

***Dicranum transsylvanicum* (Musci, Dicranaceae), a new species from Romania**

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Abstract – *Dicranum transsylvanicum* Lüth is described and illustrated as a new species from the Apuseni Mountains in western Romania. The new species resembles *D. scoparium* Hedw. in habit and *D. crassifolium* Sérgio, Ochyra & Séneca in microscopic details, especially in its partially bistratose lamina cells in the upper half of the leaf, but differs in having a strongly spinose leaf lamina on the dorsal side, irregularly dentate leaf margins in the upper part and a triangular stem in transverse section.

Bryophyta / Musci / Dicranaceae/ *Dicranum*/ Romania/ Apuseni / taxonomy

INTRODUCTION

In summer 2000 I accompanied Prof. Dr. Albert Reif, University of Freiburg, to Ghetar in the Apuseni Mountains in West Romania, to prepare a project for a nature reserve and agricultural development.

It is a mountainous region with an average altitude of 800-1000 m with higher peaks of 1500-1800 m. The area surrounding the 1000 m high village of Ghetar was settled 100 years ago. Prior to settlement, a few people lived in the valleys but the higher areas were reserved for the bears, lynxes and wolves. Today there are small villages in clearings with a little agriculture and many lumberjacks. The most important tools in the area are the horse and the power saw, but more recently, a very few people have acquired a tractor or car: the region is starting slowly to connect with modern times. The project from the University of Freiburg is to study the vegetation, agriculture and social life with the objective of allowing change to continue without destroying the natural environment and social structures.

During those studies, we took a relevé in a forest with beech, fir and spruce on a rocky steep slope. In this relevé I found a puzzling *Dicranum* on spruce needle litter between limestone boulders, that could have been either *D. scoparium* Hedw. or *D. polysetum* Sw., as it had characteristics of both. A sample was taken for examination.

The first look down the microscope brought a big surprise: the lamina was partly bistratose, the costa had up to 6 lamellae and there were teeth on the lam-

ina. In some parts it reminded me of the newly described *Dicranum crassifolium* Sérgio, Ochyra & Séneca (1995) from Portugal, but when I compared it with that plant I was certain that it was not the same. I sent part of the specimen to Michael Sauer, Germany, who worked with *Dicranum* for the handbook 'Die Moose Baden-Württembergs' (Sauer, 2000) and had examined a lot of material from Central Europe, to Thor-Björn Engelmark, Sweden, who knows *Dicranum* from all over Europe and to Ryszard Ochyra, Poland, who has examined *Dicranum* from several places of the world and who contributed to the description of *D. crassifolium*. The result of this inquiry to the experts was that this was an unknown *Dicranum*, an undescribed new species.

DESCRIPTION

Dicranum transsylvanicum Lüth sp. nov. (Figs. 1-2)

Diagnosis – *Species haec D. scopario similis sed recedit foliis erecto-patentibus vel patentibus, torsivis et aliquando parce undulatis, marginibus in parte superiore irregulariter hamato-dentatis, laminis distali bistratosi dorso fortiter spinosis, caule in sectione transversali triangulari et ducto centrali distinctissimo praedito et costis dorso sulcatis, lamellis 4-6-seriatis instructis.*

Type – ROMANIA, Transsylvania, Apuseni Mountains, District Scarisoara, Ghetar. Mt. Bocului, alt. ca 1150 m, rocky east-facing slope in forest dominated by beech (*Fagus sylvatica*), spruce (*Picea abies*) and fir (*Abies alba*); on spruce needle litter between limestone boulders, Rel. No. 940, 31 August 2000, Lüth 3154 (Holotype: STU; isotype: KRAM).

Description – **Plants**, large and fairly robust, in rather loose, green to brownish-green tufts. **Stems** erect, 4-6(-7) cm high, dark brown, glossy, mostly simple, sometimes sparingly branched, usually densely matted with a tomentum of branched, smooth rhizoids, whitish above, brownish below, in cross-section usually triangular with concave sides, epidermis with 1-3 layers of small, strongly thick-walled and reddish-brown cells, cortical cells in 3-5 layers, wider, rather thin-walled with small corner thickenings, orange, central strand present, distinct, medium-sized. **Leaves** equally spaced along the stem, usually more crowded at the apex, straight or rarely falcate-secund, sometimes spirally twisted and weakly undulate, mostly erecto-patent to spreading, ovate-lanceolate, gradually long acuminate, concave throughout, 1,3-1,6 mm wide, 6-9 mm long. **Margins** plane, entire below, strongly toothed above, with irregular, long and spinulose teeth composed of 1-6 cells. **Costa** single, concolorous or sometimes somewhat brownish, 100-160 µm wide at base, gradually tapering upwards, ending near the apex, in the upper part winged with 4-6 prominent dorsal lamellae of up to 5 cells, up to 30(-50) µm high, strongly toothed with irregularly spinulose, often characteristically hook-shaped teeth, in cross-section with a single row of large guide cells and two stereid bands, at the back often with one row of larger epidermal cells, mainly in the lower smooth part of leaf. **Laminal cells** unistratose below, irregularly bistratose above with numerous 1-2 cell high teeth on the dorsal side of lamina in upper half, elongate and porous throughout, oblong and strongly porose in the lower part, 50-150 µm

