LOWER TETRAPODS FROM THE EARLY OLIGOCENE OF TRANSYLVANIA

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Introduction and Material

Knowledge on lower tetrapods from the Palaeogene of Romania is rather scanty even if some of the investigated vertebrate localities were known for more than a century. Here we report a diverse fossil assemblage of lower tetrapods (proteid salamanders, atyrid-, palaeobatrachid- and ranid frogs, anguid lizards, aniliid and tropidophiid snakes and alligatoroid crocodylians) from the early Oligocene localities of Suceag and Cluj-Napoca (Rupelian, MP 23/24; Dâncu Formation, Romania).

The material consists of isolated and fragmentary specimens bearing taxonomically important morphologic features recovered by wet screening.

Geological setting

The fossiliferous layers with lower tetrapods are part of the Dâncu Formation in the Cetâuia Hill, Cluj-Napoca and Suceag (Fig. 1) and consist of alternating clay, marl and sand with lumachelle and coal interbedding indicating environmental changes from fluvial to more flooded, fluvial-lacustrine and marshy environments.

Fig. 1. Geological map showing the area of fossil localities.

Fig. 2. Isolated vomer (A, B, holotype UBB V.521), dentaries (C-E, UBB V. 523, 524 and 526), atlantal centrum (F-I, UBB V. 527) and trunk vertebrae (J, K, UBB V.528/1, 528/4) of Milotropius gardneri. Abbreviations: ac, anterior cotyle; alp, alar-like process; caf, contact area for frontal; cap, contact area for palatopterygoid; cp, coronoid process; dp, dental parapet; mg, meckelian groove; op, odontoid process; po, posterior basiophysis; ps, palatal shelf; sc, subcentral crest; scf, subcentral foramen; sk, subcentral keel; sy, synphysia. Scale = 2 mm.

Fig. 3. Strict consensus of two most parsimonious trees, showing no support for the monophyly of Proteidae. (54 steps; consistency index [CI] = 0.611; homoplasy index [HI] = 0.419; retention index [RI] = 0.686). Asterisks (*) denote extant taxa.

List of characters and character-taxon matrix consist of 24 vertebrae features DeMar (2013: appendix 1, 2).

Values above branches represent Bremer support (− decay indices); below the branches are the bootstrap values ≥50%.

Fig. 4. Maxillae (A, B) and ilia of Latonia (C, D); frontoscutal (E, F, holotype, UBB V. 442) of Alibionbatrachus oligocenicus; ilia (G, H) of Pelophylax sp.; vertebrae of Eunaturus sp. Scale = 2 mm.

Remarks and Conclusions

The amphibians probably preferred fluvial and/or marshy-lacustrine paleoenvironments. The taxa inhabiting terrestrial ecosystems are relatively rare (the anguid Orthiodon sp., the small-sized snake Eunaturus sp. (Aniliidae) and "Tropidophiidae" indet. (Boidea)).

The palaeoclimatic was relatively temperate, suggested by the presence of Diplocaulobium (mean annual temperature at least of 14.5 °C, or even higher).

Milotropius gardneri may represent the earliest fossil record of a proteid from the Cenozoic of Europe (Venczel & Codrea, in press.). Alibionbatrachus oligocenicus is a survivor of the Eocene/Oligocene extinction event (‘Grande Coupure’) (Venczel et al. 2013).

Zoogeographic connections: link with N-America is suggested by proteids, whereas that with ormer Gondwana by the ranid frogs).

References


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