

***TORTULA LINGULATA* IN ROMANIAN BRIOFLORA**

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Through original illustrations and careful description is presented the species *Tortula lingulata* Lindb., New in the Romanian bryoflora, compared to *T. obtusifolia* (Schwägr.) Mathieu, with which it is easily confused, but can be recognized by the size of the spores and especially by the apex and leaf border.

Keywords: not cited species, border, apex, mucron, subpercurrent, morpho-anatomy.

INTRODUCTION

Following detailed morpho-anatomical analyzes on a bryophytic sample not identified by the collector, from the BUCA herbarium, we present the new species for the Romanian Bryoflora, *Tortula lingulata* Lindb., confirmed as well by Dr. S. Ștefănuț. The species description and key are inserted separation from *Tortula obtusifolia* (Schwägr.) Mathieu, with which it is easily confused, accompanied by the original illustration.

MATERIALS AND METHODS

On the occasion of the former collaboration on the topic of Romania's Bryophlora, we consulted the bryophytic material from the Herbarium of the Institute of Biology [BUCA], where an unidentified sample, collected by a well-known advanced bryologist, drew our attention. The respective material, examined by us, comes from the Mureș Gorge, from Răstolița, Mureș County: [leg. R. Walfisch, October 1981), on sandstone rocks.

The difficulties encountered in identifying this sample required a detailed morpho-anatomical analysis which resulted in all possible illustrations (Fig. 1–3). If the subpercurrent place, as far as the vein (rib) and the type of leaf apex could be fixed by morphological examination (Fig. 2), the type of border required microscopic foliar sections which resulted in the total cellular structure of the leaf (Fig. 3).

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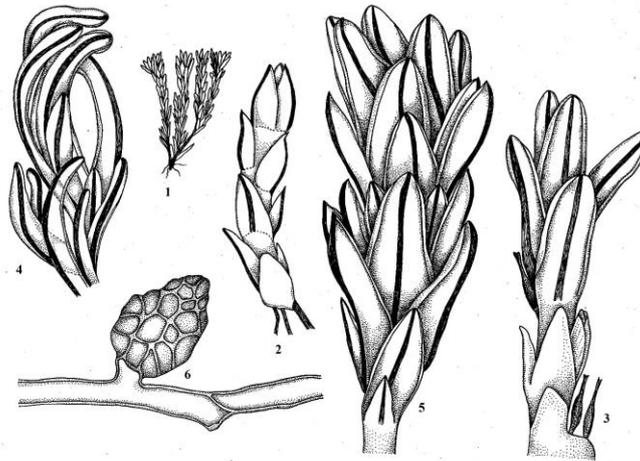


Figure 1. Gametophyte: 1– habit (5x), 2 – juvenile shoot, appeared laterally at the tip of the stem, 3 – new shoot (a–shoot primordium, b–antidia), 4 – unmanned shoot tip, 5 – segment old shoot, moistened, 6 – rhizoid with bulb (orig.).

