



## Presence of the genus *Choerolophodon* (Proboscidea: Mammalia) within the Moldavian Platform framework (Eastern Carpathians Foreland, Romania)

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### Abstract

The reassignment of a mandible fragment bearing an m3 and also a left upper tusk previously described as "*Mastodon (Tetralophodon) grandicissivum*" to *Choerolophodon* cf. *anatolicus* is the leading goal of the paper. The records were collected from Khersonian rocks which crop out on the interfluvium between Ulucilor/Ulucelor and Topu valleys (Tanacu village, Vaslui District). Several biostratigraphical details have been up-dated for this area, which is confined with the Moldavian Platform (Eastern Carpathians Foreland).

Tanacu records become thereby the first occurrence of *Choerolophodon* cf. *anatolicus* in Romania, highlighting its spreading in the more northern areas in comparison to the previous specimens of the Mediterranean Land Realm (Turkey and Greece). The morphological and biometrical details of these teeth also improve the known data about this stunning proboscidean species.

**Keywords:** m3, mandible fragment, tusk, reassignment, Tanacu-Vaslui, Sarmatian/Vallesian.

### General data on the choerolophodonts

Subfamily Choerolophodontinae GAZIRY, 1976 (Family Gomphotheriidae HAY, 1922) or Family Choerolophodontidae includes one or two genera: *Choerolophodon* SCHLESINGER 1917 and *Afrochoerodon* PICKFORD 2001 (Shoshani and Tassy, 2005 considered the latter genus as a paraphyletic taxon assigning it to *Choerolophodon*). It is generally supposed that choerolophodonts originated in the

early Miocene of East Africa from where they dispersed into Eurasia, reaching firstly the Indian Subcontinent during early-late Miocene (Orleanian-Turolian) (e.g., Tassy, 1977, 1990; Pickford, 2001; Koufos, 2003; Sanders et al., 2010). The choerolophodonts have prospered in the circum-Mediterranean area (Greece, Macedonia, Bulgaria, and Turkey – e.g., Markov, 2008; Konidaris et al., in press and cited references) and further to the east, in Iraq, Iran, Pakistan, China (Tassy, 1996; Wang and

Deng, 2011 and cited references), but also in the Republic of Moldova (Lungu and Rzebik-Kowalska, 2011). In Central, Western and Northern Europe, the choerolophodonts have never been recorded (Koufos, 2003, among others). They disappeared at the Miocene/Pliocene boundary (Konidaris et al., in press).

Three European species are nowadays recognized (e.g., Sanders, 2003; Konidaris et al., in press): *Ch. chioticus* TOBIEN 1980, *Ch. anatolicus* OZANSOY 1965, and *Ch. pentelici* (GAUDRY and LARTET 1856).

The oldest European choerolophodont, *Ch. chioticus*, is documented in Thymiana, Chios Island-Greece (Middle Miocene – MN5/late Oleanian, –15.5 Ma), where it coexisted with *Prodeinotherium bavaricum* (MEYER, 1833) and possibly with *Gomphotherium angustidens* (CUVIER, 1817) (Paraskevaidis, 1940, fide Konidaris et al., in press). It should be noted that Pickford (2001) and Sanders et al. (2010) assigned “*chioticus*” species to the genus *Afrochoerodon*.

*Ch. anatolicus* was erected by Ozansoy (1965) based on juvenile specimens found near Yassiören-Turkey (middle member of Sinap Formation, early Vallesian–MN9). Afterwards, the species registered several approaches. Gaziry (1976), Tassy (1985 – fide Sanders, 2003), and Sen (1990) subsumed the species to *Ch. pentelici*. Later, Tassy et al. (1989) and Tassy (1994) considered it as a new subspecies – *Ch. pentelici lydiensis*, in order that Sanders (2003) reinstates its validity. *Ch. anatolicus* co-occurred with *Deinotherium giganteum* (KAUP, 1829) (Sanders, 2003).

