

## NEW CONTRIBUTIONS TO THE FOSSIL BRYOFLORA IN ROMANIA

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**ABSTRACT.** Three fossil *Bryophyta* from the Pannonian-Pontian from Romania are presented. *Platybryopsis distichus* are a n. gen. and n. sp.

**KEY WORDS:** *Bryophyta*, late Miocene

### INTRODUCTION

Two previous papers (Givulescu & Olos 1973, Plamada & Givulescu 1979) described a few fossil bryophytes for the first time in our country. Two of these species are new scientific records: *Tinca denticulata* and *Chiuzbaia tenella*.

The present paper concerns three fossilized bryophytes collected from fossiliferous deposits lying at Borozel and Valea Crişului, in the Bihor country, and at Chiuzbaia, Maramureş country.

### GEOGRAPHIC AND GEOLOGIC DATA

The Borozel village lies close to Borod, Bihor country, on the Oradea – Cluj road (Fig. 1). The borehole providing the sample is located between the villages Borozel and Gheghie, south of Lunçsëara. The sample has been preserved in a coarse, gray marl, bearing scarce fish remains. It has been assigned to the Pannonian (unhorizonted) (Givulescu, in press). Valea Crişului (before Valea Neagra) lies a few km north of the Bra-tea village to which it belongs. The sample presented here was collected from the fossiliferous point nr 2 located near the confluence of the Negrutii and Brusturi streams. An abandoned mining gallery displays here coarse, tuffaceous gray marls that bear plant remains: *Glyptostrobus europaeus*, *Cunninghamia borzeana*, *Magnolia liblarensis* and various species of *Laurophyllum*. The age is Pannonian B/C (Givulescu 1975). Chiuzbaia lies 10 km north of Baia Mare (Fig. 1). The deposits bearing fossil plants lies north of the village on the southern slope of the Inniş Mountain, at an altitude of about 850–870 m. They consist of white or yellowish diatomites alternating with extremely fine cinerites. The plants occur mainly as prints preserved in diatomite, and can be as-

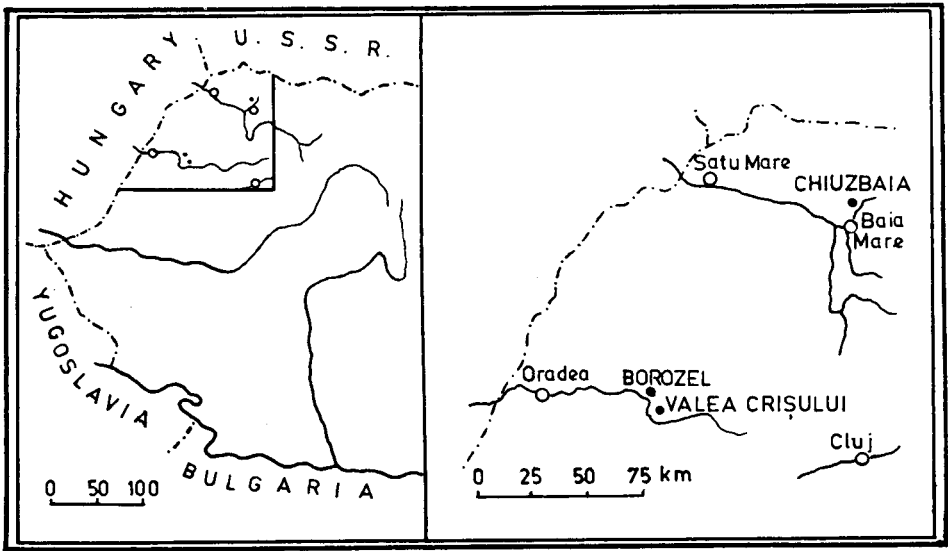


Fig. 1. Map of the region with the three fossiliferous sites: Chiuzbaia, Borozel and Valea Crişului in Transilvania

signed to the late Pontian (Pannonian G/H). Besides *Chiuzbaia tenella*, mentioned above informations has been also published on the following bryophytes identified in this fossiliferous deposit: *Madotheca* cf. *platyphylla*, *Dicranum* cf. *scoparium*, *Cinclidotus* sp., *Brachythecium* sp. The coenotic environment where they were found comprises a rich cormophytic flora, about 180 species, the most significant of which are: *Ginkgo adiantoides*, *Sequoia abietina*, *Glyptostrobus europaeus*, *Cephalotaxus pliocaenica*, *Carya minor*, *Carpinus grandis*, *Fagus silesiaca*, *Quercus* sp. div., *Zelkova zelkovaefolia*, *Cercidiphyllum crenatum*, *Liquidambar europaea*, *Acer integrilobum*, *A. palaeosaccharinum*, *Vitis strictum* a. o. (Givulescu 1990).

