15th International Congress of the Geological Society of Greece
Athens, 22-24 May, 2019 | Harokopio University of Athens, Greece
Bulletin of the Geological Society of Greece, Sp. Pub. 7 Ext. Abs. GSG2019-122

Faunal Diversity at the Turolian locality of Kerassia (Northern Euboea, Greece)

P. Kampouridis[1], S. Roussiakis[2], N. Kargopoulos[2], I. Giaourtsakis[3], G. Dimakopoulos[2], G. Iliopoulos[4], G. Svorligkou[2] and G. Theodorou[2]

(1) Eberhard-Karls University of Tübingen, Department of Geosciences, Sigwartstr. 10, 72074, Tübingen, Germany, panagiotis.kampouridis@student.uni-tuebingen.de
(2) National and Kapodistrian University of Athens, Department of Geology and Geoenvironment, Panepistimiopolis, 15784, Athens, Greece
(3) Ludwig-Maximilians-Universität München, Department of Earth and Environmental Sciences, Paleontology & Geobiology, Richard-Wagner-Str. 10, 80333 München, Germany
(4) University of Patras, Department of Geology 26504, Rio Patras, Greece

The fossiliferous sites of Kerassia are located in northern Euboea, Greece. The first excavation was conducted in 1982 by H. de Bruijn, A. van der Meulen (University of Utrecht) and C. Doukas (National and Kapodistrian University of Athens; NKUA). They were not continued until 1992, when G. Theodorou (NKUA) began a series of recurring systematic excavations in the area, revealing seven fossiliferous sites, which can be allocated into two distinct stratigraphical horizons (Iliopoulos, 2003; Theodorou *et al.*, 2003). The lower horizon contains the sites K2, K3, K4 and K5. The upper horizon comprises the sites K1, K6, as well as the site Ke of the initial excavation of 1982. In the present study, the majority of the material from Kerassia, which is housed in the collections of the Museum of Palaeontology and Geology of the NKUA, has been evaluated, shedding light on the faunal composition of the two fossiliferous horizons (Fig. 1), and updating the taxonomic identifications based on a greater sample of specimens (Kampouridis & Dimakopoulos, 2018).

The bovid material consists mostly of fragmentary mandibles, whereas crania and horns are rare, making their identification quite difficult. Currently, two main groups can be distinguished: one of a large-sized bovid, resembling the species *Tragoportax amalthea*, and one of a smaller-sized, resembling *Gazella capricornis*. It seems that in the lower horizon the bigger bovid is the dominant taxon, while in the upper horizon the smaller one is more frequent. In the upper horizon, a partially preserved skull differs from the rest of the *G.* cf. *capricornis* material and resembles *Gazella deperdita*. In the lower horizon two more bovid taxa can be preliminary referred, ?*Palaeoreas lindermayeri* and ?*Protragelaphus skouzesi*.

The hipparionine horses are well-represented in Kerassia. However, similar to the bovids, the cranial material is scarce. The postcranial material can be separated into two main groups, a robust and a slender one. The robust postcranials can be assigned to *Hippotherium brachypus*, which is the most common robust hipparionine species in Greece during the Turolian. The identification of the slender hipparionine material is more delicate, due to the existence of several potential taxa, which are usually identified based on cranial and dental material. Only two fragmentary crania have been found so far. Neither of them can be assigned to *H. brachypus*, whereas both of them differ significantly from each other to be assigned to the same species. A juvenile cranium, from the site K4, has a single, well-developed, and deep preorbital fossa, which is situated near the orbit. These features are typical for the *Cremohipparion* lineage, in particular *Cremohipparion mediterraneum*. An adult cranium, originating from the initial excavation site (Ke), features a weakly developed preorbital fossa without posterior pocketing, placed far from the orbit, whereas its upper dentition is moderately plicated. These features resemble closer the *Hipparion dietrichi* - *Hipparion prostylum* lineage. Thus, it may be assumed that Kerassia was inhabited by two slender hipparionine species. In the lower horizon the slender hipparionines are more frequent, while in the upper horizon the robust *H. brachypus* is more common.

The Rhinocerotidae from Kerassia have been studied in detail (Giaourtsakis *et al*., 2006; Athanassiou *et al*., 2014), and are represented by three species: the tandem-horned rhinocerotids "*Diceros*" *neumayri* and *Dihoplus pikermiensis*, along with the hornless species *Acerorhinus neleus*. "*Diceros*" *neumayri* is the dominant rhinocerotid taxon, and the only one that occurs in both fossiliferous horizons, so far. The family Chalicotheriidae is represented in both horizons by a few specimens, which are attributed to the schizotheriine *Ancylotherium pentelicum* (Kampouridis & Dimakopoulos, 2018).