*Ch. pentelici* succeeded the presumed ancestor *Ch. anatolicus*, but the replacement time-interval is still uncertain: until the Vallesian/Turolian boundary (Markov, 2008) or “at the close of the early Turolian” (Sanders, 2003) or during Vallesian until the MN9-MN10 boundary (Konidaris and Koufos, 2013). The species was contemporaneous with *Tetralophodon*, *Zygalophodon*, *Mammut*, *Deinotherium*, and *Konobelodon* genera. *Ch. pentelici* records were leading to an intraspecific evolution (the ages correspond to

the Mediterranean areas calibration, Fig. 2): in the late Vallesian (MN 10), possibly until early Turolian (MN 11), a primitive morph was documented, followed by a more advanced morph dated to the early-late Turolian (MN11-MN13) (e.g., Konidaris and Koufos, 2013; Konidaris et al., in press). *Ch. pentelici* persisted in Greece till the boundary Turolian/Ruscinian (Miocene/Pliocene), when a climate turnover towards more humid conditions probably prohibited its existence throughout the developing of more forested environments (Konidaris et al., in press).

## Historical framework

The previous records in Romania were carried out by Rădulescu and Şova (1987) and Ştiucă (2003). The former authors described two fragments of mandible, including several molars and also limb bones belonging to an adult and a juvenile specimen. The fossil material was unearthed during the diggings for a thermal station performed in the area of Bacău city, from the Maeotian rocks. The material was assigned to *Ch. pentelici* into a preliminary note without any systematic description. The material seems to be lost or, hopefully, wandered.

The second record, a DP4 of *Ch. pentelici*, was documented by Ştiucă, (2003) in Maeotian rocks of Eastern Carpathians Molasse (Subcarpathian Nappe), which crop out near the confluence of Milcov and Reghiu brooks (Vrancea District). The attempt to study the tooth failed, the fossil being not found in the collections of “Emil Racoviţă” Institute of Spaeology, Bucharest (Petculescu, pers. comm., 2014).

## Geological setting of *Choerolophodon* records

The material herein studied represents an m3 dext. and an I2 sin. described by Macarovici and Zaharia (1968) as “*Mastodon (Tetralophdon) grandicisivum*” from the Khersonian rocks, which crops out on the

interfluvium between Ulucilor and Topu valleys (Tanacu village, Vaslui District).

Taking into account the splitting of Eastern Carpathians Foreland in several major units by several trans-crustal fault systems (e.g., Răileanu et al., 2012), the area is confined with the southern part of Moldavian Platform being placed north of Bistrița Fault (Fig. 1). The Moldavian Platform is the south-

western sector of the large East European Platform, the main differences compared with the adjacent Scythian Platform consisting on the metamorphic basement and pre-Neogene rocks. Starting with Neogene, both platforms evolved similarly, only several differences having been noticed (e.g., the presence of Pontian-Romanian deposits only in the Scythian Platform – Ionesi, 1994).

