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Louis de BONIS, Boris EKRT,
Lucie KUNSTMÜLLEROVÁ, Karel MARTÍNEK,
Vladislav RAPPRICH & Jan WAGNER

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Louis de BONIS
University of Poitiers, Palevoprim:
Laboratoire de Paléontologie, Évolution, Paléoécosystèmes, Paléoprimatologie,
Bât B35 TSA51106 – 6 rue Michel Brunet, F-86073 Poitiers cedex 9 (France)
louis.debonis@univ-poitiers.fr

Boris EKRT
Department of Palaeontology, National Museum of the Czech Republic,
Václavské náměstí 68, 110 00 Praha 1 (the Czech Republic)
boris.ekrt@nm.cz

Lucie KUNSTMÜLLEROVÁ
Karel MARTÍNEK
Institute of Geology and Palaeontology, Faculty of Science,
Charles University, Albertov 6, 128 43 Praha 2 (the Czech Republic)
kunstmul@natur.cuni.cz
karel.martinek@natur.cuni.cz

Vladislav RAPPRICH
Czech Geological Survey
Klárov 3, 118 21 Praha 1 (the Czech Republic)
vladislav.rapprich@geology.cz

Jan WAGNER
Department of Palaeontology, National Museum of the Czech Republic
Václavské náměstí 68, 110 00 Praha 1 (the Czech Republic)
jan.wagner@nm.cz (corresponding author)

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ABSTRACT
During the field work in 2017, a left carnivoran hemi-mandible was found at the locality Valeč-Šibeniční Vrch (= Waltsch-Galgenberg), the Czech Republic. Valeč-Šibeniční Vrch is located on the south-eastern periphery of the complex Doupovské Hory shield volcano (North Bohemia), and is formed by volcanosedimentary series. The hemi-mandible was found in pyroclastic deposits under the laminated limestones, from which so-called "rodent from Valeč" originated. This carnivoran represents an early aeluroid and is described as *Fejfarictis valecensis* n. gen., n. sp., belonging to a lineage hitherto unrecognized in Europe. It differs from early Oligocene aeluroids of Europe by its differently specialized dentition and is most similar to aeluroid genera *Alagtsavbaatar* and *Asiavorator* from the late Eocene and early Oligocene of Mongolia. *Fejfarictis valecensis* n. gen., n. sp., is most probably of earliest Oligocene age, and together with *Anictis* represent the earliest migration of aeluroids to Europe.

KEY WORDS
Aeluroidea,
Europe,
Oligocene,
Rupelian,
early migration,
"Grande Coupure",
new genus,
new species.

RÉSUMÉ

Un nouveau carnivore aeluroïde précoce (Mammalia, Carnivora, Feliformia) de la localité de Valeč, en République tchèque.

Lors des travaux de terrain en 2017, une hémi-mandibule gauche de carnivore a été trouvée dans la localité de Valeč-Šibeniční Vrch (= Waltsch-Galgenberg), en République tchèque. Valeč-Šibeniční Vrch est située à la périphérie sud-est du complexe du volcan bouclier de Doupovské Hory (Bohême du Nord), et est formée par des séries volcano-sédimentaires. L'hémi-mandibule a été trouvée dans des dépôts pyroclastiques sous les calcaires stratifiés, d'où provient ce que l'on appelle le « rongeur de Valeč ». Ce carnivore constitue un aeluroïde précoce et est décrit comme *Fejfarictis valecensis* n. gen., n. sp., appartenant à une lignée jusqu'à présent non reconnue en Europe. Il diffère des aeluroïdes de l'Oligocène inférieur d'Europe par sa dentition différemment spécialisée et est très similaire aux genres d'aeluroïdes *Alagtsavbaatar* et *Asiavorator* de l'Éocène supérieur et de l'Oligocène inférieur de Mongolie. *Fejfarictis valecensis* n. gen., n. sp. est très probablement d'âge oligocène inférieur et représente, avec *Anictis*, la plus ancienne migration d'aeluroïdes vers l'Europe.

MOTS CLÉS
Aeluroidea,
Europe,
Oligocène,
Rupélien,
migration précoce,
« Grande Coupure »,
genre nouveau,
espèce nouvelle.

INTRODUCTION

The locality Valeč-Šibeniční Vrch (= Waltsch-Galgenberg) is well known, primarily due to its record of fossil vertebrates, including the so-called "rodent from Valeč", mentioned in literature since the early 18th century (Fejfar & Storch 1994). This specimen was most recently examined by O. Fejfar, who recognized it as a glirid (Fejfar & Storch 1994 and references therein). But since the discovery of this unique find more than 300 years ago, no other fossil mammal has been found at this locality.

The Šibeniční Vrch Hill is located *c.* 1 km east of Valeč village, on the south-eastern margin of the Doupovské hory Volcanic complex (North Bohemia) (Fig. 1). From the 17th to 19th centuries, limestone has been exploited from several small quarries and adits in foothills of Šibeniční Vrch Hill, and most of the fossils were found during this period. In 1990s, O. Fejfar re-opened this locality, but during his excavations, no new fossil mammal was discovered. Since then, the palaeontological field research at this locality has been only sporadic.

Recently, new sedimentological research was initiated as part of a bachelor's thesis of one of the co-authors (LK). The studied profile (Kunstmüllerová 2017; Rapprich *et al.* 2017) is located in a historical adit, and was studied and sampled in 2016 and 2017. During this occasion in 2017, BE discovered the carnivoran hemi-mandible in the adit's ceiling. Some additional observation and corrections of the geological situation were made during supplementary field work in February 2023.

This study focuses on the taxonomical description of this specimen. A more detailed volcanological, sedimentological and stratigraphical model of the locality remains beyond the scope of this presentation, needing separate study.

