

## Early Cretaceous araucarian driftwood from hemipelagic sediments of the Puez area, South Tyrol, Italy

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### ABSTRACT

We describe a calcareously permineralised fossil tree-trunk, preserved as driftwood, within hemipelagic sediments of the Cretaceous Puez Formation near Wolkenstein, South Tyrol, Italy. Planktic foraminiferal assemblages recovered from the marls containing the fossil wood indicate a latest middle Albian age. Based on its wood anatomy, the trunk is assigned to *Agathoxylon* and probably has an affinity with the conifer family Araucariaceae. The wood lacks pronounced tree-rings consistent with tree growth within the broad humid tropical belt that existed at that time. The trunk contains cylindrical chambers filled within faecal pellets, demonstrating that oribatid mites infested the tree, either during life, or shortly after death. Prior to final burial, the tree-trunk drifted out into the open sea for a considerable period as indicated by extensive borings assigned to the ichnospecies *Teredolites longissimus* and produced by teredinid bivalves. Relatively little is known about the Cretaceous floras of Italy, so this new finding fills a gap in our knowledge of the composition and ecology of the vegetation of this region.

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### 1. Introduction

The Cretaceous fossil plant record of Italy is relatively poorly known and in most cases dominated by conifers (for an overview see Gomez et al., 2002, fig. 2). Most of these fossils come from the Campania region of southern Italy. These include early Albian megafloral assemblages from Pietraraja in Benevento, which contain putative cycads, bennettites (*?Zamites*) and conifers (*Brachyphyllum*; Bravi and Garassino, 1998a), a middle Albian angiosperm fructification, *Sagaria cilentana* from Monti Alburni near Patina (Bravi et al., 2010), and late Albian conifers (*Pagiophyllum*, *?Podozamites*) and bennettites (*?Zamites*) from Petina in Salerno (Bravi, 1995; Bravi and Garassino, 1998b; Dalla Vecchia, 2000). In contrast Cretaceous megafloral assemblages from northern Italy are, so far, represented only by unidentified conifers from the late Barremian of Cornappo Valley near Torlano (Friuli-Venezia-Giulia region; Muscio and Venturini, 1990; Dalla Vecchia, 2000) and Albian–?Cenomanian ferns and monocotyledons from a bituminous limestone near

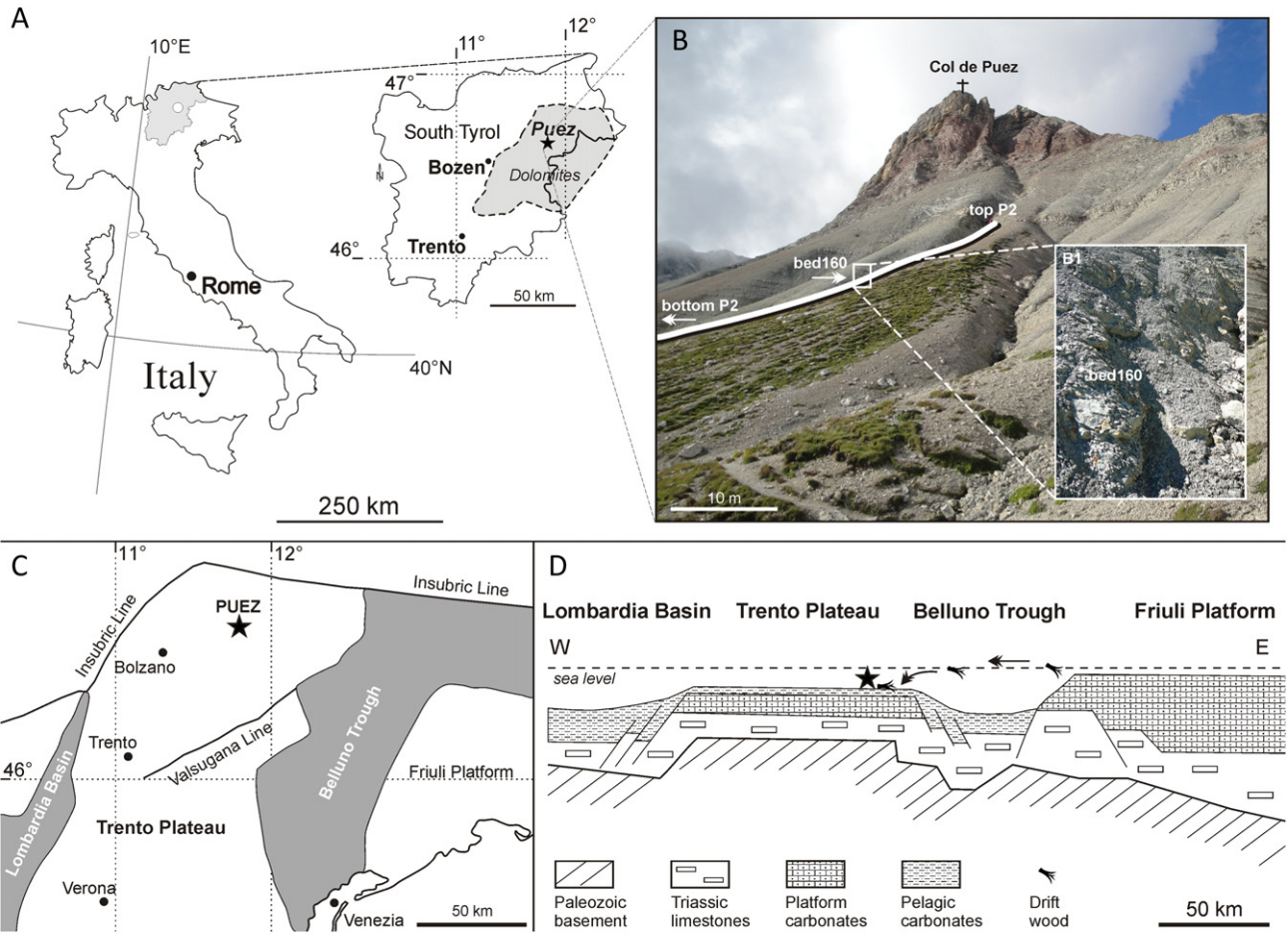
Faierazzo (Friuli-Venezia-Giulia region; Taramelli, 1873; Gomez et al., 2002).

