



UNIVERSITY OF
BUCHAREST
VIRTUTE ET SAPIENTIA

THE 14th ROMANIAN
**SYMPOSIUM
ON PALAEOONTOLOGY**
BUCHAREST - September 14th - 15th, 2023
ABSTRACT BOOK

EDITED BY
ZOLTÁN CSIKI-SAVA, ALINA FLOROIU, MARIA-RALUCA
VĂCĂRESCU & IULIANA LAZĂR



EDITURA UNIVERSITĂȚII DIN BUCUREȘTI
BUCHAREST UNIVERSITY PRESS

2023

The earliest record of Poaceae (monocots, bamboo pollen) in the Upper Cretaceous of Eastern Carpathians

Țabără, D.¹, Chelariu, C.¹ & Slimani, H.²

¹“Al. I. Cuza” University of Iași, Department of Geology, 20A Carol I Blv., 700505 Iași, Romania, e-mail: dan.tabara@yahoo.com, ciprian.chelariu@uaic.ro

² Geo-Biodiversity and Natural Patrimony Laboratory (GEOBIO), “Geophysics, Natural Patrimony and Green Chemistry” Research Center (GEO PAC), Department of Geology and Remote Sensing, Scientific Institute, Mohammed V University in Rabat, Avenue Ibn Batouta, P.B. 703, 10106 Rabat-Agdal, Morocco, e-mail: hamid.slimani@um5.ac.ma

Keywords: palynology, Late Cretaceous, Bambusoideae, Sucevița

A palynological analysis of three shales samples collected from the Hangu Formation – previously dated to Senonian (Joja et al., 1984) – in the Bercheza River (Tarcău Nappe, Sucevița area) revealed an assemblage of marine and terrestrial palynomorphs, suggesting a late Campanian–late Maastrichtian age interval. In one of the samples, the fern spore *Vadaszsporites sacali* indicates the late Campanian (Góczán & Siegl-Farkas, 1990), and the other two samples contain an assemblage of dinoflagellate cysts, such as *Trithyrodinium evittii*, *Cladopyxidium paucireticulatum* (Fig. 1c), *Alterbidinium varium* (Fig. 1d) and *Cerodinium albertii*, supporting a late early Maastrichtian–early late Maastrichtian age (Slimani, 2001; Țabără et al., 2023). Terrestrial palynomorphs include specimens assigned to the Normapolles group (*Trudopollis nonperfectus*, *Trudopollis fossulotrudens*), in association with various gymnosperms (*Pinuspollenites* div. sp., *Podocarpidites* sp.), and fern spores (*Gleicheniidites ancorus*, *Polypodiaceoisporites* sp., *Murospora florida*).

This study presents an interesting occurrence that could represent the earliest record of Poaceae pollen (monocots) assigned to the genus *Graminidites* (Fig. 1a, b) in the upper Maastrichtian deposits of Sucevița. This monoporate pollen is quite similar to *Graminidites bambusoides* Stuchlik in Ziemińska-Tworzydło et al. (1994), quoted from Miocene deposits in Poland (Ziemińska-Tworzydło et al., 1994; Worobiec & Worobiec, 2005) and Spain (Gaudant et al., 2015). However, the size of the specimen that we identified is about 2.7 times larger than the holotype of *Graminidites bambusoides*. The pollen grain is ovoidal to spheroidal, with a polar axis of 143 μm, a diameter of the distal pore of about 17 μm, and an annulus of about 6.1 μm. The exine surface is psilate and shows some secondary folds.

The ancestral monocots probably evolved during the Early Cretaceous (Linder & Rudall, 2005), and it seems that the Bambusoideae subfamily shows a first occurrence beginning from the Campanian (Bremer, 2000; Prasad et al., 2011), their diversification being observed in the early Eocene. The *Graminidites* pollen that we identified in the upper Maastrichtian deposits at Sucevița can be considered as the earliest occurrence of a bambusoid taxa in Romania, and could represent a new species of some "primitive" grasses that were contemporaneous with other early angiosperms (*Normapolles* group).