GEOLOGICAL SETTING

The studied locality Valeč-Šibeniční Vrch is located on the south-eastern periphery of the complex Doupovské Hory shield volcano. The Doupovské Hory Volcanic Complex was formed by several stages of edifice growth interrupted by several stages of volcanic decay, and its activity lasted over the entire Oligocene, until the Early Miocene (e.g., Rapprich & Holub 2008; Sakala *et al.* 2010; Rapprich *et al.* 2023). The volcano is dominated by lavas of mafic alkaline rocks (basanites, foidites) and associated pyroclastic deposits and lahars. Products of the earliest stages of volcanic activity are exposed on the south-eastern margin of the volcano. The entire volcanic sequence exposed on the slopes of the Valeč-Šibeniční Vrch with total thickness reaching 130 m can be subdivided into three basic units: i) a volcano-sedimentary succession comprising laminated limestones; ii) epiclastic sequence consisting of lahars and volcanoclastic fluvial deposits; and iii) lavas of alkaline basaltic rocks. Here we focus on palaeontological content of the lowermost part, overlying discordantly on the kaolinized Permo-Carboniferous arkoses and sandstones (e.g., Mlčoch & Konopásek 2010), frequently with developed silcretes. The studied profile is located in the upper part of the lowermost, i.e., volcano-sedimentary (i) sequence, some 70 m above the pre-volcanic surface (Kunstmüllerová 2017).

Lacustrine laminated limestones are sandwiched between pyroclastic deposits in the profile described by Kunstmüllerová (2017). Although it seems possible that the limestone horizon is not developed in the whole area (cf. Rapprich 2011), it is an important marker, as it yielded most of the stratigraphically relevant fossils. Fejfar & Storch (1994) described in detail the so-called "rodent from Valeč", until now the only known fossil mammal from the locality, and determined it as *Butseloglis* cf. *micio* (*Bransatoglis* cf. *micio* in terminology of that time). Except for this glirid, other fossil vertebrates found in laminated limestones are fishes (Böhme 2007). *Butseloglis micio* was described from early Oligocene locality Hoogbutsel, Belgium (MP 21), and is most commonly recorded in biozones MP 21-MP 23 (Fejfar & Storch 1994; Vianey-Liaud 1994, 2004; Freudenthal 2004; Maridet *et al.* 2013). This is consistent with the ichthyological record described by Böhme (2007), who recognized an assemblage of cyprinid fishes and *Esox*, i.e., taxa known in Europe only after the "Grande Coupure" (with their earliest record just in Valeč).

The plant macrofossils collected in the past originated from laminated limestones and pyroclastic deposits. The original literature does not specify which pyroclastic deposits held the plant remains: above and/or below the laminated limestones. During the recent field work, leaves and twigs were recorded in the pyroclastic deposits above the laminated limestones, and twigs and stalks of undetermined monocotyledons in pyroclastic deposits under the limestones. The macroflora is represented by Arcto-Tertiary elements typical for the Oligocene (Bůžek *et al.* 1990; Kvaček & Teodoridis 2007). But it is necessary to note, that Arcto-Tertiary flora was also recently documented in the latest Eocene locality Roudníky (North Bohemia), but in connection with an amiid fish assemblage and without any cyprinids (Kvaček *et al.* 2014). Bůžek *et al.* (1968) also reported a thermophilous gymnosperm *Doliostrobus* from Valeč. But this specimen together with few other taxa coming from old collections (now housed in NM) are preserved in massive limestone, distinct from the laminate limestone discussed here. Later, it was recognized (Kvaček & Teodoridis 2007) that this taxon does not belong to the Valeč-Šibeniční Vrch plant assemblage. Currently, *Doliostrobus* is considered an exclusively Eocene element in this region (Kvaček *et al.* 2014; Teodoridis & Kvaček 2015; Kvaček & Sakala 2016 and discussion therein). Konzalová (2003) studied the palynospectrum from pyroclastic deposits above the laminated limestones, showing strong dominance of deciduous plants.

The fossil record thus provides very convincing evidence for an early Oligocene age of the laminated limestone horizon.

The mandible under consideration was found 68 cm under the laminated limestone horizon, near the basis of the profile described by Kunstmüllerová (2017). The sedimentary series under the laminated limestones is formed by massive lapillistone with a sandy matrix and cross bedded lapillistone, locally affected by water redeposition (Kunstmüllerová 2017). The mandible was deposited in hydromagmatic pyroclastic deposits of a Surtseyan cone erupting in a water-saturated environment, resulting in local redeposition of the pyroclastic deposits.

The locality Valeč-Šibeniční Vrch is often correlated with the nearby locality Dětaň (e.g., Fejfar & Kvaček 1993; Fejfar & Storch 1994; Fejfar 2016). The latter locality yielded a relatively rich faunal assemblage, described in detail by Fejfar (1987), who assigned it to the earliest Oligocene (MP 21). Among other rodent taxa, *Butseloglis micio* was recognized here as well (Fejfar 2016). The carnivorous mammals within this assemblage are arctoids and hyaenodonts (Fejfar 1987). This fauna was buried in the basal layer of pyroclastic deposition in this area (Fejfar 1987; Mikuláš *et al.* 2003; Fejfar & Kaiser 2005). But the contemporariness of these two localities can only be considered as probable from similar geological position, not proven. Besides the limited faunal record from Valeč, the problem is also the character of the volcanic activity in the early stage of the Doupovské Hory Volcanic Complex evolution, represented by a volcanic field of scattered monogenetic volcanoes (Rapprich 2011). Individual beds have limited areal extent and rapidly change their thickness and grain-size, making their correlation among individual exposures challenging. Despite the pyroclastic sequences at both localities belonging to the same volcanic phase (i.e., the earliest Oligocene; Cajz *et al.* 2006), more precise relative dating between the two is currently dependent on biostratigraphic data.

