

ΓΕΩΛΟΓΙΑ.— **New data from the Villafranchian mammal locality of Gerakarou (Macedonia - Greece), by George D. Koufos and John K. Melentis***. Ἀνεκρινώθη ὑπὸ τοῦ Ἀκαδημαϊκοῦ κ. Λουκᾶ Μούσσουλου.

INTRODUCTION

Many mammal localities from Central Macedonia are known. Most of them belong to Upper Miocene (Arambourg-Piveteau, 1929 ; Bonis-Melentis, 1977; Koufos, 1980). The presence of Pleistocene is only known by some

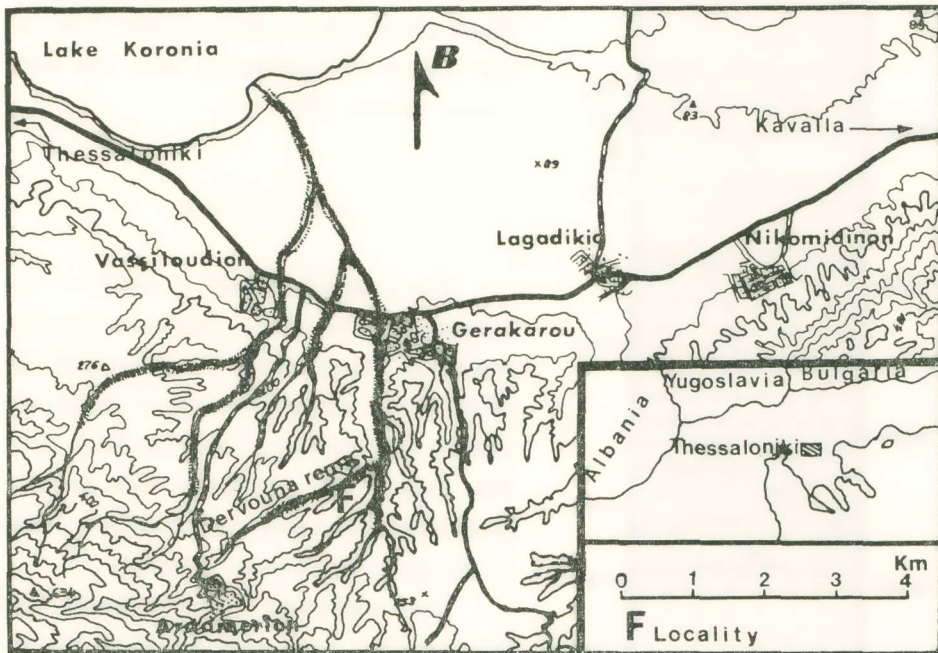


Fig. 1. Geographic position of the Gerakarou locality.

isolated specimens (teeth or bones) from different regions of Macedonia. Some Villafranchian mammal localities are known from the Grevena basin (Western Macedonia, referred by Brunn, 1956) and others from Eastern Macedonia

* Γ. Δ. ΚΟΥΦΟΥ - Ι. Κ. ΜΕΛΕΝΤΗ, Νέα στοιχεία ἀπὸ τὸ Βιλλαφράγκιο κοίτασμα σπονδυλωτῶν τῆς Γερακαροῦς (Μακεδονία - Ἑλλάδα).

as the Villafranchian locality of Volax (Sickenberg, 1968) and the Upper Pleistocene locality of Aggitis (Koufos, 1981); both are situated in the Drama basin.

In Central Macedonia a Pleistocene locality (Ravin de l'éléphant) is known from the Axios basin (Bonis et al, 1973). Another one is the Villafranchian locality of Krimni, situated about 60 Km eastern to Thessaloniki into the Langada basin (Sakellariou et al, 1979). Recently the Gerakarou locality is found; it is situated into the Langada basin about 35 Km eastern to Thessaloniki. More exactly it is about 2 Km S.W. to the village of Gerakarou into the Der-vouna ravine (Fig. 1).

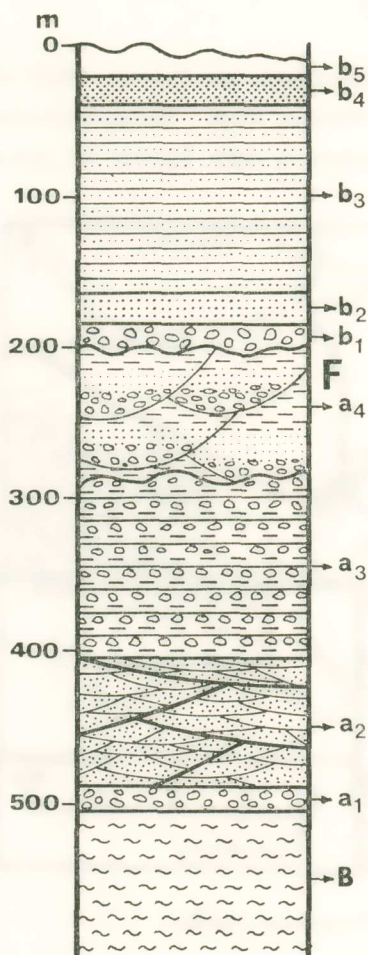


Fig. 2. Stratigraphic column of the Langada basin sediments. (After Psilovikos, 1977; abbreviations in the text).

