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Geological and Palaeontological context of three new Barremian (Lower Cretaceous) vertebrate sites in the Iberian Peninsula (Cuenca Province, Central Spain)

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ABSTRACT

Three new Lower Cretaceous vertebrate sites (Vadillos-1, Vadillos-2, El Tobar) have been recently discovered and studied in the Cuenca Province (Central Spain). They are located in deposits of "Wealden" facies belonging to the El Collado Sandstone and Clay Formation. In these outcrops, micro and macroremains corresponding to plants, invertebrates and vertebrates have been collected and subsequently assigned to macrophytes, charophytes (e.g., *Atopochara trivolvis triquetra*, *Globator maillardii trochiliscoides*, *Clavator harrisii harrisii*), ostracods (e.g., *Cypridea* gr. *modesta*, *Cypridea* cf. *C. isasae*, *Cypridea* sp. aff. *C. moneta*, *Cypridea* sp. 1, *Cypridea* sp. 2), molluscs (Unionoida, *Viviparus* sp.), fishes, amphibians, turtles (cf. Eucryptodira), crocodyliforms (Neosuchia) and dinosaurs (ankylosaurs, ornithopods, theropods). Among the vertebrate remains, scales, teeth, plates, osteoderms, phalanges, ribs, vertebrae and other incomplete bones, as well as eggshell fragments have been identified. This rich and diverse assemblage was deposited in an upper Barremian alluvial-palustrine muddy floodplain crossed by braided sandy channels.

1. Introduction

The last few decades have seen an incredible increase in palaeontological studies on the Iberian Peninsula across a wide range of geological ages. These studies have resulted in the discovery of many new fossiliferous localities, especially of Cretaceous vertebrates. A good example of this is the recent discovery of the "Lo Hueco" site during the construction of the Madrid-Levante high-speed railway in Cuenca Province (Barroso-Barcenilla et al., 2009) that, added to the classic site of "Las Hoyas" (Prieto and Díaz-Romeral, 1989; Buscalioni and Fregenal-Martínez, 2010), shows a rich and diverse Cretaceous biota. Preliminary palaeontological evidences from the Beteta Gorges (Lapparent et al., 1969; Ruiz-Omeñaca and Canudo, 2003) allowed the prediction of new vertebrate sites in the North of Cuenca, as happened when vertebrate remains were reported by students (Prieto et al., 2013a, 2013b, 2014; Ruiz-Galván et al., 2013a, 2013b, 2014) of the Universidad Complutense de Madrid (Fig. 1.1–2). As a result, three new sites rich in Lower Cretaceous vertebrate remains were discovered in the Beteta Gorges. A programme of thorough field-work was undertaken in December 2013 and January 2014, being the first integrated conclusions on the integrated analysis of the geological context and the rich palaeontological content (that includes plants, invertebrates, fishes, amphibians, turtles, crocodyliforms and dinosaurs) presented here.