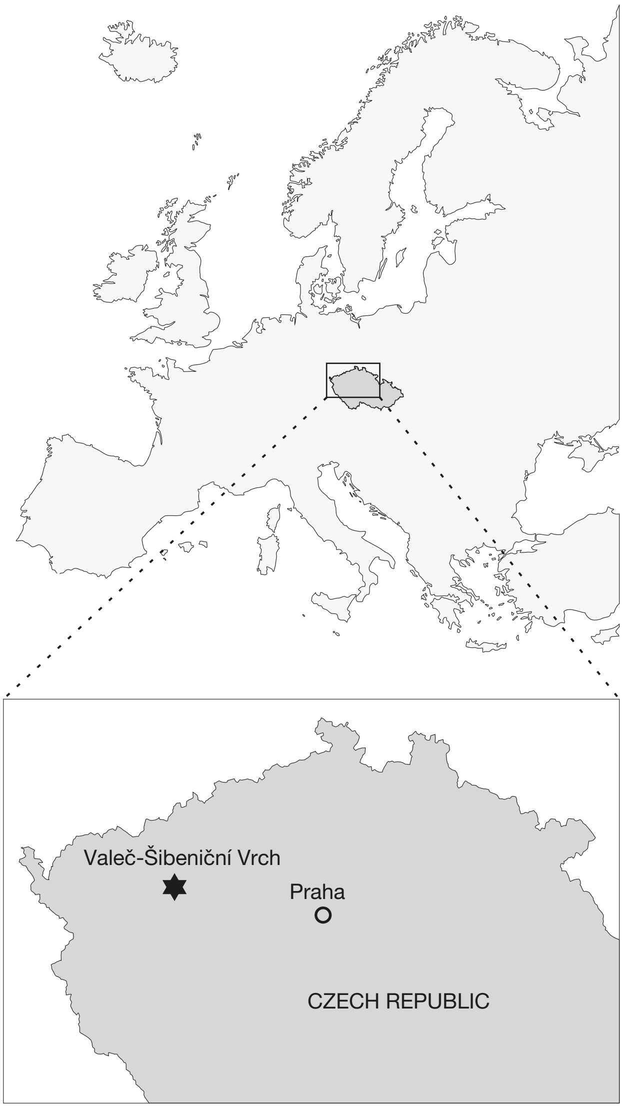

Fig. 1. — Location of the Valeč-Šibeniční Vrch locality (the Czech Republic). GPS coordinates for adit entrance: 50.175, 13.271 (50°10'29"N, 13°16'15"E).

This means that the precise stratigraphic position of the Valeč mandible cannot be derived from its geological/palaeontological context. On the other hand, all the available evidence, though indirect, supports an early Oligocene age for this specimen. This interpretation is also supported by the fact that no positive evidence of feliformians has been recorded in Europe before the Oligocene (Solé *et al.* 2022).

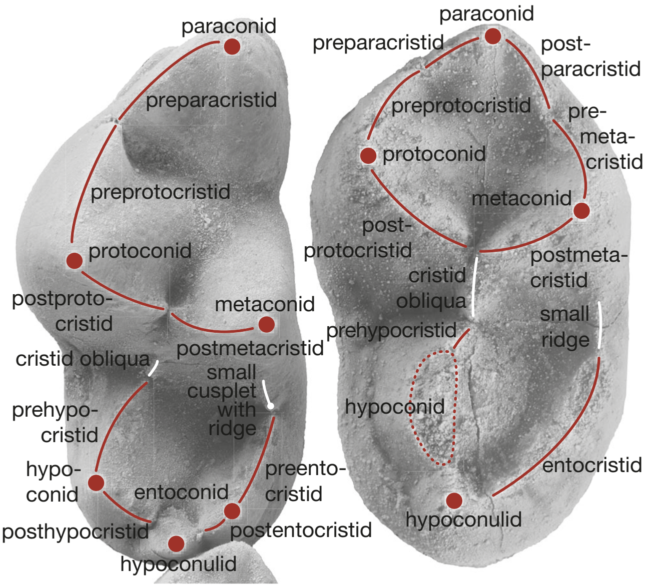

FIG. 2. — Terminology of fine enamel structures of m1 and m2.

MATERIAL AND METHODS

The specimen under study is housed in the collection of the National Museum of the Czech Republic, Prague.

Photos of the mandible were made with a Sony Alpha A7R digital camera. Photos of teeth were made with a Canon EOS 6D digital camera. Each tooth image was assembled by stacking multiple photos of varying focal depth using Helicon Remote. Teeth were coated with ammonium chloride before making photos. See also Appendices 1-3 for additional views of the teeth. Measurements were taken using a digital calliper.

Capital and lowercase letters, C/c (canines), P/p (premolars), and M/m (molars), refer to upper and lower permanent teeth, respectively. For terminology of the fine enamel structures of m1 and m2, see Figure 2.

ABBREVIATIONS

Anatomical abbreviations

aacd	anterior (mesial) accessory cuspid;
pacd	posterior (distal) accessory cuspid;
L	length;
W	width.

Institutional abbreviations

NM	National Museum of the Czech Republic, Prague.

SYSTEMATIC PALAEONTOLOGY

Order CARNIVORA Bowdich, 1821
Suborder FELIFORMIA Kretzoi, 1945

Infraorder AELUROIDEA Flower, 1869

REMARK

The Aeluroidea correspond to the Feliformia without the Palaeogalidae Martin & Lim, 2001 and Nimravidae Cope, 1880.