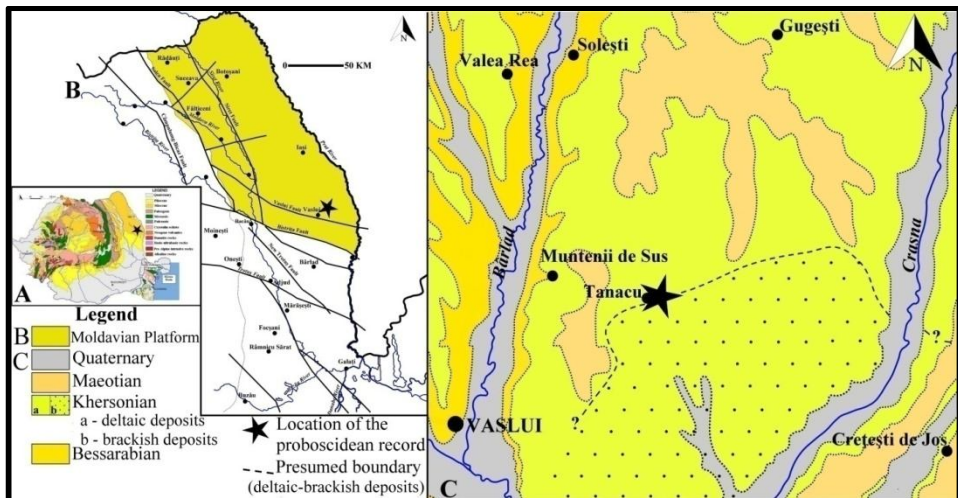


Fig. 1 The geological setting of Tanacu records. A-Geological map of Romania, after IGR; B-Location of the Moldavian Platform (East-European Platform) within the Eastern Carpathians Foreland framework, after Răileanu et al. (2012); C-Geological sketch of Tanacu area, after IGR, folio 1:200.000 Vaslui) and Jeanrenaud (1961).

In the invoked area, Jeanrenaud (1961) mapped two different facies for the Khersonian substage. Firstly, there is a deltaic facies, generally with very scarce fauna, which occurs mainly to the west and north of Vaslui city. The other is a brackish one with small mactrids developed towards south-east (Fig. 1). Jeanrenaud (1961) presumed that the boundary between these two facies crosses Tanacu village (Muntenii de Jos-east Vaslui-Tanacu-Bălțați-Huși localities). Nowadays, further detailed fieldwork on the area between Bârlad and Crasna rivers has yet to be settled it more specifically.

Nonetheless, the stratum which originate the records proved an obvious cross stratification

belonging to the deltaic rocks, only rare and rolled specimens of foraminifers (*Elphidium* sp., *Nonion* sp.) being observed as Macarovici and Zaharia noticed (1968: pp. 223, footnote).

Later, Ionesi et al. (2005) proposed Huși Formation for the Khersonian deposits with the mactrids and Balta-Păun Formation for the Khersonian developed in the deltic facies, respectively.

Consequently, within the Tanacu village area both facies could be encountered, the proboscidean fossils having originated in the rocks of Balta-Păun Formation.

Khersonian substage (Late Sarmatian) corresponds to the Vallesian mammal megazone of South-Eastern Europe, more precisely

to MN 10 (Fig. 2). It should be noted that the beginning of Vallesian (*Hipparion*-datum) is not widely accepted. In the Mediterranean areas and Western Europe, the last magnetostratigraphic data placed it at 10.7 Ma after the samples from Sinap, Turkey (Kappelman et al., 2003) or 10.8 Ma after the results of

Daroca, Spain (Garces et al., 2003). These data are close to conflict with the beginning of Vallesian (*Hipparion*-datum) in Eastern Europe, where it was placed earlier, at 11.9 (11.5) Ma on the data from the *Hipparion* occurrences in the Moldova Republic (Vangengeim et al., 2006).

