



Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com



Palaeontology of the upper Miocene vertebrate localities of Nikiti (Chalkidiki Peninsula, Macedonia, Greece)

Aves[☆]



George D. Koufos^{a,*}, Dimitris S. Kostopoulos^a, George E. Konidaris^{a,b}

^a Aristotle University of Thessaloniki, Department of Geology, Laboratory of Geology and Palaeontology, GR-54124 Thessaloniki, Greece

^b Eberhard Karls University of Tübingen, Palaeoanthropology, Senckenberg Center for Human Evolution and Palaeoenvironment, Rümelinstr. 23, 72070 Tübingen, Germany

ARTICLE INFO

Article history:

Received 23 October 2014

Accepted 19 January 2016

Available online 27 January 2016

Keywords:

Aves
 Struthionidae
 Late Miocene
 Greece
 Taxonomy
 Biogeography
 Palaeoenvironment

ABSTRACT

The upper Miocene avian localities of Greece are rare and the known material is poor. During the last campaigns of excavations in Nikiti 2, a tarsometatarsus of a large struthionid has been unearthed, enriching the poor known Greek sample of late Miocene birds. Morphological and comparative features suggest similarities with the extant and fossil large struthionids referred to *Struthio*. Several taxa of this genus are known from the upper Miocene but the studied tarsometatarsus is more similar to *S. karatheodoris*. The latter is known from Samos (Greece, type locality) and Pikermi (Attica, Greece). Albeit their similarity, the lacking of comparable material from the type locality does not allow for a confident determination; it is therefore referred to as *Struthio* cf. *karatheodoris*. Based on morphological resemblances, it is quite possible that the north peri-Pontic taxon *S. brachydactylus* is a junior synonym of *S. karatheodoris*. Two coexisting *Struthio* lineages have been recognized in southeastern Europe during the upper Miocene to Pliocene: *S. karatheodoris*/*S. brachydactylus* and *S. novorossicus*. The second lineage is larger and with higher “degree of didactyly” than the former one. The late Miocene southeastern European ostriches were living in a palaeoenvironment, which does not fit with that of the extant African ostriches, apart maybe for *S. molybdophanes*.

© 2016 Elsevier Masson SAS. All rights reserved.

1. Introduction

There are a few known Upper Miocene avian localities in Greece, and the available avian remains are very scarce (Fig. 1). Struthionids are seldom found in the Upper Miocene deposits of Greece (Fig. 1), following the general scarcity of avian remains during this time interval. The first struthionid remains originate from the Upper Miocene mammal localities of Samos Island, Greece (Forsyth Major, 1888), where they were described as *Struthio karatheodoris* Forsyth Major, 1888. Quite later, the presence of struthionids was recognized in Pikermi, Greece, (Bachmayer and Zapfe, 1962) and were described as *S. cf. karatheodoris*; the presence of the species was recently confirmed (Michailidis et al., 2010, pers. comm. 2014). The discovery of a struthionid in Nikiti 2 (NIK) is the third evidence for the presence of *Struthio* in Greece and the first in northern Greece, adding new information for this taxon and enriching the list of the bird bearing localities of Greece.

NIK is situated in the Chalkidiki Peninsula (northern Greece) and includes a rich mammal fauna, which is studied in the present volume. The fossiliferous site is located in the upper part of the

Nikiti Fm., consisting mainly of sands, gravels, loose conglomerates and red-brown sandy marls. It is dated to the early Turolian (MN 11) based on its mammal fauna. More information about the stratigraphy, locality and age are given in Koufos (2016) and Koufos et al. (2016).

2. Material and methods

The studied specimen is housed in the Laboratory of Geology and Palaeontology, University of Thessaloniki (LGPU). The measurements on the tarsometatarsus are given in Fig. 2; they were taken using a digital caliper and they are given in mm with an accuracy of 0.1 mm. The comparative material of the modern ostrich is housed in the NMNHS; it has been measured by G.E.K.

Abbreviations: Morphology: **cmh**, crista medialis hypotarsi; **cmp**, crista medialis plantaris; **DAP**, antero-posterior diameter; **dfi**, dorsal fossa infracondylaris; **DT**, transverse diameter; **laf**, lateral articular facet of the proximal articular surface; **maf**, medial articular facet of the proximal articular surface; **mdaf**, median articular facet of the proximal articular surface; **t_{II}**, trochlea II; **t_{III}**, trochlea III; **t_{IV}**, trochlea IV.