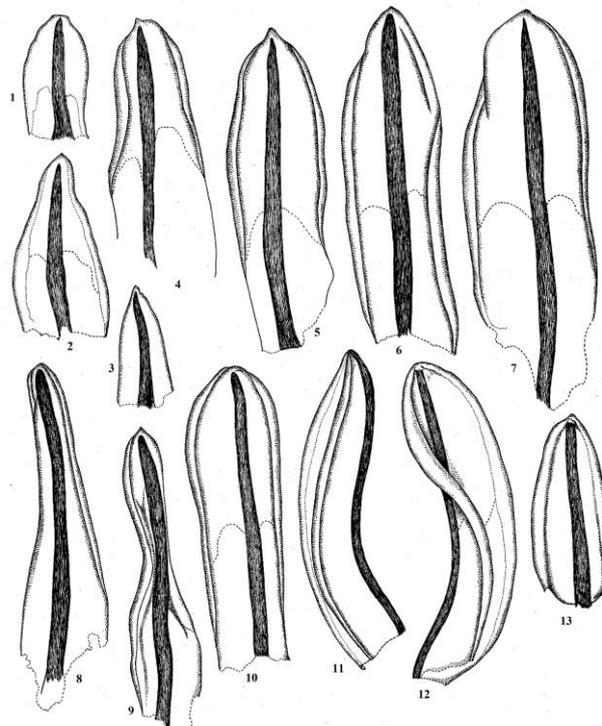


Figure 2. Leaves: 1–3 – leaves from the base of the shoots, 4–7 – leaves from the top of the shoots, 8–9 – old leaves from the base of the shoots, 10–12 – leaves external peritectic, 13 – leaf internal pericetial (orig.).

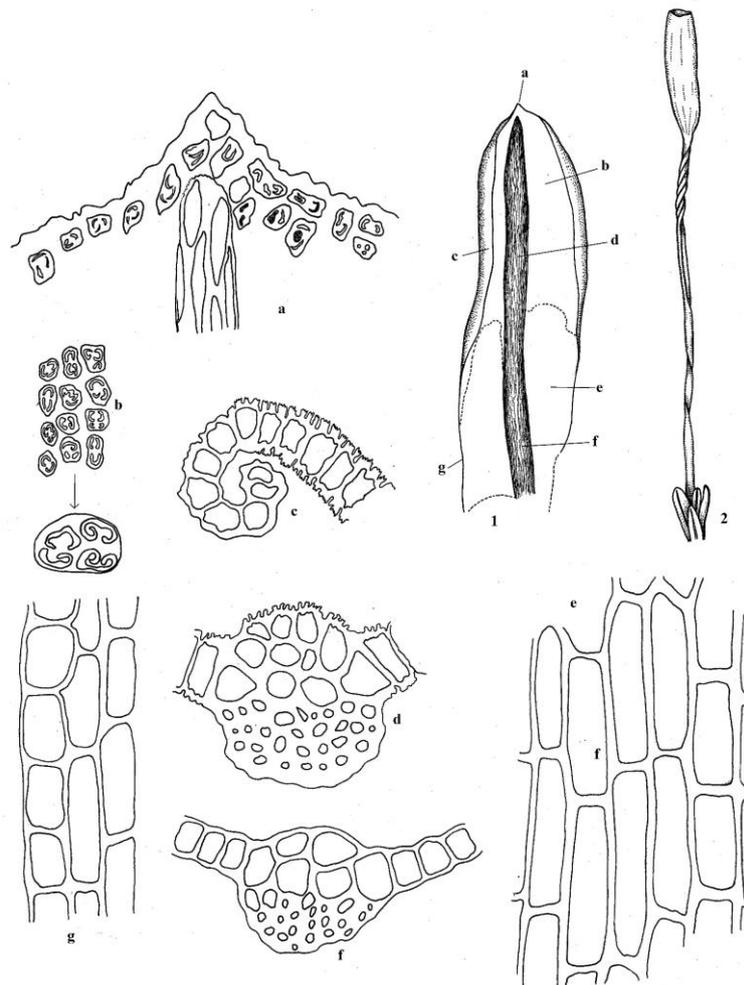


Figure 3. Leaf structure and sporophyte: 1 – leaf (a – leaf tip, b – upper cells, c – leaf edge in the middle, d – rib in the middle, e – lower cells, f – rib towards the base, g – leaf edge towards the base), 2 – sporophyte (orig.).

RESULTS

I have consulted a lot of literature, but either it didn't have that species, or it wasn't easy to separate *Tortula lingulata* Lind. of *Tortula obtusifolia* (Schwägr.) Mathieu. I finally came to the conclusion that the sample falls under *Tortula lingulata*. We present a short description of it, with the identification key according to the literature, and the detailed, original iconography, which favored the identification.