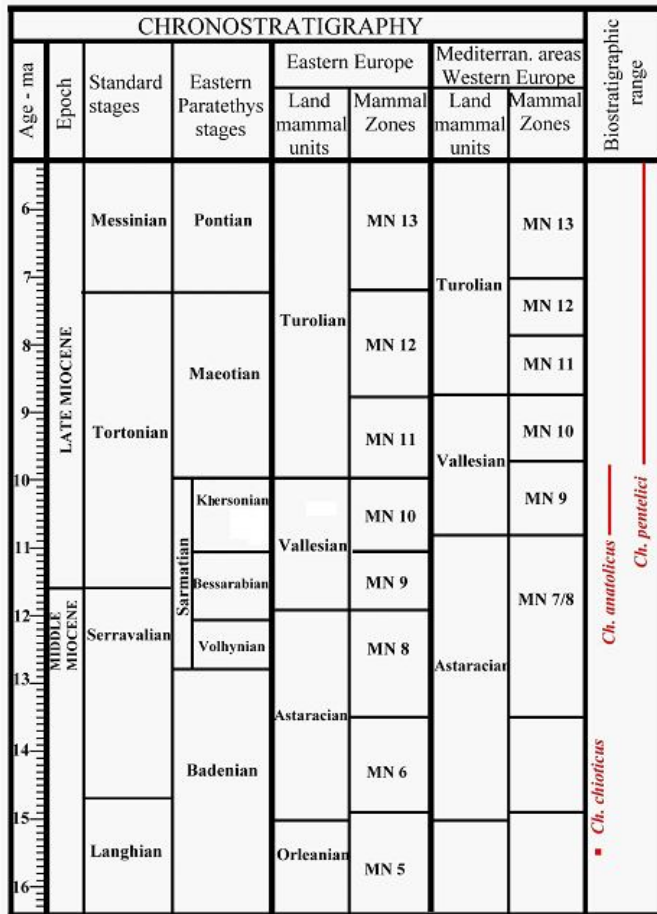


Fig. 2 The age differences of Mammal megazones between Western and Eastern Europe (after Kappelman et al., 2003; Garces et al., 2003; Vangengeim et al., 2006).

**Material and methods**

The mandible fragment bearing the m3 dext. and also the I2 sin. are housed in the Museum of Paleontology-Original Collection, University of “Alexandru Ioan Cuza” Iași

(MP-UAIC), Collection Macarovici and Zaharia, Inv. MZS 11 and MZS 10, respectively.

Macarovici and Zaharia (1968, pp. 226) signaled another left mandible fragment bearing only the roots of one molar presuming

to be originated by a juvenile specimen. The fossil has been not found in the MP-UAIC.

Systematics follows Sanders (2003) and Shoshani and Tassy (2005) and the terminology follows Tassy (1996) and Sanders et al. (2010).

Suitable comparative material from the main available papers was used to identify and describe the fossil material.

**Dental abbreviations:** The upper teeth are denoted with capitalized letters, and the lower ones with lowercase letters. I2 – upper tusk; DP/dp – deciduous upper/lower premolar; m – lower molar, digit – order of the tooth; dext. – dexter; sin. – sinister.

**Dental definitions** (after Sanders et al., 2010, including the quotations): abaxial conelet – the outer/main cone in each half-lophid (Tassy, 1996); accessory conules – enamel-covered pillars situated anterior and/or posterior face to lophids, or in the valleys partially blocking them (Tobien, 1973); adaxial conelet/mesoconelet – the inner cone in each half-lophid (Tassy, 1996); chevroning – the arrangement of half-lophid to form an anterior pointing V or chevrons (Tobien, 1975; Sanders and Miller, 2002); choerodonty – the occurrence of accessory tubercles within the transverse valley (Osborn, 1942); ptychodonty – plication or infolding of enamel borders with the molar sides growing (Osborn, 1942).

## Paleontology

Class Mammalia LINNAEUS, 1758

Order Proboscidea ILLIGER, 1811

Superfamily Elephantoidae GRAY, 1821

Family Gomphotheriidae HAY, 1922

Subfamily Choerolophodontinae GAZIRY, 1976

Genus *Choerolophodon* SCHLESINGER, 1917

*Choerolophodon* cf. *anatolicus* OZANSOY, 1965

**Material:** Fragment of right mandible bearing the m3; left upper tusk.

**Locality:** Tanacu, Vaslui; Moldavian Platform.

**Age:** Vallesian of Eastern Europe, MN10

**Collection:** MP-UAIC, Inv. nr. MZS 11, MZS 10.

## Description:

**MZS 11** represents a fragment of right mandibular corpus bearing the m3. The symphysis is not preserved, thus the presence or absence of a ventral angulation is not possible to be observed.

The m3 consists of four heavily worn bunodont lophids and a destroyed distal part. It could represent the distal cingulid but the presence of a fifth lophid cannot be ruled out as Macarovici and Zaharia (1968) assumed. This distal ending as well as the mesial part has been embedded in a gypsum carcass.