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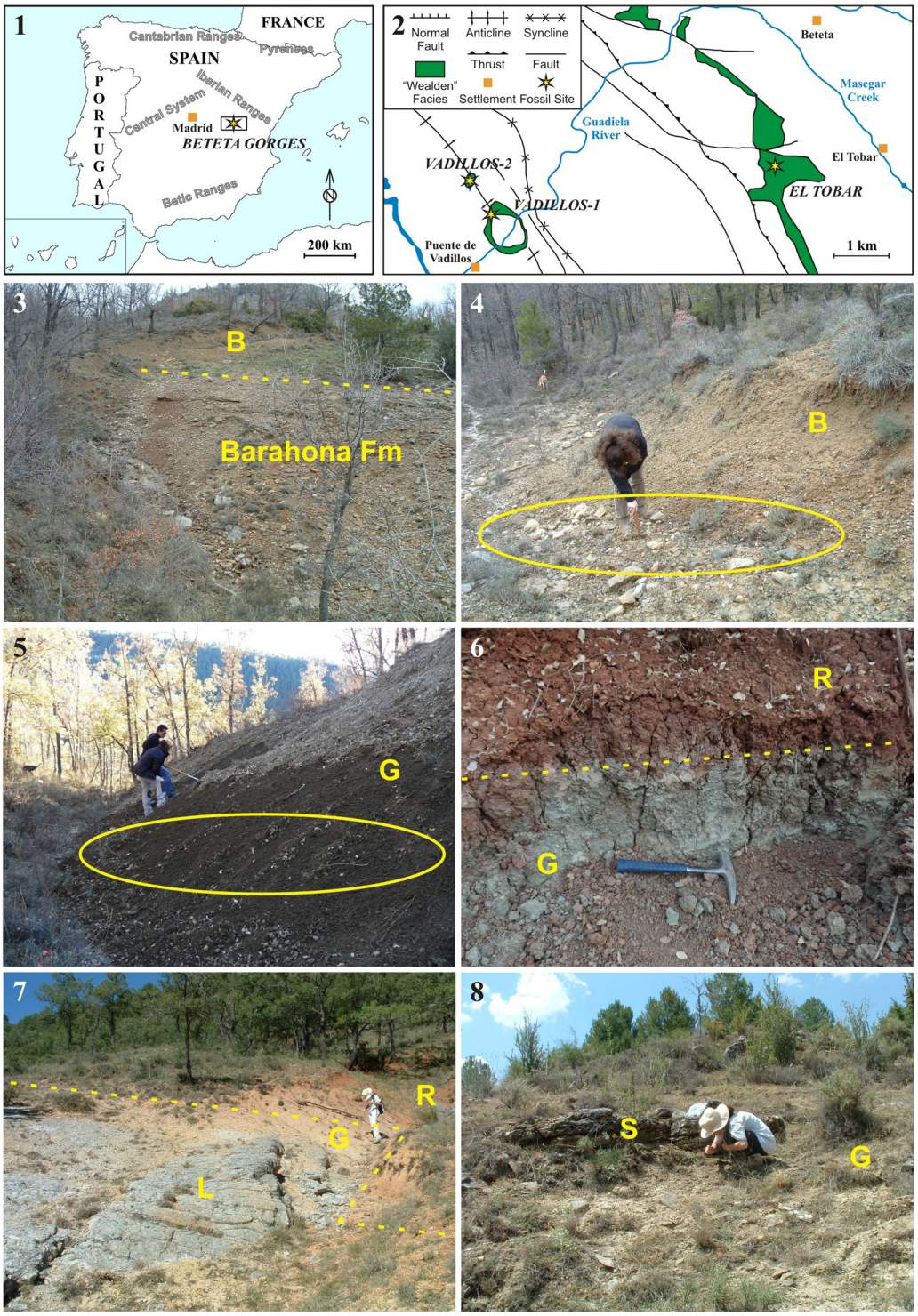

Fig. 1. General geographic (1) and detailed geologic (2) location of the new fossil sites in the Beteta Gorges (Spain). Photographic views of fossiliferous intervals in the Vadillos-1 (3–6), Vadillos-2 (7) and El Tobar (8) sites. 3: Vadillos-1, stratigraphic boundary (dashed yellow line) between the Lower Jurassic Barahona Formation and the lower part of the brown mudstones level (B) of the upper Barremian El Collado Formation; 4: Vadillos-1, concentration of ex-situ calcareous nodules (yellow oval) from the upper part of the brown mudstones level (B); 5: Vadillos-1, concentration of vegetal carbonified remains (yellow circle) in the middle part of the grey mudstones level (G) of the El Collado Formation; 6: Vadillos-1, stratigraphic boundary (dashed yellow line) between the grey (G) and red (R) mudstones levels of the El Collado Formation; 7: Vadillos-2, the sandy limestones (L) in the upper part of grey mudstones level (G) of the El Collado Formation, and stratigraphic boundary (dashed yellow line) between this and the red mudstones level (R); 8: El Tobar, the channels built up of sandy banks (S) in the upper part of grey mudstones level (G) of the El Collado Formation.

2. Geographical setting

The new Lower Cretaceous vertebrate sites are located in the Beteta Municipality, in the North of Cuenca Province, Central-eastern Spain. They lie within the Beteta Gorges, a group of natural canyons cut by the Guadiela River and its tributary, Masegar Creek. This area was studied in detail by Álvaro López and Olmo Zamora (1989a), and is included in the Peralejos de las Truchas Geological Map (Sheet 539)

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