PALEODEST Paleontologia em Destaque
e-ISSN 1807-2550 – Sociedade Brasileira de Paleontologia

Scientific Note

NEW OCCURENCE OF OSTRACOD ASSEMBLAGES FROM THE CRETACEOUS QUIRICÓ FORMATION, SANFRANCISCANA BASIN, SE BRAZIL

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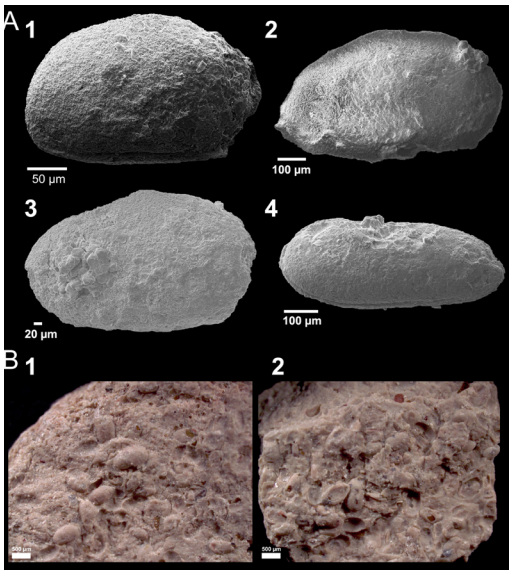
v. 40, n. 83, p. 121-125, 2025. Doi: 10.4072/paleodest.2025.40.83.06

Submetido: 23 de janeiro de 2025
Aceito: 12 de março de 2026



Santos Filho *et al.*, 2025. *Paleontologia em Destaque*, v. 40, n. 83, p 124, Figura 2.

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Keywords: Alagoas Stage, Três Barras Formation, Ostracoda.

Nova ocorrência de assembléias de ostracodes do Cretáceo da Formação Quiricó, Bacia Sanfranciscana, SE do Brasil.

Palavras-Chave: Estágio Alagoas, Formação Três Barras, Ostracoda.

Ostracods, small bivalved microcrustaceans with a robust calcareous carapace, inhabit all known aquatic environments, from lakes and rivers to shallow and deep seas (Morkhoven, 1963; Coimbra & Bergue, 2011). Their rapid evolutionary turnover, ecological specificity, and wide distribution across aquatic environments make them excellent proxies for reconstructing paleoenvironments, recognizing salinity gradients, and refining stratigraphic correlations (Horne *et al.*, 2002; Coimbra *et al.*, 2002).

In continental basins, ostracods can provide valuable biostratigraphic resolution and environmental insights, with non-marine ostracods having been pivotal in establishing biozonation schemes for the Lower Cretaceous of Brazil and Africa (Poropat & Colin 2012, and references therein). They have also played a key role in refining depositional models, especially where marine incursions into predominantly continental sequences are suspected (*e.g.*, do Carmo *et al.*, 2018; Melo *et al.*, 2020; Araripe *et al.*, 2022).

The Sanfranciscana Basin, located in southeastern Brazil, preserves an important record of Early Cretaceous continental sedimentation, with the Areado Group - comprising the Abaeté, Quiricó, and Três Barras formations - recording a transition from lacustrine to fluvial/aeolian environments, punctuated by evidence of marine incursions (Fauth *et al.*, 2024).

Although marine fossils (*e.g.*, foraminifera, calcareous nannofossils) have been previously described from the Três Barras Formation, particularly at the Morro do Cruzeiro outcrop, the nature and extent of marine influence in the underlying Quiricó Formation remain uncertain. This note potentially contributes to this discussion by documenting a new occurrence of ostracod assemblages from the upper Quiricó Formation, Abaeté Sub-basin.

Fifteen samples (Q2-01 to Q2-15) were collected from a 5 m thick stratigraphic section in the Presidente Olegário region (18°18′44.1″S, 46°17′46.8″W), approximately 30 m below the lithological boundary with the Três Barras Formation (Figure 1). Samples were then dried, disaggregated, and washed through 250 and 125 μm sieves, and the residues were dried and examined under a stereomicroscope to isolate and identify microfossils. Selected specimens were analyzed with a scanning electron microscope (SEM) to obtain higher-resolution images and observe diagnostic morphological features.

Doi: 10.4072/paleodest.2025.40.83.05

Eight out of the 15 samples analyzed contained microfossils (Table 1). Preservation was very poor, with the material consisting primarily of internal molds and heavily recrystallized specimens (Figure 2A). All samples showed very low abundance except for sample Q2-11, where many molds could be observed (Figure 2B).

While many specimens could not be classified, the better preserved ones were tentatively assigned to two genera: *Pattersoncypris* Bate, 1972 (Figure 2A.1–3), based on the presence of a pronounced hump at the greatest height of the mold and an overall ovate outline in lateral view; and a member of Darwinulidae (Figure 2A.4), likely *Alicenula* Rossetti and Martens, 1992, based on the elongated carapace and the overlap of the left valve over right. A more refined classification is not possible due to the low quality of the material. *Pattersoncypris* dominates the assemblage, with only a singular specimen of *Alicenula* having been found (Table 1). While both genera have been observed before in this basin (Do Carmo *et al.*, 2004, as *Harbinia* and *Darwinula*), there are no earlier records of ostracod molds occurring in such remarkable abundance as in sample Q2-11.