TABLE 1. — Measurements (in mm) of teeth of *Fejfarictis valecensis* n. gen., n. sp. (holotype, NM-Pv 12300). When taking maximal width for m1, the calliper was touching trigonid on buccal side and talonid on lingual side.

tooth	maxima L	maximal W	trigonid W	talonid W
p4	8.1	3.4	–	–
m1	9.1	4.8	4.6	4.1
m2	4.5	2.6	–	–

Family indet.

Genus *Fejfarictis* n. gen.

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TYPE SPECIES. — *Fejfarictis valecensis* n. sp.

ETYMOLOGY. — The new genus is named in honour of Professor Oldřich Fejfar, an outstanding Czech palaeontologist who devoted his life to the study of fossil mammals. He, among others, rediscovered and scientifically described the so-called “rodent from Valeč”. Ictis (ἴκτις) is an ancient Greek word for small mustelids, in scientific names commonly used for small carnivorans in general.

DIAGNOSIS. — Small aeluroid, elongate p4 with strong mesial and distal accessory cuspids, quite thick cingulid encircling distal margin, m1 with moderately high protoconid, paraconid edge mesially, lingually and slightly up directed, metaconid slightly distally shifted with respect to protoconid (visible in buccal view), talonid basined with two quite thick cristids, bi-rooted m2 with low cuspids and thick cristids.

Fejfarictis valecensis n. gen., n. sp.
(Figs 3, 4)

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HOLOTYPE. — Fragmentary left hemi-mandible with p4-m2, alveoli of p1-p3 and partly preserved alveolus of c inf. (NM-Pv 12300; Figs 3, 4).

REPOSITORY. — Department of Palaeontology, National Museum of the Czech Republic, Prague.

ETYMOLOGY. — According to the type locality.

TYPE LOCALITY AND HORIZON. — Valeč-Šibeniční Vrch (= Waltsch-Galgenberg), Northern Bohemia, Czech Republic; early Oligocene (Rupelian), probably MP 21.

DIAGNOSIS. — As for genus.

DESCRIPTION

The holotype is the only available specimen. It is a horizontal ramus of a left hemi-mandible (Fig. 3), missing both a small anterior-most part and almost the entire vertical ramus. p4-m2 (see Table 1 for measurements), alveoli of p1-p3 and part of the canine alveolus are preserved. The m3 was not developed. The length of the preserved part of the mandible (measured from anterior-most to distal-most point) is 68.9 mm, the height of the mandible body under m1 (measured on the medial side) is 12.2 mm, the length of p4-m2 (on alveoli) is

Fig. 3. — **A**, left hemi-mandible of *Fejfarictis valecensis* n. gen., n. sp. (holotype; NM-Pv 12300) in occlusal (**A1**), buccal (**A2**) and lingual (**A3**) view; **B**, detailed occlusal view of anterior part with alveoli. Scale bars: 10 mm.

20.5 mm, the length of p1-p3 (on alveoli) is *c.* 17.1 mm (the alveolar margin in front of p4 is slightly damaged).

The first premolar was one-rooted and p2 and p3 had two roots (Fig. 3B). The p4 (Fig. 4A) is elongate relative to m1 (Lp4/Lm1 = 0.89). Its main cuspid is as high as the paraconid of m1, and relatively trenchant; there are mesial and distal accessory cuspids, a well-developed aacd and a far larger pacd; a small cingulid runs along the buccal side of aacd and another one, larger, turns back the pacd as a crest limiting a narrow valley on the lingual side and forming a small cuspid distal to pacd (Fig. 4A3). The crown is asymmetrical, the part distal to the protoconid apex being longer than the proximal one.

The trigonid of the carnassial (Fig. 4B) is high with a quite great height difference between paraconid and protoconid. The former has a cingulid at the buccal base, which gives rise to a narrow trench along the paraconid, interrupted by a thin edge. Lingually, the base of the paraconid contacts the base of the metaconid. The lingual face of the protoconid is marked by a subvertical, central bulging, running from the top to the base, and framed, mesially and distally, by narrow flat surfaces. The metaconid is as high as the paraconid and is relatively distally shifted. As a result, a small part of its posterior portion is visible in a buccal view of the crown. There is a narrowing at the limit between trigonid and talonid, with a large notch between the distal face of the protoconid and the hypoconid. The latter, preceded by a small cristid obliqua, is elongate; its lingual face is flat. It seems to be slightly affected by abrasion, but it is hard to reconstruct the original surface and shape with certainty. Currently, there is no convexity, which is seen in the lingual face of the protoconid. Preceded by a small cusplet followed by a short ridge at the disto-lingual base of the metaconid, the entoconid is also relatively high. The hypocristid and entocristid both encircle an elongate deep talonid basin, which is open distally, despite the presence of a hypoconulid separated from the hypocristid by a deep notch.

The m2 (Fig. 4C) is relatively short (Lm2/Lm1 = 0.49). The trigonid is complete and clearly higher than the talonid. The protoconid is slightly similar to that of m1, with a convex buccal face and a lingual one more flattened with a central vertical pillar (less developed than in m1); the preprotocristid joins a modest paraconid by the preparacristid. The metaconid has a thick postmetacristid which is separated by a notch from the postprotocristid; a short and thick cristid obliqua joins a globular dome-shaped hypoconid of which the top is missing. Like in m1, a weak ridge precedes the entoconid, a thick entocristid, which turns the talonid to join the hypoconulid, closing the oval mesio-distally elongate talonid basin. In fact, the entoconid appears like a thickening of the cristid and the hypoconulid is also only marked by a thickening of the cristid.

That dentition, by the thick cristids, looks like that of a mesocarnivore, with cutting (especially in m1) and grinding functions, the latter being very-well marked in m2.