The advanced stage of wear of the m3 hampers an accurate description, but several features, which are still obviously exposed on the occlusal surface, sustain the assignment to the genus *Choerolophodon*, respectively the obvious mesially pointing chevrons in lophids 2-4 and the presence of choerodonty and ptychodonty (Pl. I, Fig. 1a).

The mesial cingulid is oblate by the pressure mark with the previous molar, forming a narrow strip fused with the first lophid; only one inferred cusp could be visually differentiate towards the lingual margin.

It is more difficult to ascertain the morphology, displacement and accurate number of conelets and conules in each lophid. Still on, one observes on 2-4 lophids the oblique alignment to the molar axis of all conelets and conules, the pretrite and posttrite half-lophids being angled on one-other. The first lophid is relative straight exhibiting a strong inner mesoconelet. The majority of conelets and conules seem to retain a cavsi-ellipsoidal shape, which becomes laterally narrowed. On both pretrite and posttrite sides, the mesoconelets are smaller than the abaxial conelets, conquering an anterior position against them. Obviously, the pretrite mesoconelet endings are set before the anterior line of the all posttrite conelets on 2-4 lophids, the chevroning of pretrite half-lophids exceeding clearly the posttrite one. The accessory conules are very scarce, only in the first and second valleys of the pretrite half-lophid arising distinctly one posterior accessory conule.

The median sulcus is jagged. On the posttrite half-lophids, the conelets and the conules can be only inferred. They display the same oblique alignment to the molar axis. But the ptychodonty is more expressed (e.g., the two and third half-lophids) and more cementum can be observed in the first valley of the posttrite side.

Unfortunately, the distal cingulid/talonid was damaged, most probably during the extraction of the molar. The connection with the last lophid can only be inferred on the pretrite half (Pl. I, fig. 1a).

The discontinuous components of the cingulum can be observed both on the lingual and buccal margins, the lingual valley between the second and the third lophids being occluded by a moderate conule. Enamel thickness measured on the lingual margin is around 6.3 mm.

MZS 10 represents a left upper tusk, which was reinforced ventrally and also caught in the wire loops. It proves proximally

an outward direction followed by a slightly inward and upward part. The cross-section is dorso-ventrally compressed up to the tip, which tends to have a more rounded shape (Tab. 1). Consequently, the general shape of I2 is oval, with the longest axis developed laterally.

The internal structure of the I2 is composed of concentric thin layers of dentin, which can be seen in the proximal and tip cross-sections.

### Measurements:

The biometrical values for the records are inserted in the Table 1.

It should be remembered that the m3 distal part is incomplete, as well as the proximal part of I2, most probably. Also, it seems that the fossilization process did not exactly flatten dorso-ventrally the tusk, the strange tip orientation after the restoration (Pl. I, Fig. 2b) being one of its consequences. The tip is mostly worn and the axes were measured at the last wire loop, consequently.

Tab. 1 Biometrical values for the m3 and I2 of Tanacu

								m3	
Parameters	L	W1	W2	W3	Wmax/L (%)	Hmcr	Et		
Values									
(in mm)	? 158.4	64.4	69.5	70.8	? 0.455598	~ 3.92	6.3		
								I2	
Parameters	L	C	Alm pr	Adv pr.	FR pr (%)	Alm t	Adv t	FR t (%)	
Values									
(in mm)	? 1088	183.4	91.80	69.80	76.03	61.40	54.47	88.71	

Alm- latero-medial axis; Adv- dorso-ventral axis; C-maximum distance between the dorsal margin of the tip and the horizontal line between the beginning and the tip of I2; Et-enamel thickness; FR-flattening report = $\text{Adv} \times 100/\text{Alm}$ ; Hmcr-maximum height of the crown; L-length of tooth; pr-proximal cross-section; t-cross-section of the tusk tip; W1-width of the lophid 1-3.

