

An enigmatic tropical conifer from the Early Cretaceous of Gondwana

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We describe a new genus of *Leliacladus* Batista & L.Kunzmann with the type species *Leliacladus (Brachyphyllum) castilhoi* (Duarte, 1985) Batista & L.Kunzmann gen. nov. et comb. nov., a rare fossil conifer that has been described from the Aptian (Lower Cretaceous) Romualdo Formation of the Araripe Basin, northeastern Brazil. We decided to leave this new fossil-genus unassigned to any existing family as it does not display sufficient number of anatomical characters. We re-studied the type material of the type species as well as we described additional new material from the Aptian Crato Formation of the same basin. The more recently found fossil materials include large portions of leafy shoots excavated from laminated lacustrine limestones. In contrast to the type material, the new material shows the replacement of organic matter by iron oxide, which is suitable for investigating anatomical features of the wood and leaves. The material allowed for a reappraisal of the systematic position of the fossil plant. Together, the morphological and anatomical characters revealed sufficient evidence to separate the conifer from *Brachyphyllum* and accommodate it in a new fossil-genus. *Leliacladus* gen. nov. is defined by the presence of comparatively thick and short claviform lateral branches, and the absence of thinner ultimate order branches with gradual tapering axes. The wood is characterized by dense tracheids with uniseriate pitting in the radial walls and cross-fields that possess one or two large pits. The rays are one to three cells high. The epidermises of the densely and helically arranged scale leaves show non-papillate cyclocytic stomatal complexes slightly sunken that are mostly scattered and randomly arranged across the abaxial surface. This combination of characters suggests the material belongs to the conifer families Podocarpaceae or Cheirolepidiaceae. The arrangement of the sparsely branched, but woody shoots of *Leliacladus castilhoi* gen. nov. et comb. nov. suggest a hypothetical candelabra-like growth habit of the plant, and the remarkable thickness of the axes suggests a hypothetical xeromorphic adaptation to the semiarid paleoenvironment.

Key words: Cheirolepidiaceae, Podocarpaceae, *Leliacladus castilhoi*, leaf epidermis, wood anatomy, Araripe Basin, Santana Group.

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