COMPARISONS

Fejfarictis valecensis n. gen., n. sp. was carnivorous, judging by the morphology of its dentition. Carnivores were present in Europe during the Eocene and the beginning of Oligocene, with the Hyaenodonta and the Carnivoramorpha. The former are very different from the Valeč hemimandible in the structure of the lower molars, whose size increases from m1 to m3. The Valeč hemimandible belongs to the latter, and more precisely to the Carnivoraformes and the clade Carnivora (see Solé *et al.* 2014, 2022). Viverravidae, present in Europe in early Eocene, differ from Carnivoraformes (and therefore also from *Fejfarictis* n. gen.), among others, in the morphology of m2 with elongated talonid and enlarged hypoconulid (Flynn *et al.* 2010: 37).

We know the Carnivoraformes in Europe from the latest Paleocene (Solé *et al.* 2016). In the late Eocene (MP 16), they are present with *Simamphicyon* Viret, 1942, *Quercygale* Kretzoi, 1945, *Paramiacis* Matthis, 1985.

The type and only species of *Simamphicyon*, *S. helveticus* (Pictet & Humbert, 1869) is far larger than the Valeč form; it was sometimes considered to be an amphicyonid (see Springhorn 1977), but recently, it was placed into basal carnivoraforms (Tomiya & Tseng 2016; Solé *et al.* 2022). It differs from *Fejfarictis* n. gen. also by the relatively less elongate p4 and the quite trenchant talonid of m1.

The larger species of *Paramiacis*, *P. teilhardi* Matthis, 1987, is smaller than *F. valecensis* n. gen., n. sp. Its maximum m1 length can reach only 5.1, while it is 9.1 for *F. valecensis* n. gen., n. sp. The p4 is relatively shorter, high and pointed, without accessory cuspids. The trigonid of m1 is relatively higher and with more pointed cuspids; the m2 is relatively larger and the paraconid seems to be very small or absent. *Paramiacis* has an m3.

Quercygale angustidens (Filhol, 1872) was recorded in several late Eocene localities. The revision of its phyletic position places the taxon as “the most derived miacid” (Wesley-Hunt & Werdelin 2005), just before the crown-group of Carnivora in a cladogram, after a study of the cranial characters. A similar result occurs in an analysis of the Carnivoraformes, using 246 characters (Solé *et al.* 2014). The m3 of *Quercygale* is lost, as is that of *Fejfarictis* n. gen. Nevertheless, *Quercygale* differs from our fossil in the shape of the anterior part of the mandible, with a marked flange and a large mental foramen, p4 without anterior accessory cuspid, shorter talonid of m1 and smaller m2.

In Europe, the end of Eocene is marked by the arrival of a small amphicyonid, *Cynodictis* Bravard & Pomel, 1850. The type-species, *C. lacustris* Bravard & Pomel, 1850, comes from the locality La Débruge (MP 18; Bravard & Pomel 1850), but the genus was also recorded in later Eocene localities (MP 19; Aguilar *et al.* 1997; Le Verger *et al.* 2020). Like all Eocene and Oligocene amphicyonids, *Cynodictis* has a lower m3, although some specimens may have lost m3 (Teilhard de Chardin 1915), but that character must have been rare. In the locality Sainte-Néboule de Béduers, the only locality where it is possible to observe a *Cynodictis* population (minimum number of individuals = 24), there is no individual without m3 (Bonis 1978). The size of the Valeč specimen is compatible with that of the *Cynodictis* of Sainte-Néboule de Béduer. Nevertheless, the proportions are different for p4; the index [(Lp4/Lm1) × 100] is 89 for *Fejfarictis* n. gen. and varies from

