigraphy – Lignite open pit, Ruscinian.

Literature – Van de Weerd (1979), Rümke (1985).

Insectivores – Talpidae: *Archaeodesmana getica* (Terzea, 1980), *Desmana verestchagini* Topachevski, 1961, Talpidae indet. Soricidae: Soricidae indet.

Taxonomic description – Rümke (1985) described *Dibolia dekkersi* from Kardia (here listed as *Archaeodesmana getica*, see Rzebik-Kowalska (2005)), and *Desmana verestchagini* from both Kardia and Ptolemais 1. The rest of the insectivores are under study by Doukas.

Remarks – The material from several different sites in the Ptolemais lignitic fields is here listed under one heading. The unprecedented time control achieved for the study area makes it clear that all this material is derived from the same stratum.

Storage of the material – The material from Komanos and Vorio is stored at AMPG, that from Ptolemais 1 and Kardia at IVAU.

Spilia 0, 1

Locality – Vertical exposure of the Spilia Formation sediments in a stream 10 km. NW of the city of Serres (N.Greece) [N 41°15'10" E 23°46'54"].

Stratigraphy – Succession of sands, marls and occasional lignites in the Pliocene sediments of the Spilia Formation, Ruscinian.

Literature – De Bruijn (1989), Doukas (1989), Rümke (1985).

Insectivores – Talpidae: *Desmana verestchagini* Topachevski, 1961. Soricidae: Soricidae gen. et sp. indet.

Taxonomic description – The small Spilia desman assemblage was described by Rümke (1985). Doukas (1989) noted the presence of a shrew in Spilia 0.

Storage of the material – IVAU.

MN 15

Apolakkia

Location – Neogene sediments of the Apolakkia Formation with the site APO2, 5 km. SE. of the Apolakkia village (S. island of Rhodes).

Stratigraphy – Succession of clays, marls, lignites, lignitic clays and thin intercalations of siltstone and sandstone of the Apolakkia Formation.

Literature – Meulenkamp *et al.* (1972), Van de Weerd *et al.* (1982).

Insectivores – Erinaceidae: Galericinae gen. et sp. indet. Soricidae: *Crocidura* sp., *Blarinella* sp. et sp. indet., *Blarinella* sp., *Asoriculus gibberodon* (Petényi, 1864).

Taxonomic description – Van de Weerd *et al.* (1982) described the large and small mammals fauna from Apolakkia.

Storage of material – IVAU.

Vevi

Location – Road cut 300 m. E of the village of Vevi (Florina, N. Greece) [N 40°15'29" E 23° 46'59"].

Stratigraphy – Clay sediments in a road cut, Ruscinian.

Literature – Strakari (2004).

Insectivores – Talpidae: *Archaeodesmana* sp., Talpidae gen. et sp. indet. Soricidae: *Asoriculus* sp., cf. *Blarinella* sp.

Taxonomic descriptions – The insectivores are currently under study by the present author.

Storage of the material – AMPG.

Ptolemais lignite mines

Location – Lignite mines Tomea Eksi 3, Vorio 3/3a, Komanos 2, Notio 1, and Ptolemais 3 within the lignite fields of Ptolemais [N 40°48'28" E 21°76'59"].

Stratigraphy – Open lignite pit, Ruscinian.

Literature – Van de Weerd (1979), Rümke (1985).

Insectivores – Erinaceidae: *Schizogalerix* sp. Talpidae: *Archaeodesmana getica* (Terzea, 1980), Talpidae indet. Soricidae: *Asoriculus* sp.,? *Beremendia* sp.

Taxonomic description – Rümke (1985) described the desman from Ptolemais 3 as *Dibolia dekkersi*, which is here listed as *Archaeodesmana getica* for reasons given in Rzebik-Kowalska (2005). The rest of the insectivores are under study by Doukas.

Remarks – The material listed here comes from several sites in the Ptolemais lignitic mine fields. The unprecedented time control achieved for the study area shows, however, that it is all derived from the same stratum.

Storage of the material – The material from Ptolemais 3 is stored at IVAU; that from all of the other localities listed here at AMPG.

MN 16

Limni 6

Location – Isle of Euboea (Evia), Limni-Istiea Basin.

Stratigraphy – Lacustrine sediments, Early Villanyian.

Literature – Katsikatsos *et al.* (1981).

Insectivores – Talpidae: *Desmanella* sp., *Archaeodesmana bifida* (Engesser, 1980). Soricidae: Soricid gen. et sp. indet 1 en 2.

