

Paper Number: 4718

On *Damonella ultima* from the Santana Formation (Upper Aptian, Lower Cretaceous), Araripe basin, Northeastern Brazil

Antonietto, L.S.¹, Barbosa, V.R.F.¹ and Do Carmo, D.A.¹

¹University of Brasilia, Darcy Ribeiro campus, Brasilia, Distrito Federal, Brazil, antoniettols@gmail.com

The main objective of the present abstract is to redescribe *Damonella ultima* (Krömmelbein & Weber, 1971) (Crustacea, Ostracoda), based in the occurrence of this species in the Santana Formation, Aptian of the Araripe basin, States of Ceará and Pernambuco, Brazil. Additionally, some comments are made about the uncommon stratigraphic distribution of *Damonella ultima* in this basin; the species is traditionally a fossil guide to the local Jiquiá (Barremian) Stage in the São Sebastião Formation of the Recôncavo basin, Bahia State, Brazil (part of the historical “Bahia Series”) [1]. For such, a taphonomic analysis of fossil material encountered was realized.

The studied samples, MP-931 and MP-1103, were respectively obtained from the IPS-11-CE well, City of Crato, Ceará (7°10' S, 39°29' W), and the CAMPEVI quarry, City of Araripina, Pernambuco (7°44'S, 40°27'W). They were stored, prepared and picked according to the methodology developed by the Micropaleontology Laboratory of University of Brasilia (LabMicro-UnB), based in Sohn [2] and Do Carmo et al. [3]. After that, several *Damonella ultima* carapaces and valves were photographed and analyzed for alterations that could evidence taphonomic processes, such as transportation or chemical weathering. A redescription of this species is proposed based on presently recovered specimens, which displayed excellent state of preservation.

Three hypotheses could explain these new data: reworking of ostracod carapaces on samples, a wider stratigraphic distribution for *Damonella ultima* or a different age for the Crato Member of the Santana Formation. If reworking is to be considered, it could explain occurrences of *Damonella ultima* in samples of Aptian Age. Through analysis of *Damonella ultima* specimens on both samples, it was possible to identify signs of dissolution, abrasion, incrustation and fracturing, despite their overall state of preservation. These evidences, coupled with previous paleoenvironmental interpretations of the Santana Formation, would allow us to interpret taphonomic processes as being dominated by slow deposition processes followed by quick diagenesis, possibly related to transport by tectonic uplifts and gravity. During the Aptian, the Araripe basin was exposed to tectonics associated with the opening of Southern and Central Proto-Atlantic oceans [4].

On another hand, this species could have a more extended stratigraphic distribution in chronostratigraphy, being also Aptian, as assumed by Tome [1] – something not observed at their type locality, the Recôncavo Basin, due to erosive discordances at its uppermost Barremian-lowermost Aptian [5]. It is also possible that some strata of the Santana Formation such as the Crato Member, currently considered to be of Aptian Age, would in fact be Barremian, based on the occurrence of *Damonella ultima* on sample MP-1103; its occurrence in the sample MP-931 from Romualdo could also be product of reworking.

Future taxonomic, lithostratigraphic, spectrometric and isotopic analyses of rock samples should contribute for the better understanding of tectonic and paleoenvironmental changes that probably conditioned the composition of the ostracod assemblages observed. Such investigations should necessarily involve absolute radiometric dating, stratigraphic correlation and paleoenvironmental reconstruction, in order to clarify if some of the occurrences of *Damonella ultima* result from reworking of Barremian sediments of the Araripe basin to Aptian strata, or if the status of this species as a Barremian fossil guide is limited to the Recôncavo basin.

References:

- [1] Tomé METR et al. (2014) Cret. Res. 48:153-176
- [2] Sohn IG (1961) Geophys. Monogr 131:37-64
- [3] Do Carmo DA (2004) Rev. Bras. Paleontol 7(2):151-158
- [4] Dias JL (2005) Bol. Geocienc. Petrobras 13(1):7-25
- [5] Silva OB et al. (2007) Bol. Geocienc. Petrobras 15(2):423-431