## MATERIALS AND METHODS

We had opportunity to analyse three fragments of *Bryophyta* from the clear and well-preserved impressions in the respective rocks which are marls and diatomite. They were studied through binocular and then reproduced by drawing.

## DESCRIPTION

### *Platybryopsis distichum* gen. et sp. nov.

(Fig. 2)

The sample represents a vegetative fragment of pleurocarp moss imprinted in a grayish marl, being clearly visible with the binocular. Its morphological characters are

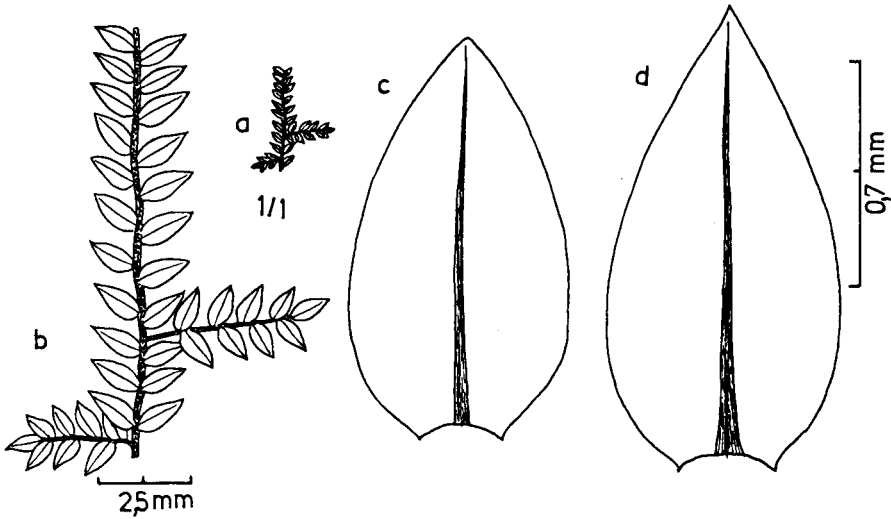


Fig. 2. *Platybryopsis distichus* gen. et sp. nov. a – plant fragment in natural size; b – the same fragment enlarged 5x; c, d – leaves, 40x

distinct and cannot be assigned to any of the present-day or fossil bryophyte species known so far.

### *Platybryopsis* gen. nov.

*Genus fossilis e classi Muscopsida (Musci), a grege Pleurocarporum. Cauliculus plagiotropus, ramificatione bilateralis, ramulis planis, foliis parvis, pseudoplanis, ovalibus, nervo simplice, longe.*

Type species. *Platybryopsis distichus* sp. nov.

*Diagnosis. Plantae satis robustae, cauliculis ad 160–200 μm crassus, ramificatio bilateralis, planis ramulis ad 2–4 mm longis, foliis parvis ad 1,2–1,4 mm longis, ovalibus, breviter acuminatis, insertione pseudobilateralis, dispositione alterna, haud decurrentibus, nervis longis usque ad apicem.*

*Holotype.* Holotype in the collection of the Departement of Geology and Paleontology, University of Cluj-Napoca, nr. 699/1991.

*Locus typicus.* Borozel/Bihor

*Stratum typicum.* Pannonian unhorizonted.

*Legit.* N. Ticleanu 1981.

*Description.* Pleurocarp moss, relatively robust, stem about 160–200 μm thick, bilateral ramification, short little branches 2–4 mm long, flat, plant width of 2.2–2.4 mm, leaflets seemingly inserted bilaterally, alternate distribution, oval short pointed, non-decurrent, plane, being 1.2–1.4 mm long and 0.5–0.7 mm wide, the branches ones smaller, vein long till tip or close to the tip, margin seemingly entire.

The plane appearance of the plant and the fact that the leaflets seems to be inserted

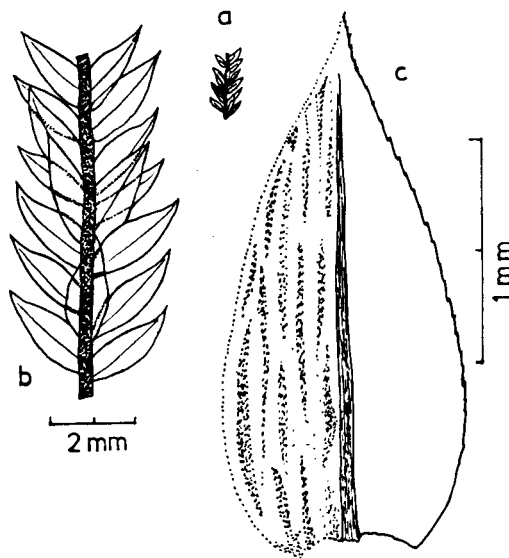
on two opposite rows account for its generic and specific name.