Taxonomic descriptions – The only insectivore published from Limni 6 is the desman, which Rümke (1985) described as *Dibolia bifida*. The remainder of the fauna is unpublished and the listing here is based on the collection in the IVAU.

Storage of material – IVAU.

Tourkobounia 1

Location – Karstic fissures in limestone quarry in the Tourkovounia hill of Athens [N 38°01'05" E 23°58'45"].

Stratigraphy – Fissure filling in Mesozoic limestone.

Literature – De Bruijn & van der Meulen (1975), Reumer & Doukas (1985).

Insectivores – Erinaceidae: *Erinaceus* sp. Soricidae: *Crocidura* sp., *Asoriculus gibberodon* (Petényi, 1864), *Beremendia fissidens* (Petényi, 1864).

Taxonomic description – Reumer & Doukas (1985) described the insectivore assemblages from the fissures at Tourkobounia.

Remarks – Five different fissures from Tourkobounia have been studied, numbered from one (TB1) to five (TB5). The fissure TB1 is in De Bruijn & Van der Meulen (1975) and Reumer & Doukas (1985) listed as Early Pleistocene. Today we consider TB1 as Late Pliocene (MN16). The other fissures are all of Pleistocene age.

Storage of the material – AMPG.

References

- Armour-Brown, A., Bruijn, H. de, Maniati, C., Siatos, G. & Niesen, P. 1977. The Geology of the Neogene Sediments north of Serrai and the use of rodent faunas for biostratigraphic control. *Proceedings 6th Colloquium for the Geology of the Aegean Region*, 6 (2): 615-622.
- Bachmayer, F. & Wilson, R.W. 1970. Die Fauna der altpliozänen Höhlen- und Spaltenfüllungen bei Kohfidisch, Burgenland (Österreich). *Annalen des Naturhistorischen Museums Wien*, 74: 533-587.
- Black, C. C., Krishtalka, L. & Solounias, N. 1980. Mammalian fossils of Samos and Pikermi. Part 1. The Turolian insectivores of Samos. *Annals of Carnegie Museum*, 49 (21): 359-378.
- Bruijn, H. de. 1976. Vallesian and Turolian rodents from Biotia, Attica and Rhodes (Greece). *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B79 (5): 361-384.
- Bruijn, H. de. 1989. Smaller mammals from the Upper Miocene and Lower Pliocene of the Strimon basin, Greece; I Rodentia and Lagomorpha. *Bollettino della Società Paleontologica Italiana*, 28 (2/3): 189-195.
- Bruijn, H. de, Dawson M.R. & Mein, P. 1970. Upper Pliocene Rodentia, Lagomorpha and Insectivora (Mammalia) from the Isle of Rhodes (Greece), I, II, III. *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B73 (5): 535-595.
- Bruijn, H. de & Meulen, A.J. van der. 1975. The Early Pleistocene rodents from Tourkobounia 1 (Athens, Greece). *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B78: 314-338.
- Bruijn, H. de, Meulen A.J. van der & Katsikatsos G. 1980. The mammals from the lower Miocene of Aliveri (Island of Evia, Greece) Part I. The Sciuridae. *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B83 (3): 241-261.
- Bruijn, H. de, Fahlbusch, V. Sarac, G. & Ünay, E. 1993. Early Miocene rodent faunas from the Eastern Mediterranean area. Part III. The genera *Deperetomys* and *Cricetodon* with a discussion of the evolutionary history of the Cricetodontini. *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B96 (2): 151-216.
- Bruijn, H. de, Sondaar, P.Y. & Zachariasse, W.J. 1971. Mammalia and Foraminifera from the Neogene of Kastellios Hill, (Crete), a correlation of continental and marine biozones, I + II. *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B74 (5): 1-22.
- Bruijn, H. de & Zachariasse, W.J. 1979. The correlation of marine and continental biozones of Kastellios Hill reconsidered. *VIIIth international congress on the Mediterranean Neogene. Annales Géologique des Pays Hellenique (hors serie)*, 1: 219-226.
- Dam, J.A. van. 2004. Anourosoricini (Mammalia, Soricidae) from the Mediterranean region: A pre-Quaternary example of recurrent climate-controlled North-South range shifting. *Journal of Paleontology*, 78 (4): 741-764.
- Dames, W. 1883. Hirsche und Mäuse von Pikermi in Attica. *Zeitschrift der Deutschen Geologischen Gesellschaft*, 35: 92-101.
- Doukas, C.S. 1983. *Insectivores (Insectivora, Mammalia) from the Lower Miocene of Aliveri (Island of Evia, Greece)*. Unpublished PhD-Thesis, University of Athens: 87 pp. (in Greek).
- Doukas, C.S. 1986. The mammals from the Lower Miocene of Aliveri (Island of Evia, Greece). Part 5: The insectivores. *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, B89 (1). 15-38.
- Doukas, C.S. 1989. Smaller mammals from the Upper Pliocene of Strimon basin, Greece. Part 2: Insectivora. *Bollettino della Società Paleontologica Italiana*, 28 (2-3): 213-216.