### Comparison and discussion

The m3 was assigned by Macarovici and Zaharia (1968) to "*Mastodon (Tetralophodon) grandicisivum*", assuming five lophids and a distal cingulid. The authors reached this conclusion by comparing with m3 figured by Schlesinger (1922).

The obvious chevroning, the weakly expressed ptychodonty and choerodonty, and also the biometrical parameters are arguments for the more primitive species, respectively *Ch. anatolicus*, than *Ch. pentelici* (Tobien, 1973, 1980; Sanders, 2003), but the wear stage and the destroyed distal part urged us to caution.

It should also be noticed that the m3 of *Ch. anatolicus* used for comparison, as well as the Tanacu molar, exhibit the mesial endings of pretrite mesoconelets setting before the anterior line of the half-lophid posttrite.

Ozansoy (1965) erected *Ch. anatolicus* on juvenile specimens, respectively palatal and mandibular fragments from Yassiören (Turkey). The author has outlined several morphological differences from *Ch. pentelici*, as well as the smaller dimensions of the former species. The distinction between the above mentioned species were furthermore highlighted by Sanders (2003), Konidaris and Koufos (2013), Konidaris et al. (in press) based on a more complete material. Consequently, the comparison focuses on this material.

The m3 dext. of Tanacu is similar with the correspondent molar of the m1-m3 tooth row of "*Ch. pentelici*" right hemimandible figured by Gaziry (1976, taf. 5, fig. 6-7) from Uşak-Eşme Akçaköy (Turkey), which exhibits four lophids. The latter molar is better preserved; the choerodonty is well-expressed, unlike the ptychodonty which seems to be less developed. The same strongly angled into anteriorly pointing chevrons of the pretrite and posttrite half-lophids can be observed on both molars. The Turkish molar has in addition strong mesial and distal cingulids, the latter being formed by several cusps fused with the smaller pretrite half-lophid.

The molar from Tanacu displays close affinities with the m3 sin. described by Tassy et al. (1989) from the same Turkish locality. The molar acquires also four lophids, which are lesser worn than the Romanian one, enabling partially the conelets and conules observation (e.g., 3-4 lophids). Their shape is more rounded, but the chevroning rests conspicuously, the mesoconelets occurring before the abaxial conelets. Although, several differences can be outlined: on the Turkish molar, the anterior setting of the pretrite mesoconelets against the posttrite line is less expressed, moreover, on the third lophid, the mesoconelets of pretrite and posttrite halves seeming to reach the same alignment; the first lophid is larger and the fourth one is preserved,

being obviously connected with the distal cingulid; the choerodonty and ptychodonty is weaker exposed than at the Tanacu molar.

The m3 dext. of Tanacu displays close affinities with the m3 sin. of Sinap (Turkey) figured by Sanders (2003, fig. 10.8 A, B). Four worn lophids showing conspicuous chevroning, the elongate conules and conelets, and the same occlusal arrangement of the mesoconelets on the pretrite and posttrite half-lophids sustain the above mentioned assertion. The differences reside in the obvious development of only four lophids on the Turkish molar (the last fused with the distal cingulid), and also in the large mesial cingulid.

Also, several similarities can be highlighted with the m3 dext. illustrated by Sanders (2003, fig. 10.7, 10.8 C, m2-m3 right hemimandible fragment), which bears five lophids. Even the conelets and conules are rounded, they preserved the same occlusal pattern, respectively the mesoconelets occur before the main conelet on both half-lophids, and the ones of the pretrite exceed the anterior line of the posttrite-pair. The choerodonty is more conspicuously on Sinap molar in the mesial half, but the ptychodonty rests weakly developed. Also, few remnants of cementum coats were preserved on the last lophid. A difference is also the better defined cingulids in the Sinap molar, the distal one fused with the smaller fifth lophid.