Tortula lingulata Lindb. 1880, Rev. Bryol. 7(3): 40

Syn.: *Barbula montenegrina* Breidl. & Szyszyl., *Desmatodon montenegrinus* (Breidl. & Szyszyl.) Paris, *Tortula montenegrina* (Breidl. & Szyszyl.) Broth.

Description. *Turf* short, 1–3 cm high, thick, pulvinate. A rhizoid carried a propagule. *Leaves* (filides) lingulate, rounded at the apex, cucullate, with the edges almost from the base to the tip strongly revolute. The thick rib (vein), slightly attenuated towards the base, usually ends below the apex of the leaf, i.e. subapical (subpercurrent rib), rarely comes out as a mucron. Obviously differentiated *areolation*. The basal cells are narrow-rectangular, smooth, yellowish-hyaline, with thicker transverse walls, the upper ones \pm polygonal or circular, opaque, strongly papillary, small, on the edge especially above are differentiated into several square rows, non- or weakly papillous, but with strongly thickened walls, the central ones irregular in shape, small and papillate.

Monoeiocus species. Brown pedicel, 5–7 mm, double twisted on drying, at the base twisted loosely clockwise (dextrors), and at the tip twisted tightly counterclockwise (senestrors). Cylindrical capsule, erect, 1.9 / 0.4 mm, irregularly dry and slightly furrowed, more visible at the base. The long-faced operculum. Differentiated ring. The teeth of the peristome sit on a low basement membrane and are slightly turned to the right (Melniciuk 1970).

We provide a key determination, according to the literature (Košnar, Kolář 2009), including the diagnosis of leaf margin:

1. *Spores* of (10-) 11–15 (-18.5) μm ; *Leaves* bordered by several rows of smooth cells which at least on some leaves reach the apex. Leaf apex with apiculate or mucron (rib excurrent) only 2–12 (30) μm , never forms a hyaline hair. *Peristome* long of (100-) 140–280 (-350) μm , slightly twisted filiform teeth, often irregularly developed.

Diploid, on basic sandstones – **Tortula lingulata**

1. *Spores* of (7.5-) 8.5–12 (13.5) μm . *Leaves* with border of different lengths, which usually do not touch the apex. Leaf apex variable, with short apex, mucron or hyaline hair. *Peristome* variable, 100–150 μm long, well developed or sometimes reduced or without filiform teeth.

Haploid or diploid, growing on different stony substrates – 2

2. *Peristome* usually reduced, sometimes without filiform teeth. Leaves with short mucron, non-hyaline, often spirally arranged, dry. Haploid, on basic rocks – **Tortula obtusifolia**

2. Well-developed *peristome* with spiral filiform teeth. Leaves with short excurrent rib at long, often hyaline at the top. Haploid or diploid, on basic rocks or artificial substrate - **Tortula muralis** – 3

3. Excurrent *rib* in short mucron – var. **aestiva**

3. Excurrent *rib* in long hair, hyaline – var. **muralis**

DISCUSSION

Tortula lingulata is morphologically similar to *Tortula obtusifolia*, but differs in smaller size, lack of mucron (rib) at the tip of the leaves, but the apex is present and, especially, in leaves obviously bordered with smooth cells and thick walls. The design of the leaf for *T. obtusifolia*, given in some works (Cortini Pedrotti 2001), corresponds perfectly with that of *T. lingulata*, but in the text it is clearly stated that the leaves are not bordered.

Tortula lingulata has not been cited so far in the Romanian bryoflora, only a recent information of this case, offered to foreign literature (Dihoru, Ștefănuț 2018), either it is a very rare species or it has been confused with *T. obtusifolia*, quite rarely cited and this, only from four choronyms (places) (Bacău County, Botoșani County, Cluj County).

CONCLUSIONS

The material presented by us not only adds a new species to the rare ones in the Bryoflora of Romania, but it is also a kind of invitation for further careful research of these two species, but unfortunately, the field of bryophyte research in our country has very few valuable specialists.

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