In addition to these megafloral assemblages there are five records of fossil wood (see database in Peralta-Medina and Falcon-Lang, 2012). A fossil trunk of putative Cretaceous age found near Guiglia, Modena was described as *Araucarioxylon* (Bertolani Marchetti, 1963), and compared to *Araucarioxylon scarabellii* Clerici from Quarternary sediments near Imola (Clerici, 1902). A second silicified trunk was discovered in the Aptian–Albian “Marne a Fucoidi” beds, east of Camerino (Deiana and Pieruccini, 1974); unfortunately, local collectors stole this fossil, and only a small fragment, assigned to *Araucarioxylon*, has been preserved (Biondi, 1976). A third fossil wood fragment from the “Marne a Fucoidi” beds at Monti Sibillini (Biondi, 1980) is assigned to *Protophyllocladoxylon* aff. *subdiphtericum* Dupéron Laudoueneix. Finally, from the Southern Alps, Lehner et al. (1987) mentioned a silicified fragment from the Cretaceous of the Scaglia Bianca of Costa Valley, Brescia, and Biondi (1978) described a specimen of *Protopodocarpoxyton pedrotii* from Albian strata near Trento.

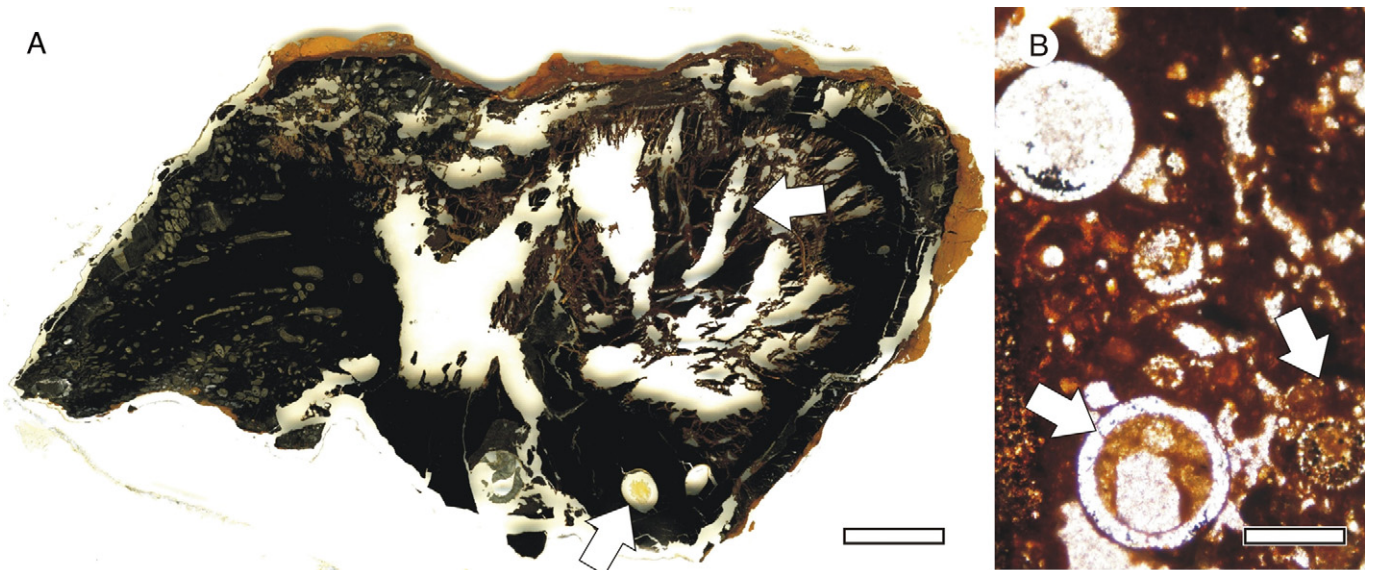
Here, we describe a new specimen of permineralised wood from the Cretaceous (Albian) of the Southern Alps, and the first from the Puez area in South Tyrol (Fig. 1A). Considering the poor record of Cretaceous fossil plants from Italy (Dalla Vecchia, 2000; Gomez

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**Fig. 1.** Geological context for fossil wood. A, Location of fossil site in Italy, and specifically, in Puez area of South Tyrol. B, Photograph of the section (P2) at Col de Puez, highlighting Bed 160 (inset), from which the fossil wood originated. C, Palaeogeographic location of the Puez area during the Cretaceous. D, Palaeogeography of the Southern Alps during the Cretaceous showing the inferred source area of the drifted tree-trunk. The star indicates the location of the Puez area.



**Fig. 2.** The new fossil wood specimen from the Puez area. A, A polished transverse section with some teredinid molluscan borings, arrowed, scale: 20 mm. B, Marl matrix adhering to the specimen containing radiolaria (arrow, left) and foraminifera (arrow, right), scale: 300 µm.

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