Localities, museums and institutes: LGPU, Laboratory of Geology and Palaeontology, University of Thessaloniki; MTL, Mytilinii-1, Samos Island, Greece; NIK, Nikiti 2, Macedonia,

[☆] Corresponding editor: Gilles Escarguel.

* Corresponding author.

E-mail address: koufos@geo.auth.gr (G.D. Koufos).



Localities	PIK	CHO	SAM	KES	PER	KRY	AGN	MEV	NIK
Age	MN 12	MN 12	MN 12	MN 11-12	MN 12	MN 12-13	MN 14-15	MN 15	MN 11
<i>Struthio karatheodoris</i>	+	-	+	-	-	-	-	-	cf.
<i>Grus pentelici</i>	+	-	-	-	-	-	-	-	-
<i>Pavo archiaci</i>	+	+	-	+	-	-	-	-	-
<i>Pavo bravardi</i>	-	-	-	-	-	-	-	+	-
<i>Pavo</i> sp.	+	-	-	-	-	-	-	-	-
<i>Gyps</i> sp.	+	-	-	-	-	-	-	-	-
<i>Amphipelargus majori</i>	-	-	+	-	-	-	-	-	-
<i>Branta thessaliensis</i>	-	-	-	-	+	-	-	-	-
? <i>Amphipelargus</i> sp.	-	-	-	-	-	+	-	-	-
Perdicinae sp.	-	-	-	-	+	-	-	-	-
Passeriformes	-	-	-	-	-	-	+	-	-

Fig. 1. Sketch map with the Neogene avian-bearing localities of Greece and their associated avifauna. **1.** Pikermi, PIK (Gaudry, 1862–1867; Michailidis et al., 2010); **2.** Chomateres, CHO (Michailidis et al., 2010); **3.** Samos, SAM (Forsyth Major, 1888; Martin, 1903; Lydekker, 1891); **4.** Kerassia 4, KES (Michailidis et al., 2010); **5.** Perivolaki, PER (Boev and Koufos, 2006); **6.** Aegina, AGN (Mlíkovský, 1996); **7.** Megalo Emvolon, MEV (Boev and Koufos, 2000); **9.** Kryopigi, KRY (Zelenkov et al., 2015); **9.** Nikiti 2, NIK (this work). Asterisks indicate the localities with struthionids.

Greece; **NHML**, Natural History Museum of London; **NMNHs**, National Museum of Natural History of Sofia, Bulgaria; **MGL**, Geological Museum of Lausanne; **PIK**, Pikermi, Attica, Greece.

3. Systematic palaeontology

Order Struthioniformes Latham, 1790

Family Struthionidae Vigors, 1825

Genus *Struthio* Linnaeus, 1758

Type-species: *Struthio camelus* Linnaeus, 1758

Struthio karatheodoris Forsyth Major, 1888

Origin of the name: The origin of the species name for Samos *Struthio* is not mentioned by Forsyth Major (1888) but it possibly originates from Alexandros Karatheodoris, who was Samos Overlord at that time. Forsyth Major indicated that the first

person who gave him information about the fossils was the Overlord and probably gave his name to the new *Struthio* species.

Holotype: A complete femur from Samos, Greece, which is referred without description and figures by Forsyth Major (1888); later it was described and figured by Martin (1903: p. 204; text-figs. 30–31). Mlíkovský (2002) and Boev and Spassov (2009) noted that the location where the holotype is stored is unknown but the keeper of MGL informed us that it is housed in the MGL with catalogue number MGL S 317 (Marchant, pers. com. 2011).

Type locality: The holotype is labeled as “Adriano”, Samos (Forsyth Major, 1884). The Adrianos ravine is the main fossiliferous area of the Mytilinii Basin in Samos, excavated by many scientists and amateurs. The locality after its rediscovery was named Mytilinii-1 (MTL), including four fossiliferous sites (Kostopoulos et al., 2009); the holotype probably originates from one of them.

Download English Version:

<https://daneshyari.com/en/article/4747972>

Download Persian Version:

<https://daneshyari.com/article/4747972>

[Daneshyari.com](https://daneshyari.com)