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dry conditions (Figure 1). It is considered Maastrichtian in age, based on microfossils, like charophytes (*Feistiella* cf. *globose*, *F.* cf. *costata*, *Amblyochara* sp., cf. *Gobichara groeberi*), ostracods (*Ilyocypris argentiniensis*, *I. triebeli*, *I. wichmanni punctata*, *Wolburgiopsis neocretacea*) and macrofossils, including Testudines (around three different taxa), Crocodyliformes (about ten distinct species), Dromaeosauria (isolated teeth and some fragments of bones), Titanosauria (at least six different species).

These strong biostratigraphic correlations make it difficult to assume, and even to accept, a Cenomanian age for the Santo Anastácio Formation, a Turonian -Santonian age for the Adamantina and Araçatuba formations (Dias-Brito et al., 2001), and a Maastrichtian age for the Marilia Formation. The actual data based on fossils, and the absence of depositional hiatuses between these geological units, together with identified lateral correlations, without any kind of erosional surfaces, make it advisable to establish a Campanian / Maastrichtian age to the upper portion of the Bauru Group. In conclusion, there are no confirmed pre-Campanian age fossils in the Adamantina Formation.

Additionally, paleomagnetic data, and well-established microfossil correlations with Campanian / Maastrichtian Neuquen Basin strata, and the Deccan intertrappean beds of India, allows us to designate the Campanian as the oldest age for these deposits.

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Technical Session 3: Terrestrial Ecosystems – Late Jurassic (Friday, June 9, 2023, 11:45 AM)

THE ALBANERPETONTIDAE (LISSAMPHIBIA) FROM THE LOURINHÃ FORMATION (UPPER JURASSIC, PORTUGAL)

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The Albanerpetontidae are an extinct group of derived small ballistic-tongue-feeding amphibians. They ranged from the early Bathonian to the early Pleistocene and have been recovered from Europe, North America, Asia and North Africa (Carrano et al., 2022; Gardner & Böhme, 2008). Due to their small size, their fossil record is scarce and usually fragmentary, most generally recovered as isolated bones from vertebrate microfossil assemblages. The family currently comprises six genera: the type genus *Albanerpeton* (Early Cretaceous — Pleistocene of Central Asia, Europe and North America); *Anoualerpeton* (Bathonian — Berriasian of England and Morocco); *Shirerpeton* (Barremian of Japan); *Wesserpeton* (Barremian of England); *Yaksha* (Cenomanian of Myanmar); and *Celtedens* (Kimmeridgian — Albian of Europe), a genus previously reported from Portugal, among other European localities, which includes two valid species, *C. ibericus* (Barremian, Spain) and *C. megacephalus* (Albian, Italy).

Albanerpetontids were small animals, whose fossil record is fragmentary and scarce, most generally known only by isolated bones recovered by sieving. Therefore, albanerpetontid taxonomy is mostly based on few but highly diagnostic bones (Gardner, 2000), as the fused frontals, considered to be key to both identifying and diagnosing taxa at generic and specific level (Gardner, 2000; McGowan, 1998). However, recent works challenged such use, due to plasticity and intraspecific variation in the frontals and other bones (Guillaume et al., 2022; Sweetman & Gardner, 2013). In this work we present new material from the Lourinhã Formation (Kimmeridgian-Tithonian), which includes cranial and post-cranial elements, in order to better characterize the anatomy of the albanerpetontid from the Late Jurassic of Portugal (Figure 1).