- Doukas, C.S. 2003. The MN4 faunas of Aliveri and Karydia, Greece. In: López-Martínez, N. Peláez-Campanones, P. & Hernández Fernández, M. (eds), *En torno a fósiles de mamíferos: datación, evolución y paleoambiente. Coloquios de Paleontología*, Volumen extraordinario, **1**: 127-132.
- Doukas, C.S., Hoek Ostende, L.W. van den, Theocharopoulos, C. & Reumer, J.W.F. 1995. Insectivora (Erinaceidae, Talpidae, Soricidae, Mammalia). In: Schmidt-Kittler, N. (ed), *The vertebrate locality Maramena (Macedonia, Greece) at the Turolian-Ruscinian boundary. Münchner Geowissenschaftliche Abhandlungen*, **A28**: 43-64.
- Engesser, B. 1980. Insectivora und Chiroptera (Mammalia) aus dem Neogene der Türkei. *Schweizerische Paläontologische Abhandlungen*, **102**: 45-148.
- Gaillard, C. 1897. Nouveau genre d'insectivore du Miocène de la Grive-Saint-Alban (Isère). *Comptes-rendus hebdomadaires des séances de l'Académie des sciences Paris*, **124**: 1248-1250.
- Gibert, J. 1975. New insectivores from the Miocene of Spain. *Proceedings van de Koninklijke Nederlandse Akademie van Wetenschappen*, **B78**: 108-133.
- Hoek Ostende, L.W. van den & Doukas, C. 2003. Distribution and evolutionary history of the Early Miocene erinaceid *Galerix symeonidisi* Doukas, 1986. In: Reumer, J.W.F. & Wessels, W. (eds), *Distribution and migration of Tertiary mammals in Eurasia. A volume in honour of Hans de Bruijn. Deinsea*, **10**: 287-303.
- Katsikatos, G., Bruijn, H. de & Meulen, A.J. van der. 1981. The Neogene of the Island of Euboea (Evia), a review. *Geologie en Mijnbouw*, **60**: 509-516.
- Koliadimou, K. 1995. *Palaeontological and Biostratigraphic study of the fossil small mammals of the Mygdonia Basin (N. Greece)* Unpublished Ph.D. thesis. University of Thessaloniki. 345pp.
- Kormos, T. 1934. Felsőpliocénkori új rovarévkök, denevérek és rágcsálók Villány környékéről [Neue Insektenfresser, Fledermäuse und Nager aus dem Oberpliozän der Villányer Gegend]. *Földtani Közlöny*, **64**: 296-321.
- Koufos, G. & Syrides, G.E. 1997. A new Early/Middle Miocene locality from Macedonia, Greece. *Comptes Rendus de l'Académie des Sciences de Paris, Sciences de la Terre et des Planètes*, **325**: 511-516.
- Marinos, G. & Symeonidis, N. 1974. Neue Funde aus Pikermi (Attica, Griechenland) und eine allgemeine geologische Übersicht dieses paläontologischen Raumes. *Annales Géologiques des Pays Helléniques*, **26**: 1-28.
- Meszaros, L.G. 1997. *Kordosia*, a new genus for some Late Miocene Amblycoptini shrews (Mammalia, Insectivora). *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte*, **1997** (2): 65-78.
- Meulenkamp, J.E., Mulder, E.F.J. de & Weerd, A. van de, 1972. Sedimentary history and Paleogeography of the Late Cenozoic of the island of Rhodos. *Zeitschrift der Deutschen Geologischen Gesellschaft*, **123**: 541-553.
- Petényi, S.J. 1864. A beremendi mészkőbánya természetrajz-és öslénytanilag leírva. *Hátrahagyott munkái*: 35-81; Akademia Kiadasá, Budapest.
- Rabeder, G. 1973. *Galerix* und *Lanthanotherium* (Erinaceidae, Insectivora) aus dem Pannon des Wiener Beckens. *Neues Jahrbuch für Geologie und Paläontologie, Monatshefte*, **1973** (7): 429-446.
- Reumer, J.W.F. 1994. Phylogeny and Distribution of the Crocidosoricinae (Mammalia: Soricidae). In: Merritt, J.F., Kirkland, G.L. & Rose, R.K. (eds), *Advances in the Biology of Shrews. Carnegie Museum of Natural History Special Publication*, **18**: 345-356.
- Reumer, J.W.F. & Doukas, C.S. 1985. Early Pleistocene Insectivora (Mammalia) from Tourkobounia (Athens, Greece). *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, **B88** (1): 111-121.
- Rümke, C.G. 1976. Insectivora from Pikermi and Biodrak (Greece). *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, **B79** (4): 256-270.
- Rümke, C.G. 1985. A review of fossil and recent Desmaninae (Talpidae, Insectivora). *Utrecht Micropaleontological Bulletin, special publication* **4**: 1-241.
- Rzebik-Kowalska, B. 2005. Poland. In: Hoek Ostende, L.W. van den, Doukas, C.S. & Reumer, J.W.F. (eds), *The Fossil Record of the Eurasian Neogene Insectivores (Erinaceomorpha, Soricomorpha, Mammalia), Part I. Scripta Geologica Special Issue* **5**: 119-134.
- Schmidt-Kittler N., Bruijn, H. de & Doukas, C. 1995. General Introduction In: Schmidt-Kittler (ed), *The vertebrate locality Maramena (Macedonia, Greece) at the Turolian-Ruscinian boundary. Münchner Geowissenschaftliche Abhandlungen*, **A28**: 9-18.

