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ABSTRACT BOOK



ARE PALAEOBATRACHID FROGS OF EUROPE ACTUALLY SURVIVORS OF CRETACEOUS GONDWANAN PIPIDS?

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The earliest representatives of the anuran family Palaeobatrachidae were recorded from the Late Cretaceous (Campanian) of France. Later, they are known from the Paleocene of Cernay (France), and many sites in Europe dating from the Eocene through the Pliocene/Pleistocene boundary. They became extinct in the early Pleistocene. Palaeobatrachids have never been found outside of Europe. It is believed they have close relationships to the Pipidae, a family which nowadays is confined to Sub-Saharan Africa (*Xenopus* and *Hymenochirus*) and South America (*Pipa*). However, the earliest fossil record of the Pipidae is from the Lower Cretaceous of Israel (*Cordicephalus*, *Thoraciliacus* and *Shomronella*; the former two genera being represented by adults, *Shomronella* by a developmental series of tadpoles). Occurrence of pipids beyond today's Africa (but on the African plate which includes also the Arabian Peninsula) continued at least throughout the Paleogene, as evidenced by recent discovery of *Xenopus* in the Upper Oligocene of Yemen. The question arises as to whether pipids could penetrate northern continents some time in the Cretaceous and give rise to the palaeobatrachids there. This problem can be investigated from two points of view, namely palaeogeography and comparative developmental anatomy. As regards the first, Gondwana became separated from Laurasia by equatorial Tethys as early as in the Late Jurassic and this marine barrier became even more pronounced in the early Cretaceous. How efficient was this barrier for anurans is evidenced by the Discoglossidae which are documented from the middle Jurassic of England and late Jurassic/early Cretaceous of Spain but which, except for much later findings in Morocco (Miocene, *Latonia*), have never been found in Gondwanan continents. Second, in spite of similarities in the skeleton of adult palaeobatrachids and pipids (e.g., shape of the frontoparietal and parasphenoid), there are profound differences in their development. Larval pipids are unique in having a simple horizontal internasal plate supporting nasal organs ventrally and serving as an upper larval jaw, whereas the lower jaw consists of elongated Meckel's cartilage. This is a condition, which much recalls some early Triassic temnospondyls. Non-pipid anurans, instead, have two trabecular horns supporting anteriorly the suprarostrals (upper larval jaws), whereas the infrarostrals (lower larval jaws) are not derived from Meckel's cartilage. Hence, pipids and palaeobatrachids differ in the structure of their larval jaw apparatus. Similar differences may be found in some other anatomical features, as can be inferred from detailed series of fossil tadpoles of the Palaeobatrachidae recovered from the Oligocene deposits of the Czech Republic and compared with corresponding developmental stages of contemporary pipids (*Pipa*, *Xenopus*). Therefore, much of the similarities found in adults, serving as a basis for their inclusion into the single group Pipodea, may be caused by the fact that they are ecological equivalents (exclusive water dwellers). It is planned to extend this comparison to the early Cretaceous *Shomronella* mentioned above.