Fused frontals exhibit bell-shaped outline, with a curved orbital margin and a broad, and blunt internasal process, diagnostic features for the genus *Celtedens*. However, they differ from *C. megacephalus* (Aptian-Albian, Italy) by having beveled ventrolateral crests, instead of V-shaped, and from *C. ibericus* by having more curved orbital margins. The paired premaxillae here described differ from those in *C. ibericus* (Barremian, Spain) by having a small, undivided suprapalatal pit facing laterolingually, instead of having it more medial and facing

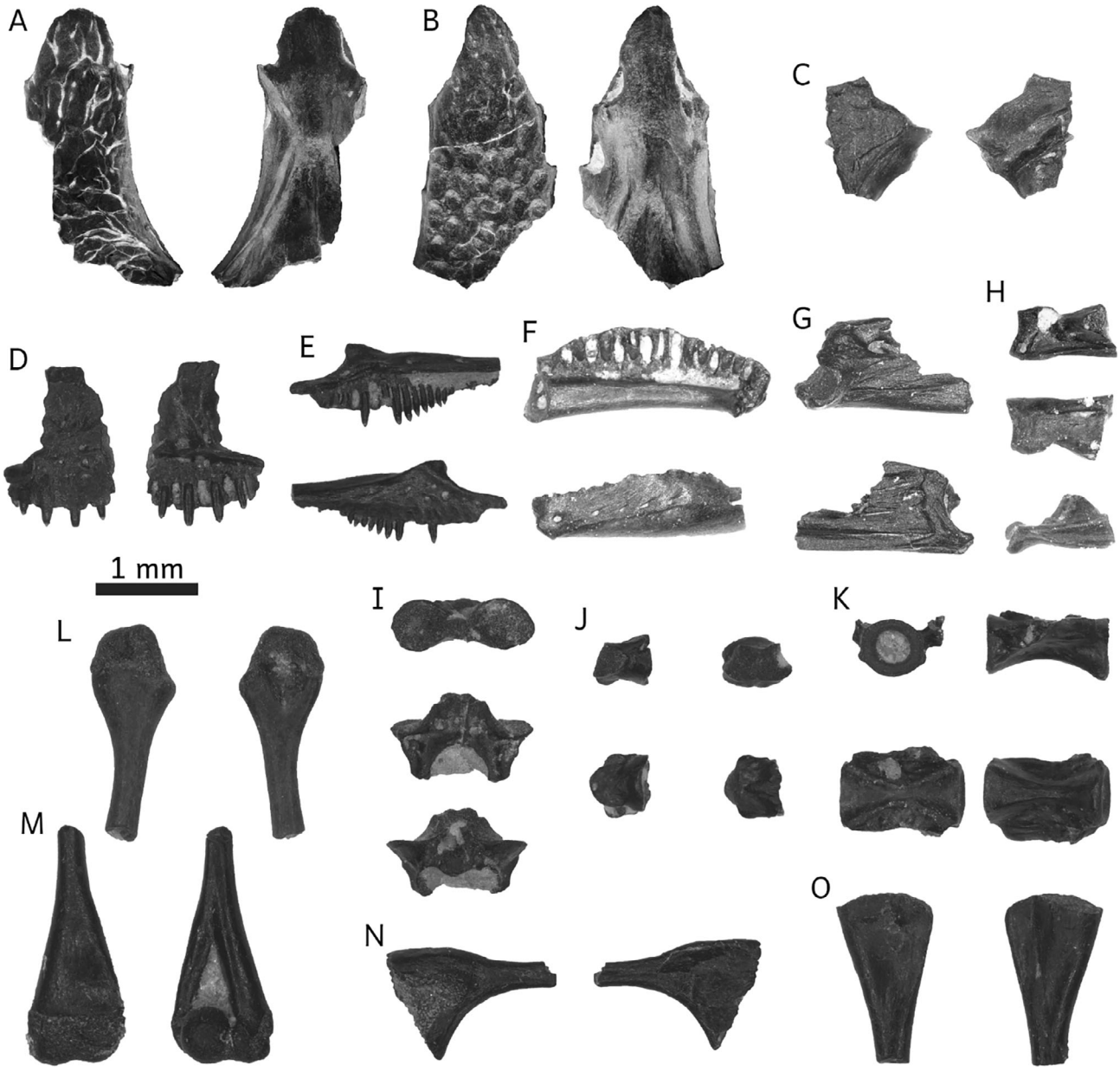

Figure 1. Albanerpetontidae indet. from the Lourinhã Formation (Upper Jurassic, Lusitanian Basin, Portugal). A, fused frontals from a juvenile individual; B, fused frontals from adult individual; C, right parietal with postorbital wing preserved; D, right premaxilla; E, right maxilla; F, left dentary; G, left articular; H, right quadrate; I, atlas; J, axis; K, dorsal vertebra; L, right proximal humerus; M, right distal humerus; N, left ilium; O, right proximal femur. Scale bar is 1mm.