The family Giraffidae is well-represented in Kerassia. Five different species have been identified: *Palaeotragus rouenii*, *Palaeotragus* sp., *Helladotherium duvernoyi*, *Bohlinia attica* and *Samotherium major* (Iliopoulos, 2003). Notably, four species coexist in each fossiliferous horizon (Fig. 1).

The carnivorans include seven species, the hyaenids *Plioviverrop*s sp., cf. *Ictitherium pannonicum*, *Hyaenotherium wongii*, *Adcrocuta eximia*, the felids *Amphimachairodus giganteus*, *Metailurus parvulus* and the mustelid ?*Promeles palaeatticus* (Iliopoulos, 2003; Roussiakis & Theodorou, 2003; Roussiakis *et al*., 2006).

The proboscideans are scarce but diverse, comprising three species: *Deinotherium* cf. *proavum*, *Konobelodon atticus* and *Choerolophodon* sp. (Theodorou *et al.*, 2001; Kampouridis & Dimakopoulos, 2018; Konidaris *et al.*, 2014). Some additional rare taxa have been recovered so far from the upper horizon, including the suid *Hippopotamodon erymanthius*, the tragulid *Dorcatherium* sp., and the tubulidentate *Amphiorycteropus gaudryi*. Interestingly, remnants of a large-sized bird, attributed to *Struthio* sp., have been reported from both horizons, while another bird *Pavo archiaci*, has been only found in the site K4 (Kampouridis & Dimakopoulos, 2018).

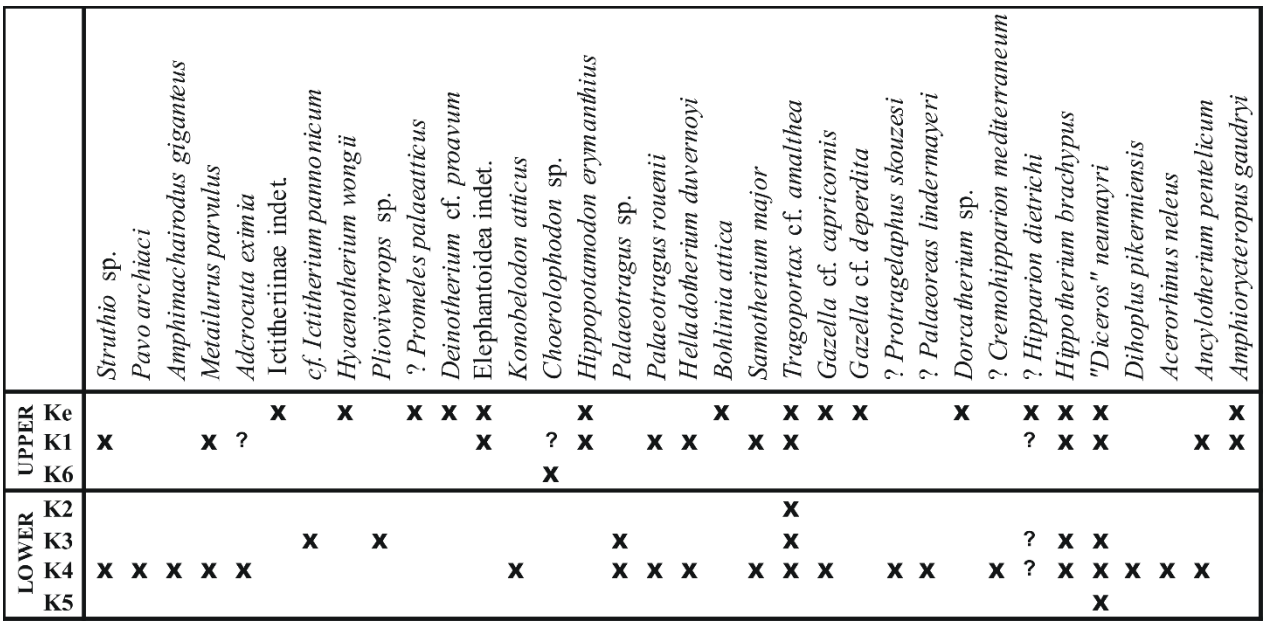

Figure 1. Updated faunal list of the Kerassia fossiliferous sites.