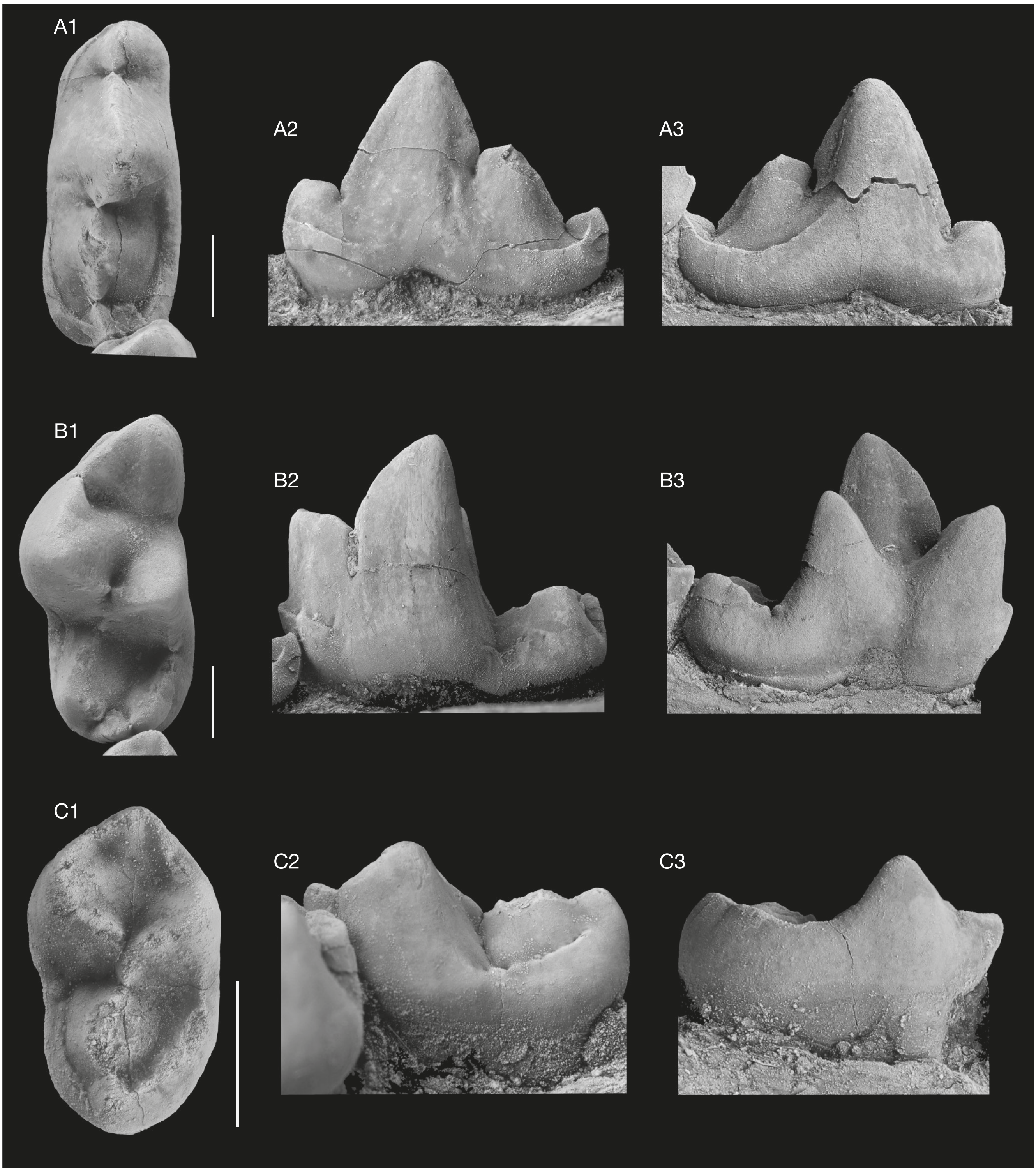

Fig. 4. — Teeth of *Fejfarictis valecensis* n. gen., n. sp. (holotype; NM-Pv 12300): **A**, p4 in occlusal (**A1**), buccal (**A2**) and lingual (**A3**) view; **B**, m1 in occlusal (**B1**), buccal (**B2**) and lingual (**B3**) view; **C**, m2 in occlusal (**C1**), buccal (**C2**) and lingual (**C3**) view. Teeth are not in scale, each tooth has its own scale bar. Scale bars: 2 mm.

44 to 69 in *Cynodictis*, while for m2 the same index is 49 for *Fejfarictis* n. gen. and varies from 44 to 69 in *Cynodictis*, placing the Valeč fossil among the smaller indices of *Cynodictis*. In *Cynodictis*, there is no well-developed anterior accessory cuspid on the p4, only sometimes a small cingulid spur, and the distal accessory cuspid is lower and smaller.

Another amphicyonid, *Storchictis* Bonis, 2020, differs from *Fejfarictis* n. gen. in the same characters as does *Cynodictis* (Bonis 2020). This taxon comes from the old collections of the "Phosphorites du Quercy", and its precise stratigraphic level is unknown, but it could be late Eocene or early Oligocene.

The "Grande Coupure" (Stehlin 1909) is a milestone separating in time, in Western Europe, the Eocene terrestrial mammalian faunas from the Oligocene ones. Many genera of carnivorans, Caniformia and Feliformia were present among the new migrants (Solé *et al.* 2022 and references therein). In the Caniformia, the Amphicynodontidae were the most abundant. Their morphology does not correspond to that of Valeč specimen. The teeth are generally lower with a more developed grinding surface, such as *Amphicynodon* Filhol, 1881 and especially *Pachycynodon* Schlosser, 1888. All have the m3 preserved. The musteloids (*Mustelictis* Lange, 1969) have lost m3, but the carnassial is relatively lower with a lesser height difference between paraconid and metaconid. Taxa most similar to *Fejfarictis* n. gen. belong to the aeluroids, in which m3 is always lacking. Most of these genera were described by Filhol (1872a, b, 1876-1877, 1880), using material from the "Phosphorites du Quercy".

Several aeluroid genera are known in the Western European early Oligocene (revision by Hunt 1998). The most common is *Stenoplesictis* Filhol, 1880, with three species: *S. cayluxi* Filhol, 1880, *S. minor* Filhol, 1882 and *S. crocheti* Peigné & Bonis, 1999. *Stenoplesictis* differs from *Fejfarictis* n. gen. in having the p4 shorter and higher than m1, with a less developed distal cingulid; the m1 with a more reduced metaconid, with a lesser height difference between paraconid and protoconid, and a shorter talonid; m2 is shorter with thinner cristids, more pointed cuspids and generally single-rooted. The mandible of *Palaeoprionodon* Filhol, 1880 is smaller and thinner than that of *Stenoplesictis*, but its overall morphology is quite similar. *Haplogale* Schlosser, 1888 is distinguished by a low and elongated mandibular corpus; its m1 is high with a very reduced metaconid, and clearly different from that of Valeč specimen. *Stenogale* Schlosser, 1887 has also a shorter p4, a m1 with a very reduced metaconid and a smaller and more trenchant talonid, and a small one-rooted m2. We may write almost the same for *Viretictis* Bonis, Peigné & Hugueney, 1999. Especially its m1, with a more reduced metaconid and a trenchant hypoconid, differs clearly from that of *Fejfarictis* n. gen.

These aeluroids, most of which come from the old collections of the phosphorites of Quercy (Teilhard de Chardin 1915), have no precise reference levels, but some were found with new excavations dated to the Oligocene. As underlined by Hunt (1998: 7) "An interesting aspect of the Quercy aeluroid fauna is the tendency of most taxa to develop a hypercarnivorous dentition". This tendency does not appear in the Valeč carnivoran.

