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On the supposed presence of *Prognathodon solvayi* in the Demopolis Chalk

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While reporting on the mosasaurid fauna of the upper Demopolis Chalk of western Alabama and northeastern Mississippi, Derstler (1988) noted the presence of numerous remains of *Plioplatecarpus* sp. and *Mosasaurus conodon*, and a single isolated tooth of *Prognathodon* cf. *Prognathodon solvayi*. These remains are of Late Campanian age, originating from within a few meters of the lower boundary of the Bluffport Marl Member.

Prognathodon solvayi is known from the Lower Maastrichtian Ciplu Chalk near Mesvin, Belgium, with additional dental occurrences tentatively referred to this taxon from the Maastrichtian of Spain and North Carolina, USA (Lingham-Soliar & Nolf, 1989; Bardet *et al.*, 1997, 2013; Rempert *et al.*, 2024) (Fig.1). The taxon possessed uniquely well-defined enamel fluting which allows for the identification of isolated teeth. The purported Demopolis Chalk prognathodontin tooth



FIGURE 1. Holotype of *Prognathodon solvayi* (IRSNB R33) at the Royal Belgian Institute of Natural Sciences, Brussels, Belgium. Picture by Brennan P. Martens.

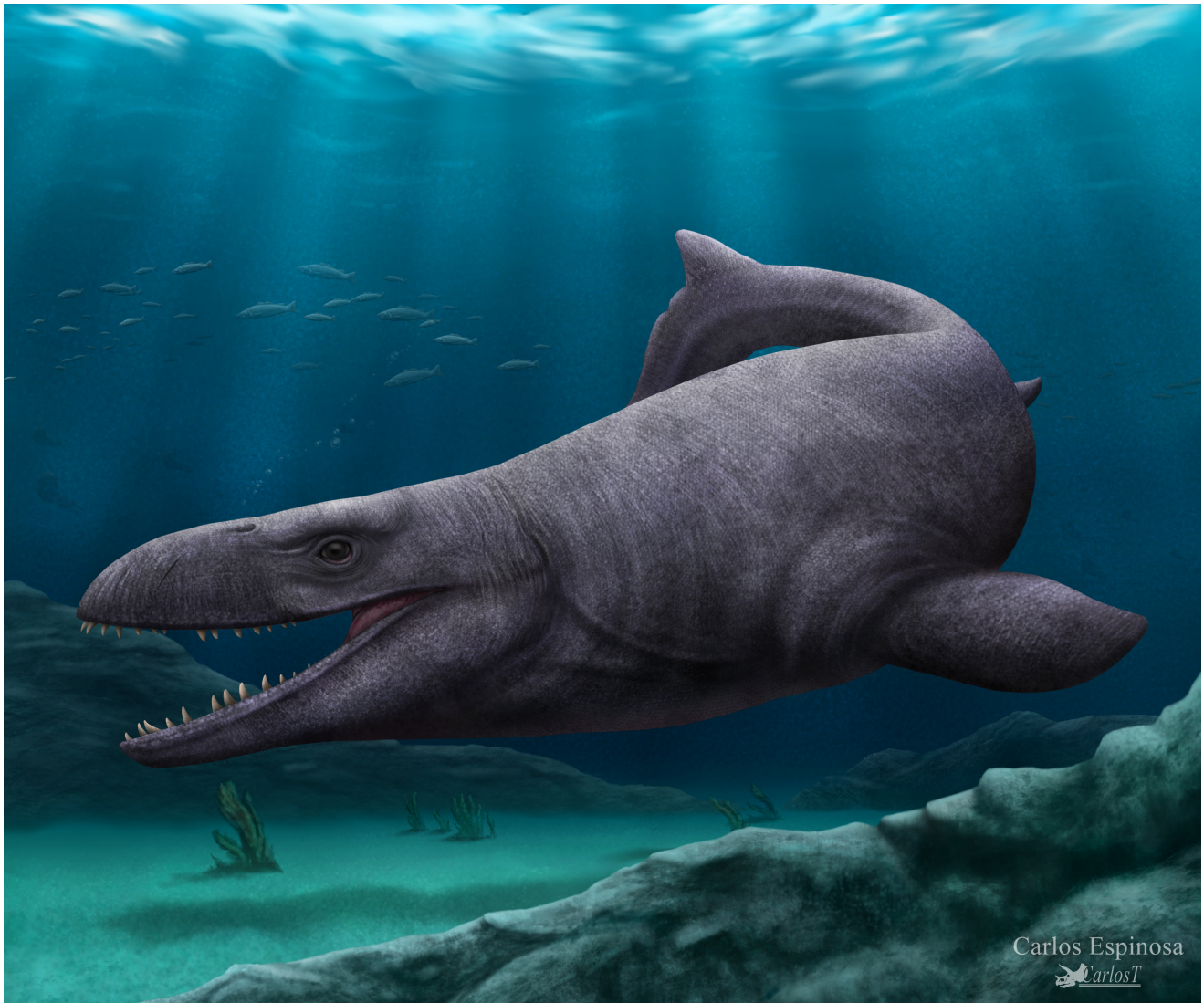


FIGURE 2. The mosasaur *Prognathodon solvayi*. Artistic reconstruction by Carlos Espinosa.

(University of New Orleans Collections; UNO-unnumbered) was reported by Derstler (1988) without description or figuring. Despite its inclusion in subsequent faunal lists, (Daly, 1992; Lucas *et al.*, 2005), it has not received any further descriptive work. Attempts to relocate UNO-unnumbered have proven unsuccessful.

The presence of *P. solvayi* in the Campanian of Mississippi is anomalous as all other occurrences are of late Early Maastrichtian age or younger and focused on the Northern Mediterranean Tethys Margin and its nearby surroundings (Fig. 2). The temporal and geographic discrepancy, as well as the fact that consistent collection pressure in the Demopolis Chalk has been unable to produce further remains of this taxon, suggests that UNO-unnumbered may be a case of misidentification.

Pronounced enamel ornamentation in the form of concave fluting is one of the principal diagnostic features of *Prognathodon solvayi* teeth and was likely used to suggest referral of UNO-unnumbered to said taxon (Lingham-Soliar & Nolf, 1989). However, amongst mosasaurs, pronounced

enamel ornamentation is not uniquely diagnostic. Well-developed facets in the teeth of *Mosasaurus* spp. can mimic prognathodontin fluting (Hornung & Reich, 2015). Any wear or damage to the tooth's enamel surface could further obfuscate identification. Pending the rediscovery of UNO-unnumbered, the authors recommend treating its identification as Mosasauridae indeterminate.

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