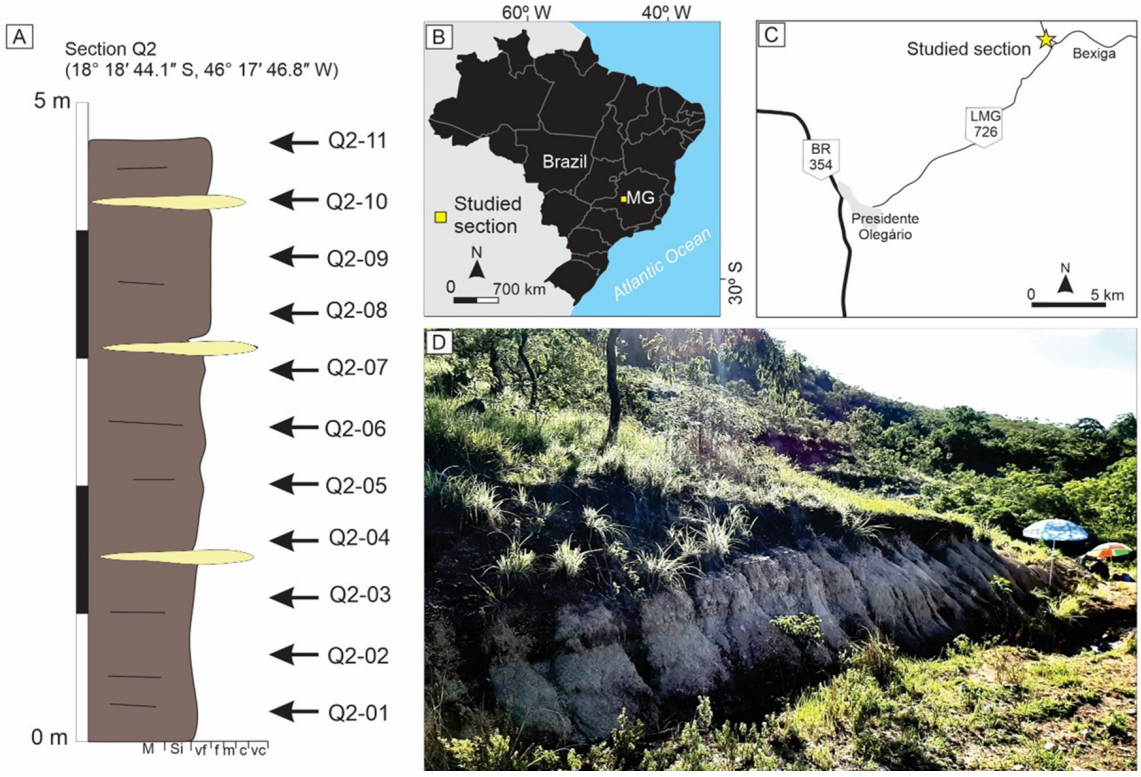

Figure 1. Location and stratigraphic context of studied samples from the Quiricó Formation: **A,** stratigraphic log with the position of studied samples; **B-C,** location of the studied section in Brazil and Presidente Olegário region, respectively; **D,** general view of the studied outcrop. MG = Minas Gerais state.
Figura 1. *Localização e contexto estratigráfico das amostras estudadas da Formação Quiricó: **A,** perfil estratigráfico com a posição das amostras estudadas; **B–C,** localização da seção estudada no Brasil e na região de Presidente Olegário, respectivamente; **D,** vista geral do afloramento estudado. MG = estado de Minas Gerais.*

Table 1. Samples analyzed for microfossils in this study and distribution of genera found.
Tabela 1. *Amostras analisadas para microfósseis neste estudo e distribuição dos gêneros encontrados.*

Samples	Microfossils	250 µm	125 µm	*Alicenula*	*Pattersoncypris*	Indeterminate
Q2-01	Yes	1	1	0	1	0
Q2-02	No	0	0	0	0	0
Q2-03	No	0	0	0	0	0
Q2-04	Yes	1	2	0	2	1
Q2-05	No	0	0	0	0	0
Q2-06	Yes	15	0	1	7	6
Q2-07	Yes	14	0	0	6	8

Samples	Microfossils	250 µm	125 µm	*Alicenula*	*Pattersoncypris*	Indeterminate
Q2-08	No	0	0	0	0	0
Q2-09	No	0	0	0	0	0
Q2-10	Yes	0	1	0	0	1
Q2-11	Yes	>100	20	0	>100	8
Q2-12	Yes	2	2	0	3	1
Q2-13	Yes	10	0	0	6	4
Q2-14	No	0	0	0	0	0
Q2-15	No	0	0	0	0	0