Another Quercy carnivoran may be compared with Valeč aeluroid. It is *Anictis* Kretzoi, 1945, figured by Schlosser (1887) and Hunt (1998). *Anictis* differs from the other aeluroids of the Quercy. It is less derived and certainly closer to the stem group of the Feliformia. It is known through two hemi-mandibles figured by Schlosser (1887: pl. IX, fig. 54) and Hunt (1998: fig. 3), respectively. Both come from the old collections without precise dating, although *Anictis* would have been recorded as early Oligocene in age (MP 21; Lange-Badré 2006). *Anictis* is relatively primitive when compared to the other Quercy aeluroids, and for Hunt (1998: 7), it has a "moderately plesiomorphic dentition". It differs from *Fejfarictis* n. gen. by these characters: p4 is simple, pointed, no mesial accessory cuspid and smaller distal one, without distal developed cingulid, the height difference between paraconid and protoconid of m1 is similar to that of Valeč, but there is no hypoconulid on m1; m2 is two-rooted but has "the three trigonid cusps positioned at the points of an equilateral triangle" (Hunt 1998) and the protoconid is clearly higher.

Other aeluroids, from the late Eocene or early Oligocene of Asia, may be compared with the Valeč carnivoran. An American Museum of Natural History expedition in Mongolia enabled Matthew & Granger (1924) to publish several new Aeluroidea taxa and the ubiquitous genus *Palaeogale* Meyer, 1846 (Matthew & Granger 1924). The aeluroids are "*Cynodictis*" *elegans* Matthew & Granger, 1924 for a mandible with the canine and the premolars, *Palaeoprionodon gracilis* Matthew & Granger, 1924 for a fragment of mandible with p3, partially broken off m1 and *Viverravus constans* Matthew & Granger, 1924 for a piece of mandible with m1-m2.

Because only premolars are known for "*Cynodictis*" *elegans*, the possibility of direct comparison with *F. valecensis* n. gen., n. sp. is limited. Based on the given drawings (Matthew & Granger 1924: fig. 6A; Hunt 1998: fig. 24A), anterior accessory cuspid of p4 is much less developed than in *F. valecensis* n. gen., n. sp. and "*C.*" *elegans* p4 seems to lack a lingual cingulid. Matthew & Granger (1924) as well as Hunt (1998) suppose that this species could be conspecific with "*P.*" *gracilis* (see below), but they leave the question open.

Other material of stenoplesictoid and Palaeogalidae from Mongolia was described by Huang (1993). Fragments of mandibles named *Cynodictis elegans* Matthew and Granger, 1924 has a p4 without aacd and two other fragments, figured as *Palaeoprionodon*, bear a p4 shorter (relative to m1) than that of the Valeč specimen, and an m1 with a smaller metaconid. Both teeth have a swollen buccal cingulid. These taxa are different from the *Fejfarictis* n. gen.

Asiavorator Spassov & Lange-Badré, 1995 is known with *A. altidens* Spassov & Lange-Badré, 1995 as a type species, from the Mongolian Oligocene. The species has a simple, shorter p4 without mesial accessory cuspid and a smaller distal accessory cuspid; the m1 is more trenchant with a large paraconid-protoconid, a reduced metaconid and a cutting, non-basined talonid (Spassov & Lange-Badré 1995: figs 1-3). Hunt (1998) assigned *Palaeoprionodon gracilis* to this genus and even synonymised both species under the name *Asiavorator gracilis*. *Asiavorator* is more specialized towards hypercarnivory than *Fejfarictis* n. gen.

Dashzeveg (1996) published other Mongolian fossils, two hemi-mandibles, under the generic name *Stenoplesictis*, *S. indigenus* Dashzeveg, 1996 (now *Alagtsavbaatar* Egi, Tsubamoto, Saneyoshi, Tsogtbaatar, Watabe, Mainbayar, Chinzorig & Khatanbaatar, 2016) and *S. simplex* Dashzeveg, 1996 from the late Eocene and/or the early Oligocene respectively; they have a morphology seemingly close to that of *F. valecensis* n. gen., n. sp. (Dashzeveg 1996: figs 2-3). Both species have an elongate p4 with well-marked mesial and distal accessory cuspids, a cingulid turning back the crown, an overall profile of m1 similar to that of Valeč m1 and a double-rooted m2. Nevertheless, *A. indigenus* differs from *F. valecensis* n. gen., n. sp. by the lower entoconid of m1, absence of hypoconulid and trenchant talonid of m2 (for the latter character see Egi *et al.* 2016). "*Stenoplesictis*" *simplex* Dashzeveg, 1996 was known by a right hemi-mandible with p3-m2; it differs from *F. valecensis* n. gen., n. sp. by the shorter talonid of p4, the thick cingulid along the buccal face of m1, the more reduced metaconid of m1, the three conic cuspids of the m2 trigonid and its narrow talonid. Both species have a p4 more symmetrical than that of Valeč p4.

Hunt (1998) described a new genus *Shandgolictis* Hunt, 1998 with *Viverravus constans* as its type species. *Shandgolictis* differs from *Fejfarictis* n. gen. by a low, short, reduced and not basined talonid of m1 (Hunt 1998), which has also a thick cingulid all along the buccal face; m2, although bi-rooted, is smaller with a clear tricuspid trigonid and a short and narrow talonid tapering distally. He brings "*Stenoplesictis*" *simplex* and "*S.*" *indigenus* close to *Shandgolictis constans* rather than to *Stenoplesictis* (see also Peigné & Bonis 1999). This view was followed by Morlo & Nagel (2007) who even used the binomen *Shandgolictis simplex*.