Konidaris et al. (in press) described a wealthy material of *Ch. anatolicus* from Pentalophos -1 (Greece) and Turkey including third lower molars. The m3 display four lophids (LGPUT-PNT-154) and five ones (LGPUT-PNT-155, 156), with obvious anteriorly-pointing chevrons in the 2-4-5 lophids. Generally, the choerodonty is more developed in comparison with the Tanacu m3, being obvious on the better preserved molars (LGPUT-PNT-154). Instead, the ptychodonty of all above mentioned molars rests similarly weakly expressed. There are also several differences viewing the cingulid development, but in spite all these, the occlusal arrangement of the meso- and abaxial conelets retain the same pattern as Tanacu molar exhibits.

Tab. 2 Length and width of *Ch. anatolicus* m3s (in mm)

Nr.	Record	Length (L)	Width (W)	Report W/L
1	Gaziry, 1976	153.0	65.0	0.424837
2	Sanders, 2003, five lophids	191.9	72.9	0.379885
3	Sanders, 2003	141.0	57.8	0.409929
4	Konidaris et al. (in press)	148.0	63.8	0.431081
5	Konidaris et al. (in press), five lophids	174.0	81.8	0.470115
6	Tanacu	158.4	70.8	0.446970

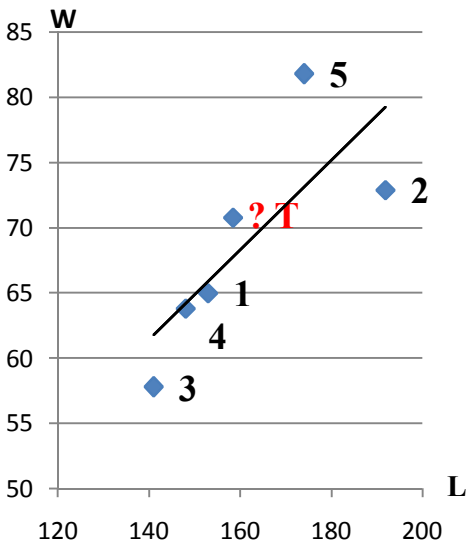


Fig. 3 Scatter diagrams length (L) versus width (W) of m3 for the compared choerolophodont records. Data from: 1-Gaziry (1976); 2,3-Sanders (2003); 4,5-Konidaris et al. (in press); T-Tanacu record. “?” designates a questionable measurement. Numbering according to Table 2.

Morphometrically, the values of the m3 match well the coeval molars mentioned above (Tab. 2, Fig 3).

The presumed length (? 158.4 mm) ranges between the minimum and maximum values for *Ch. anatolicus* quoted up to the present day by Sanders (2003), respectively 141 mm for m3 with four lophids (Sanders, 2003: fig. 10.8) and 191.9 mm for m3 with five lophids

(Sanders, 2003: fig. 10.7). Also, the maximum width (70.8 mm) falls within the measured value interval of the previous specimens. Properly taking into account the intraspecific variability, the W/L report strengthens the above statement, being placed between minimum and maximum values for *Ch. anatolicus*, respectively 0.379885 (Sanders, 2003) and 0.470115 (Konidaris et al., in press).

The I2 sin. presents a slight outward-upward curvature, typical for *Choerolophodon*, arguing the assignment to this genus. Morphologically, it resembles better with the Chinese species *Ch. guangheensis* (Wang and Deng, 2011) than the most primitive European species *Ch. chioticus* (Konidaris et al., in press) or *Ch. pentelici* described by Gaziry (1976, Tab. 6).

The biometrical values (Tab. 1) are close to the Chinese specimen, which display 1115 mm for the I2 sin. and 1018 mm for the I2 dext., being generally smaller than *Ch. pentelici* (1400 mm, quoted by Konidaris et al., in press).

