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An unusual new basal iguanodont (Dinosauria: Ornithopoda) from the Lower Cretaceous of Teruel, Spain

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Abstract

We describe a new basal iguanodont, *Proa valdearinhoensis*, from the Lower Cretaceous (lower Albian) Escucha Formation of Teruel Province, Spain. The new taxon is known from abundant cranial and postcranial material belonging to several individuals, and is distinguished by an autapomorphy (predeontary comes to a point at its rostral margin, with divergent lateral processes) and a unique combination of characters. *Proa* fills part of an otherwise lengthy temporal gap (early Aptian–Santonian) in the European fossil record of basal iguanodonts. A preliminary phylogenetic analysis places *Proa* in a polytomy with *Iguanodon bernissartensis* and more derived iguanodontians (Hadrosauroidea). *Proa* is more basal than the Valanginian *Hypselospinus* and late Barremian–early Aptian *Mantellisaurus*, suggesting a long ghost lineage leading to *Proa*.

Key Words: *Proa valdearinhoensis* gen. et sp. nov., Iguanodontia, Early Cretaceous, Escucha Formation, Spain

Introduction

The European fossil record of basal, or non-hadrosaurid, members of Iguanodontia is among the richest on Earth (Norman 2004, 2012) and is the first to have been described (Mantell 1825). The most copious European basal iguanodont remains come from Lower Cretaceous strata. England is particularly bountiful, with an extensive basal iguanodont record that spans the early Berriasian through the early Aptian, approximately 25 million years (Norman 2004, 2012; Walker & Geissman 2009); this record includes *Owenodon hoggii* (Norman & Barrett 2002; Galton 2009, 2012; Norman 2012), *Barilium dawsoni* (Norman 2010, 2011, 2012), *Hypselospinus fittoni* (Norman 2010, 2012), *Kukufeldia tilgatensis* (McDonald *et al.* 2010a), *Iguanodon bernissartensis* (Norman 1980, 2012; McDonald 2012a), *Mantellisaurus atherfieldensis* (Hooley 1925; Norman 1986, 2012; Paul 2006; McDonald 2012a), and *Valdosaurus canaliculatus* (Galton & Taquet 1982; Galton 2009, 2012; Barrett *et al.* 2011). Furthermore, complete skeletons of *Iguanodon bernissartensis* and *Mantellisaurus atherfieldensis* are known from the Bernissart Quarry in Belgium (Norman 1980, 1986, 2012; McDonald 2012a).

Concerning Spain, Early Cretaceous iguanodont remains were cited early on by Vilanova Piera (1872, 1873) in the first Spanish reference dealing with dinosaurs. Spain has recently produced abundant fossils of Early Cretaceous basal iguanodonts; for a comprehensive review, see Pereda-Suberbiola *et al.* (2012). However, only one new taxon of basal iguanodont has been named based upon material from Spain: *Delapparentia turolensis*, which is known from a single incomplete skeleton from the lower Barremian Camarillas Formation of Teruel Province (Ruiz-Omeñaca 2011).

Here, we describe a new basal iguanodont from lower Albian beds in the upper Aptian–lower Albian Escucha Formation (Rodríguez-López *et al.* 2009) of Teruel Province. Canudo *et al.* (2005) previously reported very fragmentary vertebral remains of an indeterminate basal iguanodont from the Escucha