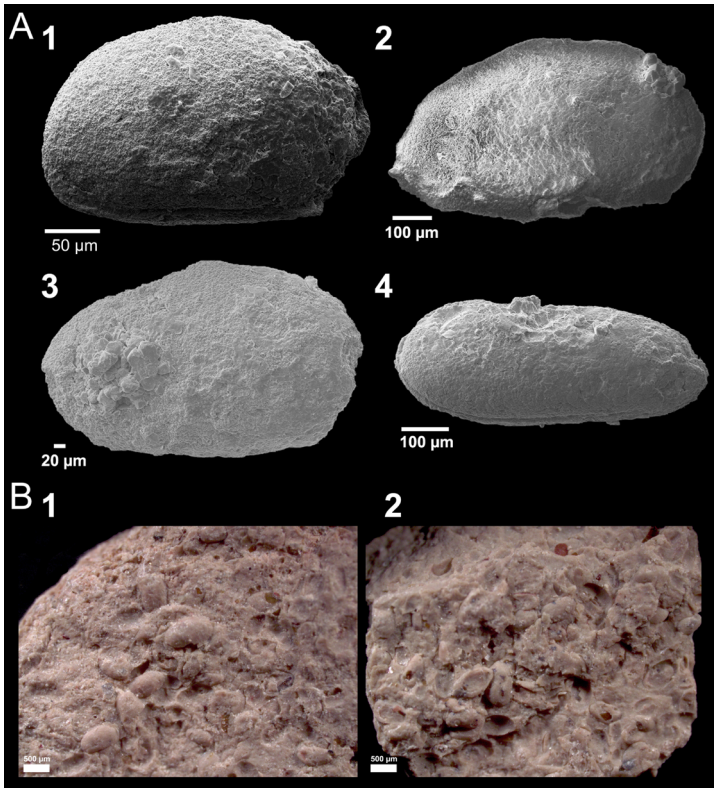

Figure 2. Fossils recovered from the studied section: **A, 1** - *Pattersoncypris* sp., recrystallized carapace; **2** - *Pattersoncypris* sp., mold; **3** - *Pattersoncypris* sp., mold; **4** - *Alicenula* sp., recrystallized carapace; **B,** fragments from sample Q2-11, showing its great abundance of ostracod molds.
Figura 2. *Fósseis recuperados nas seções estudadas:* ***A, 1*** - Pattersoncypris *sp., carapaça recristalizada;* ***2*** - Pattersoncypris *sp., molde;* ***3*** - Pattersoncypris *sp., molde;* ***4*** - Alicenula *sp., carapaça recristalizada;* ***B****, fragmentos da amostra Q2-11, apresentando a grande abundância de moldes de ostracodes.*

Despite the poor preservation of the microfossils, it is nevertheless possible to draw some potential paleoenvironmental and biostratigraphic inferences. The genus *Pattersoncypris* is widely recognized as an indicator of the local Alagoas Stage (Poropat & Colin, 2012, and references therein). A detailed biozonation scheme for the Araripe Basin has defined the *Pattersoncypris micropapillosa* Zone (OST-011) as encompassing the entire local stage (Guzmán-Gonzalez *et al.*, 2023), and a review of the genus has associated all its Brazilian and African species to the Aptian (Maia *et al.*, 2025). Therefore, the occurrence of this genus in outcrop Q2 suggests that the interval can be biostratigraphically constrained to the Alagoas Stage, correlated to the Aptian age.

From a paleoenvironmental perspective, species of *Pattersoncypris* are typically associated with mixohaline environments, having been recovered predominantly from transitional non-marine to marine settings, and the genus is considered to be euryhaline (Maia *et al.*, 2025). Occasionally, these ostracods have been found alongside fully marine taxa (*e.g.*, Arai

& Coimbra, 1990; Viviers *et al.*, 2000; Syrio & Rios-Netto, 2002; Coimbra *et al.*, 2002; Antonietto *et al.*, 2015; Melo *et al.*, 2020), and even in association with foraminifera (Arai & Coimbra, 1990; Do Carmo *et al.*, 1999). The complete dominance of *Pattersoncypris* is notable, considering that only one specimen could reliably be identified as belonging to a different genus (*Alicenula*). This diverges from the more diverse, typically freshwater assemblages recovered in the Quiricó Formation (*e.g.* Do Carmo *et al.*, 2004; Leite *et al.*, 2018). Thus, the presence of *Pattersoncypris* in some intervals of this outcrop, apparently in high abundance as indicated by sample Q2-11, may suggest that this section represents a more marginal depositional setting, with the single *Alicenula* specimen having been transported to the area.

Future work should aim to gather more material in order to recover better preserved specimens, develop more detailed taxonomic analysis, and seek to integrate sedimentological and geochemical proxies to better characterize the paleoenvironment of this transitional interval.

ACKNOWLEDGMENTS

DS thanks the National Council for Scientific and Technological Development (grant 306493/2022-5). This study is a contribution to the project FAPEMIG APQ-00458-21 "O paradoxo da influência marinha em contexto continental nos depósitos do Cretáceo Inferior da Bacia Sanfranciscana: uma abordagem paleocológica".

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