(*Dicerorhinus orientalis* - Dimopoulos, 1972) and red-beds (a₄). It is a lacustrine and fluvio-terrestrial system.

The mygdonian (upper) system consists of gravels (b₁), sand (b₂) sand-silt (b₃), sand (b₄) and alluvial deposits (b₅). This system has two series,

G E O L O G Y

The Langada basin is sited at the boundaries between Serbomacedonian mass and Vardar zone. The basement (B) of the basin consists mainly of gneis with marble intercalations, amphibolites, phylites, limestones, quartzites and granitic intrusions. The basin was filled by a series of Neogene-Quaternary deposits.

The sediments of the basin are divided into two systems (Fig. 2) the premygdonian and the mygdonian system (Psilovikos, 1977).

The premygdonian (lower) system consists of conglomerate (a₁), sandstone (a₂), sand-silt (a₃) of Pontian age

the one was formed during the filling process of the basin by the water and the other during the falling process of the lake's water-level.

LOCALITY

The fossils are found into the upper part of the red-beds. The locality is rich in fossils and seems that the water carried them. The fossilization is similar to that of the Krimni locality. The fossiliferous beds are covered by a series of large pebbles and gravels, sands and some alluvial formations. The layer with the pebbles and gravels is very thick in some places. The water in the ravine uncovered the red-beds with the fossils which are near the banks of the river.

FAUNA

The determination of the collected material, consisted of skulls, mandibles, horncores and bones gave the following fauna.

- Carnivora : *Canis etruscus*.
 Perissodactyla : *Equus stenonis senezensis*.
 Artiodactyla : *Sus* sp., *Croizetoceros ramosus* cf. *minor*, *Eucladoceros senezensis senezensis*, *Cervus* cf. *philisi*, *Cazella* sp.

AGE

The age of the Langada basin red-beds was a problem and discussed a lot. The first palaeontological evidence about their age was the locality of Krimni (Sakellariou et al., 1979). Two species were found at this locality *Equus stenonis* and *Dicerorhinus etruscus*, both characteristic of Villafranchian. More exactly the horse is similar to that of Senéze (France) so as the locality is dated to Upper Villafranchian. The Gerakarou locality was found in 1978 and the first collected material composed of the following species (Zamanis et al., 1980):

- Cervidé de la taille de *Cervus philisi*.
 Bovidé de la taille de *Procamptoceras brivatense*.
Gazella sp., *Gazellospira* sp., *Equus* cf. *stenonis*, Hyaenidé ind.
Mimomys sp.

The presence of *Equus cf. stenonis* and *Mimomys* sp. is an indication about the Villafranchian age of the locality, because of the rodent characterized the transition from Pliocene to Pleistocene.

The new collected material is more rich and allows an exact dating of the locality because of the more characteristic species. The horse *Equus*

ABSOLUTE AGE (MY)	SERIES	CONTINENTAL STAGES	MAMMAL LOCALITIES OF GREECE
0.01	HOLOCENE		
0.5	PLEISTOCENE	OLDENBURGIAN	
0.9		BIHARIAN	Tourkovounia Megalopolis
1.8		VILLAFRANCHIAN	GERAKAROU Krimni, Rhodos, Kos
3.2	PLIOCENE	RUSCINIAN	Ptolemais Alatini M.Emvolon
5.0			

Fig. 3.

stenonis senezensis found in the Senéze locality characterizes the Upper Villafranchian (zone - b), (Azzaroli, 1967, Heintz, 1970, Tobien, 1970). The presence of this horse in the Gerakarou locality helps the idea about the Upper Villafranchian age. Another characteristic species of the Senéze fauna is *Eucladoceros senezensis* and its presence in the studied locality helps the opinion about its age. The other age indication is the similarity of *Croizetoceros*

ramosus to that of Senéze (sub-species *minor*). Finally *Canis etruscus* is similar to that of Upper Valdarno (Italy) dated to Upper Villafranchian (zone-b), (Azzaroli, 1967). The presence of *Gazella* is a problem because this genus is unknown in the zone-b of Upper Villafranchian.