lingually. However, this feature makes the Portuguese material similar to the premaxillae observed in the *Celtedens* sp. specimens of the Isle of Purbeck (Berriasian, England) and in both *Anoualerpeton priscum* (Bathonian, England) and *An. unicum* (Berriasian, Morocco). The triangular nasal process differs from the material of the Isle of Purbeck by having a round apex projecting slightly anteriorly instead of acute. The dentary exhibits a sinusoid convex dental parapet, a feature shared with *Anoualerpeton*, and the more derived *Shirerpeton* and *Albanerpeton nexuosum*; and a second canal, located dorsolabially of the closed Meckelian canal –a condition absent in the Isle of Purbeck specimens. The parietal differs from *C. megacephalus* by exhibiting a unique anteromedial-posterolateral transverse crest, separating the short ornamented postorbital wing from the rest of the bone. The articular differs from *C. megacephalus* and *Wesserpeton* in presenting a saddle-shaped cotylar facet less pronounced in the glenoid fossa, as observed in the material from Isle of Purbeck. Concerning the axial skeleton, the axis of the specimens from the Lourinhã Formation differs from that of the Isle of Purbeck taxon in

having a dorsally hemmed anterior cotyle, instead of being smooth and more prominent. Finally, the ilium shares with *Wesserpeton* a dorsoventrally elongated acetabulum but differs from it and other ilia in presenting a strongly posteriorly-tilted long axis.

Our material supports the presence of a new species of Albanerpetontidae in the Upper Jurassic of Portugal, different from *Celtedens* as previously proposed (Wiechmann, 2000). Its affinities among the family remain to be determined, as the group requires a revision to tackle the recent conflicted hypotheses. Some affinities seem to be shared between our material and the one described from the Lower Cretaceous Isle of Purbeck from United Kingdom assigned to *Celtedens* sp. (McGowan & Ensom, 1997), such as the small suprapalatal pit facing laterolingually, the saddle-shaped cotylar facet in the glenoid fossa of the articular, the frontal bones with bell-shaped outline and a broad, and blunt internasal process. The material from the Lourinhã Formation shares strong affinities with the historic material from the Guimarota beds (Wiechmann, 2003): frontals outline and blunt internasal process; the presence of a lateral suprapalatal pit (which can be divided in Guimarota specimens), and the shape of the labial articular facet of the *pars dentalis* in the premaxilla; and the features in the dentaries, such as the sinusoid convex dental parapet, the labial ornamentation, and the second canal dorsolabially located of the Meckelian canal. However, some differences occur in the overlapping material: the axis possesses a prominent anterior cotyle, without hemmed ridges; the glenoid fossa of the articular exhibits a subvertical cotylar surface; and the presence of the dorsal edge facet of the *pars dentalis* in the premaxillae. However, due to the high number of specimens (over 300 from Lourinhã, several thousands from Guimarota) and their fragmentary nature, more work is still required to quantify and characterize the intraspecific variation and test to what degree these features are diagnostic of a separate species.

This material highlights the importance and the pressing need to describe more bones in Albanerpetontidae and include them in future works in order to solve the intricated relationships of this group.

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Poster Session 1 (Thursday, June 8, 2023)

VERTEBRATE MICROFOSSIL ASSEMBLAGES FROM THE LOURINHÃ FORMATION: A SNEAK PEEK ON THE PALEOECOLOGY OF THE LATE JURASSIC IN PORTUGAL

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Vertebrates Microfossil Assemblages (VMAs) capture a time averaged, accurate record of their surrounding