- Steenbrink, J., Vugt, N. van, Kloosterboer-van Hoeve, M.L. & Hilgen, F.J. 2000. Refinement of the Messinian APTS from sedimentary cycle patterns in the lacustrine Lava section (Servia Basin, NW Greece). *Earth and Planetary Science Letters*, **181** (1/2): 161-173.
- Strakari, D. 2004. *Small mammals from the Pliocene locality of Vevi (NW. Greece)*. Unpublished Diploma Thesis. University of Athens. 80pp.
- Sulimski, A. 1959. Pliocene Insectivores from Węże. Study on the Tertiary bone breccia fauna from Węże near Dialoszyn in Poland. Part XI. *Acta palaeontologica polonica*, **4** (2): 119-163.
- Syrides, G.E. 1990. *Lithostratigraphic, biostratigraphic and palaeogeographic study of the Neogene/Quaternary sedimentary deposits of Chalkidiki peninsula, Macedonia, Greece*. PhD Thesis, Aristotle University of Thessaloniki, School of Geology, Scientific Annals **1** (11). [in Greek]
- Terzea, E. 1980. Deux micromammifères du pliocène de Roumanie. *Travaux de l'Institut de Spéologie "Émile Racovitza"*, **19**: 191-201.
- Thenius, E. 1952. *Galerix exilis* aus den pontischen Schishten von Pikermi Attica. *Annales Géologiques des Pays Helléniques*, **4**: 195-202.
- Theocharopoulos, D.C. 2000. Late Oligocene – Middle Miocene *Democricetodon*, *Spanocricetodon* and *Karydomys* n. gen., from the Eastern Mediterranean area. *Gaia*, **8**: 1-91.
- Topachevsky, V.A. 1961. Novyi Pliotsenovykh vid vykhukholi iz predkavkazya. *Paleontologicheskij Zhurnal*, **4**: 131-137.
- Vassileiadou, K. & Koufos, G.D. 2005. The micromammals from the Early/Middle Miocene locality of Antonios, Chalkidiki, Greece. *Annales de Paléontologie*, **91**: 197-225.
- Vassileiadou, K.V., Koufos, G.D. & Syrides, G.E. 2003. Silata, a new locality with micromammals from the Miocene/Pliocene boundary of the Chalkidiki peninsula, Macedonia, Greece. In: Reumer, J.W.F. & Wessels, W. (eds), *Distribution and migration of Tertiary mammals in Eurasia. A volume in honour of Hans de Bruijn. Deinsea*, **10**: 549-562.
- Weerd, A. van de, 1979. Early Ruscinian rodents and lagomorphs (Mammalia) from the lignites near Ptolemais (Macedonia, Greece). *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, **B82**: 127-170.
- Weerd, A. van de, Reumer, J.W.F. & Vos, J. de. 1982. Pliocene mammals from Apolakkia Formation (Rhodes, Greece). *Proceedings Koninklijke Nederlandse Akademie van Wetenschappen*, **B85** (1): 89-112.