



## A reappraisal of *Notohypsilophodon comodorensis* (Ornithischia: Ornithopoda) from the Late Cretaceous of Patagonia, Argentina

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### Abstract

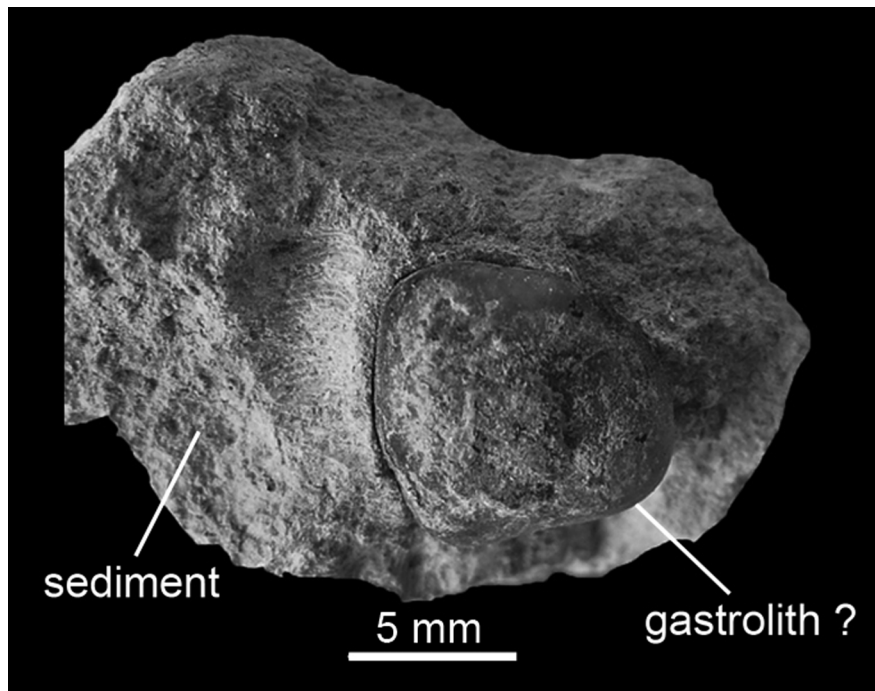
The Bajo Barreal Formation (Cenomanian, Late Cretaceous; central Patagonia, Argentina) preserves an important and rich fossil record. Among the dinosaurs described, a small ornithischian, *Notohypsilophon comodorensis*, was named in the 1990s. This small-bodied dinosaur, the most complete representative of the group discovered in that formation, was described as a “hypsilophodontid” ornithopod based on close morphological affinities with other members of that group, which is currently regarded as paraphyletic. Within this context, we present a restudy of *Notohypsilophodon*. This dinosaur is considered a basal ornithopod, probably more basal than *Gasparinisaura*. Likewise, this analysis emends and provides additional unique anatomical characters that support its taxonomic validity and position. On the basis of weak evidence, *Notohypsilophodon* might share the presence of gastroliths with other basal ornithopods (*Gasparinisaura* and *Haya*), which could suggest a specific behavior in response to its food ingestion. Finally, this study increases our knowledge of the evolutionary dynamics of South American Cretaceous ornithopods, and therefore broadens our knowledge of the early Late Cretaceous continental vertebrate assemblages of central Patagonia and of the Southern Hemisphere in general.

**Key words:** Ornithischia, Ornithopoda, Late Cretaceous, Bajo Barreal Formation, Argentina

### Introduction

The fossil record of South American ornithischians is scarce, particularly in Patagonia, and is represented predominantly by ornithopods (Coria & Calvo 2002; Novas *et al.* 2004; Coria & Cambiaso 2007; Novas 2009). However, the relatively poor diversity of South American ornithischians may be related to fossil record biases rather than their genuine absence (Coria & Cambiaso 2007). Nevertheless, although the fossil record of Patagonian ornithischians is relatively poor, this clade in general is the most diverse and geographically widespread dinosaur group (Serenó 1999; Weishampel *et al.* 2004).

Martínez (1998) named a new small ornithischian recovered from strata of the Lower Member of the Bajo Barreal Formation (Fig. 1) as *Notohypsilophodon comodorensis*. This small dinosaur, the most complete representative of the group discovered in that formation, was assigned to the “Hypsilophodontidae”, based on anatomical similarities with other members of that group. However, both the fossil record and our understanding of ornithischian evolutionary history have improved in the last 15 years; consequently, some of the anatomical features, originally recognized as autapomorphic for *Notohypsilophodon*, are now known to be plesiomorphies (i.e., pronounced narrowing of the fibular shaft, astragalus with the proximal surface disposed in two levels) or widely distributed within Ornithischia (i.e., humerus with greatly reduced deltopectoral crest, ungual pedal phalanx with a flat ventral surface) (Novas *et al.* 2004; Butler *et al.* 2008; Novas 2009; Canudo *et al.* 2013). For this reason, *Notohypsilophodon* was excluded from earlier phylogenetic analyses (Butler *et al.* 2008; Makovicky *et al.* 2011; Han *et al.* 2012, among others) and was rarely included in evolutionary comparisons.



**FIGURE 13.** A detailed view of a probable gastrolith (UNPSJB-PV 942/52).

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