Based on the faunal composition, a middle Turolian (MN12) age has been suggested for the fossiliferous sites of Kerassia, although an early Turolian (MN11) age cannot be decisively excluded (Athanassiou *et al*., 2014; Iliopoulos, 2003; Theodorou *et al.*, 2003). Thus far, the available data are not sufficient for a more precise biochronological differentiation between the two fossiliferous horizons. The biogeographical and palaeoecological implications are of particular interest, since Kerassia seems to feature some transitional elements in its faunal composition with respect to the classical localities of Pikermi and Samos (Koufos *et al.*, 2009). The fauna of Kerassia includes taxa like the giraffid *Samotherium* and the tubulidentate *Amphiorycteropus*, which are typically known from Samos but are notably absent in Pikermi. Conversely, Kerassia lacks the hornless rhinocerotid *Chilotherium*, which is characteristic for Samos, and includes *Acerorhinus neleus*, which occurs in Pikermi. The coexistence of numerous and dietary diverse ungulates within the faunal association of Kerassia (Iliopoulos, 2003; Solounias *et al*., 2010; Athanassiou *et al*., 2014), indicates a heterogeneous vegetational regime providing suitable dietary niches for each one of these species, and suggests a mosaic habitat of widespread open woodlands with intermittent bushlands and grassy herbaceous landscapes.

Acknowledgements

We would like to thank all students that participated in the excavations and in the preparation of the material. The excavations between 1992 and 2015 were funded by local authorities, the General Secretariat for Research and Technologies of Greece and the NKUA Research Account projects 70/4/1394, 70/3/2842, 70/3/3922, 70/3/8567 and 70/3/12301. Participation in the conference has been supported by the Palaeontological Association.

References

Athanassiou, A., Roussiakis, S., Giaourtsakis, I., Theodorou, G., Iliopoulos, G., 2014. A new hornless rhinoceros of the genus *Acerorhinus* (Perissodactyla: Rhinocerotidae) from the Upper Miocene of Kerassiá (Euboea, Greece), with a revision of related forms. Palaeontographica, Abt. A: Palaeozoology – Stratigraphy 303 (1-3), 23-59.

Giaourtsakis, I., Theodorou, G., Roussiakis, S., Athanassiou, A., Iliopoulos, G., 2006. Late Miocene horned rhinoceroses (Rhinocerotinae, Mammalia) from Kerassia (Euboea, Greece). N. Jb. Geol. Palaont. Abh. 239, 367-398.

Iliopoulos, G., 2003. The Giraffidae (Mammalia, Artiodactyla) and the study of histology and chemistry of fossil mammal bone from the Late Miocene of Kerassia (Euboea Island, Greece). Ph.D. Thesis, University of Leicester, Leicester, 147 p.

Kampouridis, P., Dimakopoulos, G., 2018. Taxonomic identification of the Turolian fauna of Kerassia, Euboea (Greece). Undergraduate Thesis, National and Kapodistrian University of Athens, Athens, 131 p.

Konidaris, G., Roussiakis, S., Theodorou, G., Koufos, G., 2014. The Eurasian occurrence of the shovel-tusker *Konobelodon* (Mammalia, Proboscidea) as illuminated by its presence in the Late Miocene of Pikermi (Greece). Journal of Vertebrate Paleontology 34 (6), 1437-1453.

Koufos, G., Kostopoulos, D., Merceron, G., 2009. The Late Miocene Mammal Faunas of the Mytilinii Basin, Samos Island, Greece: New Collection 17. Palaeoecology – Palaeobiogeography. Beiträge zur Paläontologie 31, 409-430.

Roussiakis, S., Theodorou, G., 2003. Carnivora from the Late Miocene of Kerassia (Northern Euboea, Greece). Deinsea 10, 469-497.

Roussiakis, S., Theodorou, G., Iliopoulos, G., 2006. An almost complete skeleton of *Metailurus parvulus* (Carnivora, Felidae) from the Late Miocene of Kerassia (Northern Euboea, Greece). Geobios 39, 563-584.

Solounias, N., Rivals, F., Semprebon, G. M., 2010. Dietary interpretation and paleoecology of herbivores from Pikermi and Samos (late Miocene of Greece). Paleobiology 36 (1), 113-136.

Theodorou, G., Athanassiou, A., Iliopoulos, G., 2001. Proboscidea from the Late Miocene of Kerassiá (Euboea, Greece). 45th Annual Meeting of the Palaeontological Association, Copenhagen. The Palaeontology Newsletter 48 (suppl.), p. 50.

Theodorou, G., Athanassiou, A., Roussiakis, S., Iliopoulos, G., 2003. Preliminary remarks on the Late Miocene herbivores of Kerassia (Northern Euboea, Greece). Deinsea 10, 519-530.