Consequently, the presence of chevroning, choerodonty and ptychodonty argue the reassigning of m3 to the genus *Choerolophodon*. The weak expression of the latter two features and the biometrical values points to *Ch. anatolicus*. Due to the absence of several diagnostic keys of species such as dp3/DP3, the symphyseal angulation, the retromolar gap between m3 and the mandibular ramus, the posterior angulation of the ramus on the corpus (Sanders, 2003), and also due to the destroyed distal part of the Tanacu m3, the specimen is subsumed to *Choerolophodon* cf.



*anatolicus*. The biometrical values also support this assertion.

The morphology and metrical parameters of I2 sin. also argue the presence of a primitive choerolophodont species. Taken into account that the previous authors, Macarovici and Zaharia (1968), have allocated both the m3 and I2 of Tanacu to the same taxon, one presumes the reassignment of incisor to *Choerolophodon* cf. *anatolicus*.

It should be noticed that there were no taphonomical details in the invoked paper, and the recent fieldtrips did not yet clarify the source-rocks for the records.

### Paleogeographical approach

The prospering of choerolophodonts in circum-Mediterranean area and its prolonging to Asia, on one hand, and their absence in Central and Western Europe, on the other hand, suggested a paleogeographical zonation based on ecological criteria (Koufos, 2003; Markov, 2008; Konidaris and Koufos, 2013; Konidaris et al., in press). Markov (2008) presumed that *Choerolophodon* occurrence mentioned by Ćirić (1957) at Titovog Veles (Macedonia) marks the western boundary of genus distribution.

In the Eastern Mediterranean area, the northern boundary of *Choerolophodon* is presumed to lie in the southern part of Balkans and Republic of Moldova (e.g., Koufos, 2003). Indeed, *Choerolophodon pentelici* was frequently recorded in the Moldova Republic (Lungu and Rzebic-Kowalska, 2011): Otovasca I Chişinău – *Ch.* cf. *pentelici*– Bessarabian or MN 9 of early Vallesian; Varniţa and Bujor II – *Ch.* *pentelici*, Late Bessarabian or MN 9 of early Vallesian; Tiraspol-Kalkotova Balka, Pitushka – *Ch.* *pentelici*, Khersonian or MN 10 of late Vallesian; Ciobruciu – *Ch.* *pentelici*, Maetian or MN 11 of early Turolian (it is possible that some of the earlier records belong to *Ch.* *anatolicus*). In the same eastern areas, Markov (2008) mentioned Ukrainian occurrences of choerolophodonts (Burchak-Abramovich, 1940; Korotkevich, 1988; Krahmalnaya, 1996).

Consequently, *Choerolophodon* is relatively common in the late Miocene mammal fauna of

Eastern Europe, its scanty records in Romania being probably due to a limited sampling.

### Conclusions

The morphological and biometrical revision of the m3 dext. and I2 sin. described as “*Mastodon (Tetralophodon) grandicisivum*” by Macarovici and Zaharia (1968) from the Khersonian deposits which crop out between the interfluvium of Ulucilor and Topu valleys (Tanacu village, Vaslui District) has led to their reassignment to *Ch.* cf. *anatolicus*.

Consequently, the Tanacu records must be added to the previous occurrences of this species, respectively to Yassiören, Eşme-Akçaköy and Kayadibi, Kemiklitepe, Gökdere, and possibly Garkin and Çorak-Yerler from Turkey (Sanders, 2003) and Pentalophos-1 form Greece (Konidaris et al., in press).

The Romanian records point out the spreading of *Ch.* *anatolicus* in the north-eastern Mediterranean Land Realm (Eastern Carpathians Foreland), the Carpathians Belt being probably a natural barrier for the choerolophodont expansion towards the Central and Western Europe area.

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**PLATE CAPTIONS****Plate I**

1a,b. m3 dext. of *Choerolophodon* cf. *anatolicus* recorded from the Balta-Păun Formation (Khersonian) of Moldavian Platform (Eastern Carpathians Foreland). a – occlusal view; b – buccal view.

2a,b,c. I2 sin. from the same outcrop. a – buccal view; b – dorsal view; c – proximal cross-section.

Plate I