All the above mentioned data shows that there is a similarity of the Gerakarou fauna to those of Upper Villafranchian ones (Senéze, Valdarno) and the locality can certainly be considered to Upper Villafranchian, possibly to the zone-b of this stage. The continuing research and study of the Gerakarou locality will help us to find more exact data about the locality, the fauna, the age and the distribution of Villafranchian in Northern Greece.

Π Ε Ρ Ι Λ Η Ψ Η

Ἡ ἔρευνα στὴ λεκάνη τοῦ Λαγκαδᾶ τὰ τελευταῖα χρόνια ἔδωσε μερικά νέα κοιλτάσματα σπονδυλωτῶν, πού ἐπέτρεψαν τὸν προσδιορισμὸ τῆς ἡλικίας τῶν ἀποθέσεων τῆς λεκάνης. Τὸ κοίτασμα σπονδυλωτῶν τῆς Γερακαροῦς βρέθηκε τὸ 1978 (Zamanis et al., 1980). Τὸ 1977 εἶχε βρεθεῖ τὸ κοίτασμα σπονδυλωτῶν τῆς Κρήμνης καὶ ἔδωσε τὰ πρῶτα παλαιοντολογικὰ στοιχεῖα γιὰ τὴν ἡλικία τῶν ἀποθέσεων τῆς λεκάνης (Sakellariou et al., 1979). Μιὰ νέα συλλογὴ ὕλικου ἀπὸ τὸ κοίτασμα τῆς Γερακαροῦς ἔδωσε καινούρια στοιχεῖα γιὰ τὴν πανίδα καὶ ἐπέτρεψε ἀκριβέστερο προσδιορισμὸ τῆς ἡλικίας τῶν στρωμάτων.

Τὸ κοίτασμα τῆς Γερακαροῦς βρίσκεται περίπου 35 Km ἀνατολικά τῆς Θεσσαλονίκης καὶ ἐντοπίζεται περίπου 2 Km νοτιοδυτικὰ τοῦ χωριοῦ στὸ ρέμα Δερβούνα (Σχ. 1). Οἱ ἀποθέσεις τῆς λεκάνης τοῦ Λαγκαδᾶ ἀποτελοῦνται ἀπὸ δύο συστήματα: α) τὸ προμυγδονιακὸ (παλαιότερο) πού ἀποτελεῖται ἀπὸ κροκαλοπαγή, ψαμμίτες, ἀργίλλους καὶ ἐρυθροστρώματα καὶ β) τὸ μυγδονιακὸ (νεώτερο) ἀπὸ χαλίκια, ἄμμους, ἀργίλλους, ἄμμους καὶ ἀλλουβιακὲς ἀποθέσεις (Σχ. 2). Τὰ ἀπολιθώματα βρίσκονται στοὺς ἀνώτερους ὀρίζοντες τῶν ἐρυθροστρωμάτων τοῦ προμυγδονιακοῦ συστήματος.

Ὁ προσδιορισμὸς τοῦ ὕλικου ἔδωσε τὰ παρακάτω εἶδη:

Σαρκοφάγα : *Canis etruscus*.

Περισσοδάκτυλα : *Equus stenorhis senezensis*.

Ἄρτιοδάκτυλα : *Sus* sp., *Croizetoceros ramosus* cf. *minor*, *Eucladoceros senezensis senezensis*, *Cervus* cf. *philisi*, *Gazella* sp.

Τὰ εἶδη αὐτὰ εἶναι χαρακτηριστικὰ τοῦ Ἐν. Βιλλαφραγκίου στὴν Εὐρώπη καὶ ἐπιτρέπουν τὴ χωρὶς ἀμφιβολία τοποθέτηση τοῦ κοιτάσματος τῆς Γερακαροῦς στὸ Ἄνωτερο Βιλλαφράγκιο. Ὅρισμένα ἀπὸ τὰ εἶδη δείχνουν μιὰ ὁμοιότητα μὲ τὰ ἀντίστοιχα τῆς περιοχῆς Senezé (Γαλλία) καὶ Valdarno (Ἰταλία) καὶ ἔτσι ἐνισχύουν τὴν πιθανότητα, τὸ ἀνώτερο τμήμα τῶν ἐρυθροστρωμάτων νὰ ἀνήκει στὴ ζώνη-b τοῦ Ἄνωτερου Βιλλαφραγκίου. Ἡ συνέχιση τῆς ἔρευνας, ἡ συλλογὴ ἀφθονότερου ὕλικου, ἡ μελέτη του καὶ ἡ σύγκρισή του μὲ ἄλλα ἀντίστοιχων ἡλικιῶν θὰ δώσει ἀκριβέστερα στοιχεῖα γιὰ τὸ κοιτάσμα καὶ γενικότερα γιὰ τὴν ἐξάπλωση τοῦ Βιλλαφραγκίου στὴ Μακεδονία.

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