**Discussion.** Although the species is described only on account of a fragment of plant, if we take into account its width and the length of its branches, we may estimate that this moss could not be longer than 2–3 cm, much like several other present-day species. Having only two leaflets rows, like the genus *Fissidens*, and having a leaflet shape similar to that of *Rhynchostegium riparioides* (with long vein up to the tip) this plant differs from all present-day and fossil pleurocarp species and genera identified so far (see also Boureau 1967 and Szafer 1961). All these peculiar characters lead us to the conclusion that this plant disappeared when the warm and humid climate of its environment started to cool.

The two other species of fossilized bryophytes, collected from Valea Crișului and Chiuzbaia present morfological characters similar to those of plants living nowadays.

*Brachythecium* cf. *rutabulum* (Hedw.) B. S. G.

(Fig. 3a–c)



**Fig. 3.** *Brachythecium* cf. *rutabulum* (Hedw.) B. S. G. a – plant fragment in natural size; b – the same fragment enlarged 7x; c – leaf, 35x

*Brachythecium* cf. *rutabulum* is represented by a fragment of about 7 mm long and 3–3.6 mm wide. Stem relatively robust, about 0.5–0.6 mm thick, leaves inserted in several rows 1.8–2.2 mm long and 0.8–1 mm wide, oval symmetrical, short pointed, concave, vein robust long almost up to the tip. All these characters assign the plant to the genus *Brachythecium*, closer *B. rutabulum*, except for the vein which is shorter in the living species (about 2/3–3/4 of the lamina). In this case, the leaf margins may be intended, but this is not visible in most of the fossil bryophytes preserved in rocks. According to the appearance of the leaves, the fragment identified seems to have belonged to the bran-

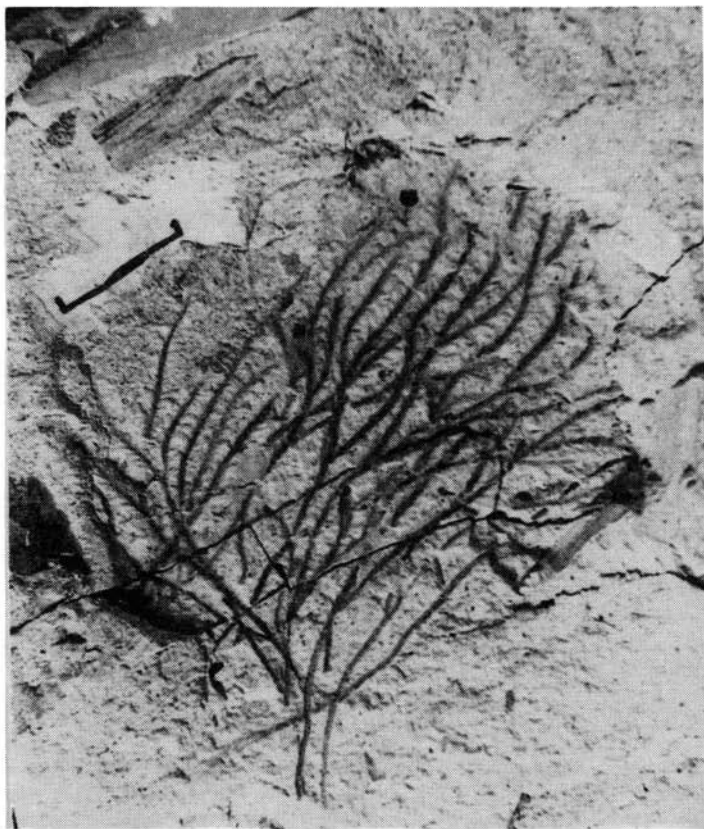


Fig. 4. *Plagiochila cf. asplenioides* (L.) Don. Bare – 1 cm

ches and not to the main stem. Collected from Valea Crişului, collection number 698/1991.

*Plagiochila cf. asplenioides* (L.) Don

(Fig. 4)

*Plagiochia cf. asplenioides* (L.) Don represented by several entire specimens imprinted in diatomitic rocks. Plants 5–7 cm long, with irregular ramifications, 2–2.4 mm wide, leaves displayed bilaterally, more or less imbricated, without a clear individual outline, the basal parts lacking leaves. The general plant habitus is highly similar to that of present-day *P. asplenioides*, but accounts for an aquatic environment. Collected at Chiuzbaia, collection number 700/1991.

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