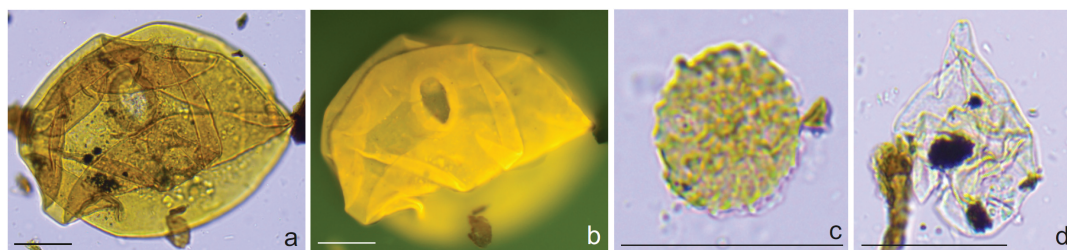


Figure 1. Selected terrestrial and marine palynomorphs (transmitted light and fluorescence) recovered from the Hangu Formation (scale bar 30 μm). a, b – *Graminidites* sp.; c - *Cladopyxidium paucireticulatum*; d - *Alterbidinium varium*.

Acknowledgments

This work was supported by a grant of the Ministry of Research, Innovation and Digitization, CNCS/CCCDI – UEFISCDI, project number PN-III-P4-ID-PCE-2020-2570, within PNCDI III, and the internal research project UB 10056/2022.

References

- Bremer, K., 2000. Early Cretaceous lineages of monocot flowering plants. *Proc Natl Acad Sci USA* 97(9), 4707–4711.
- Gaudant, J., Barrón, E., Anadón, P., Reichenbacher, B., Penalver, E., 2015. Palaeoenvironmental analysis of the Miocene Arcas del Villar gypsum sequence (Spain), based on palynomorphs and cyprinodontiform fishes. *N. Jb. Geol. Paläont. Abh.* 277/1, 105–124.
- Góczán, F., Siegl-Farkas, Á., 1990. Palynostratigraphical zonation of Senonian sediments in Hungary. *Rev. Palaeobotan. Palynol.* 66, 361–377.
- Joja, Th., Alexandrescu, G., Micu, M., 1984. Sucevița sheet (geological map, scale 1:50000). *Inst. Geol. Rom.*
- Linder, H.P., Rudall, P.J., 2005. Evolutionary history of Poales. *Annu. Rev. Ecol. Evol. Syst.* 36, 107–124.
- Prasad, V., Strömberg, C.A.E., Leaché, A.D., Samant, B., Patnaik, R., Tang, L., Mohabey, D.M., Ge, S., Sahni, A., 2011. Late Cretaceous origin of the rice tribe provides evidence for early diversification in Poaceae. *Nat. Comm.* 2, 480.
- Slimani, H., 2001. Les kystes de dinoflagellés du Campanien au Danien dans la région de Maastricht (Belgique et Pays-Bas) et de Turnhout (Belgique): biozonation et corrélation avec d'autres régions en Europe occidentale. *Geologica et Palaeontologica* 35, 161–201.
- Țabără, D., Slimani, H., Chelariu, C., Bindiu-Haitonic, R., Bălc, R., Csiki-Sava, Z., Fabianska, J.M., Miszkennan, M., Chelariu, M., 2023. Five million years of life history record in an uppermost Cretaceous northern Tethyan marine succession, Eastern Carpathians (Romania): Microfossil content and palaeoenvironmental assessment. *Rev. Palaeobotan. Palynol.* 313, 104878.
- Worobiec, E., Worobiec, G., 2005. Leaves and pollen of bamboos from the Polish Neogene. *Rev. Palaeobot. Palynol.* 133, 39–50.
- Ziemińska-Tworzydło, M., Grabowska, I., Kohlman-Adamska, A., Skawinska, K., Słodkowska, B., Stuchlik, L., Sadowska, A., Wazynska, H., 1994. Taxonomical revision of selected pollen and spores taxa from Neogene deposits. *Acta Palaeobot.* suppl. 1, 5–30.