Egi *et al.* (2016), in the newest revision of the early feliformians from Mongolia, describe new material and review the preceding taxa. They consider, following Hunt (1998), the mandible fragment figured by Matthew & Granger (1924: fig. 6E) as *Palaeoprionodon gracilis* as belonging to *Asiavorator* (but contra Hunt (1998), with "*Stenoplesictis*" *simplex* as its junior synonym). "*S.*" *indigenus* is designated as type species of a new genus, *Alagtsavbaatar*. The differences between this new genus and *Fejfarictis* n. gen. were given above for *A. indigenus*.

DISCUSSION AND CONCLUSION

The earliest representatives of Feliformia are known from late Eocene of Asia. The late Eocene nimravids are known especially from Southeast Asia with few northern records (see Averianov *et al.* 2016 for review) and aeluroids especially from more northern regions (Dashzeveg 1996; Egi *et al.* 2016). Europe seems to be divided into two bioprovinces in that time – Western Europe and Balkananatolia (in fact, nothing is known about Eastern European faunas in that period) (Licht *et al.* 2022). What is now West Bohemia was connected rather to the Western Europe bioprovince than to Balkananatolia in late Eocene (see, e.g., Ozsvárt *et al.* 2016 for palaeogeographic interpretation). But feliformians are not recorded in late Eocene of Europe, although there is growing positive evidence about a connection with Asia in that time, at least for Balkananatolia (e.g., de Bruijn *et al.* 2018; Mennecart *et al.* 2018; Weerd *et al.* 2018; Beard *et al.* 2021). Solé *et al.* (2022) reviewed the European Paleogene record of carnivorous mammals and concluded (having in mind the fact that Quercy old collection is without unambiguous stratigraphic position) that the earliest positive record of feliformians in Europe is post-"Grande Coupure", i.e., early Oligocene (MP 21). North Bohemian localities form some of the easternmost mammalian records in the early Oligocene (MP 21) of Europe (cf. Maridet *et al.* 2013). Especially important is the locality Dětaň, described by Fejfar (Fejfar 1987; Mikuláš *et al.* 2003; Fejfar & Kaiser 2005), who compared it to MP 21/22 localities from Western Europe and assigned it to the earliest Oligocene (MP 21), just after the "Grande Coupure". As discussed above, the exact age of the Valeč mandible is not known, but it seems most likely that it belongs to this early post-"Grande Coupure" migration wave recorded in Central Europe.

According to Solé *et al.* (2022), the only aeluroid genus (as defined above, i.e., without Palaeogalidae) recorded in MP 21/22 in Europe is *Anictis* (restricted to MP 21). *Fejfarictis* n. gen. is thus the second aeluroid genus for this period. Both these genera are characterized by less derived characters compared to the later forms. Of the two, *Fejfarictis* n. gen. seems to be less specialized to (hyper)carnivory. *Fejfarictis* n. gen. is most similar (related?) to genera *Asiavorator* (if "*S.*" *simplex* is included) and *Alagtsavbaatar* from the Mongolian late Eocene/early Oligocene, but based on the morphological differences, it seems more likely to be a sister taxon rather than a descendant. The presence of taxa most related to *Fejfarictis* n. gen. in Mongolia could support the northern migration route to Europe for *Fejfarictis* n. gen., maybe for early aeluroids in general. Both, *Anictis* and *Fejfarictis* n. gen. are not recorded after MP 21 in Europe. This disappearance can be at least partly explained by competition with other carnivorans. The early Oligocene carnivoran assemblages in Europe are dominated by ursids, amphicyonids and nimravids (Solé *et al.* 2022). This combination could restrict the niches for less specialized aeluroids (which would also partly explain the hypercarnivorous adaptations in Quercy aeluroids mentioned by Hunt (1998)).

The Quercy aeluroids are considered to be a group containing the ancestors of living forms, "The viverrid and felid basicranial patterns are recognizable in the Quercy and Aquitanian fossils, and the ancestors of these families lie within or in phylogenetic proximity to the fossils of *Palaeoprionodon* (Viverridae) and *Stenogale-Proailurus* (Felidae)" (Hunt 1998: 62). All these forms are engaged in a trend towards hypercarnivory. On the other hand, *F. valecensis* n. gen., n. sp. has some characters indicating another evolutionary process trending towards a more grinding dentition. Unfortunately, we do not know the skull and the morphology of the tympanic region of the Valeč fossil. Nevertheless, "the bulla of *Stenoplesictis* shows a pattern that might be expected in an ancestral hyaenid" (Hunt 1998: 62). We suppose that it may be the case for Valeč, and that both groups of aeluroids did exist in the early Oligocene and probably in the late Eocene. The early Oligocene aeluroids such as *Stenoplesictis*, *Palaeoprionodon*, *Haplogale* or *Stenogale* may be considered the seed reservoir that gave rise to some extant aeluroids. *Fejfarictis* n. gen., especially by the morphology of m2, reveals the presence of aeluroids around the Eocene-Oligocene boundary, which are less hypercarnivorous than the other taxa of this period, and may indicate the splitting of another group with a different evolutionary trend.

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APPENDIX 1. — Left p4 of *Fejfarictis valecensis* n. gen., n. sp. (NM-Pv 12300). Video produced by Helicon Remote, using Canon EOS 6D digital camera. https://doi.org/10.5852/geodiversitas2024v46a1_s1

APPENDIX 2. — Left m1 of *Fejfarictis valecensis* n. gen., n. sp. (NM-Pv 12300). Video produced by Helicon Remote, using Canon EOS 6D digital camera. https://doi.org/10.5852/geodiversitas2024v46a1_s2

APPENDIX 3. — Left m2 of *Fejfarictis valecensis* n. gen., n. sp. (NM-Pv 12300). Video produced by Helicon Remote, using Canon EOS 6D digital camera. https://doi.org/10.5852/geodiversitas2024v46a1_s3