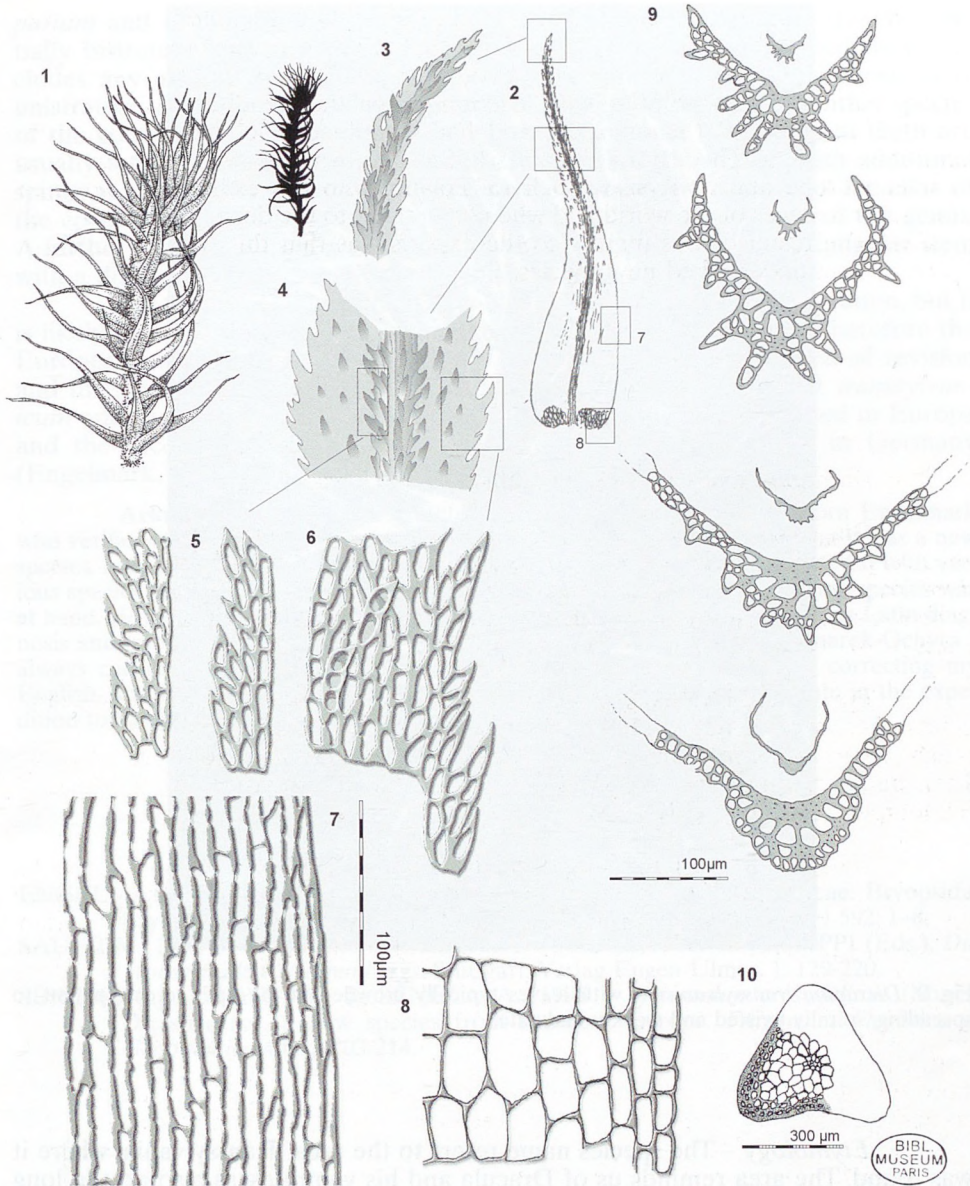


Fig. 1. *Dicranum transsylvanicum* Lüth. 1: Habit. 2: Leaf. 3: Leaf apex. 4: Upper part of leaf. 5: Lamellae from upper part of leaf. 6: Teeth on lamina and margin from upper part of leaf. 7: Lamina with margin from lower 1/3 of leaf. 8: Angular cells. 9: Sequence of leaf cross-sections. 10: Stem cross-section.

long, 8-12 µm wide, becoming shorter and less porose in upper part, 20-40(-50) µm long, 8-12 µm wide. Alar cells inflated, brown, bistratose, shortly rectangular to oval, 50-80 µm long, 30-40 µm wide, lacking pores, thin walled. **Sporophytes** unknown.



Fig. 2. *Dicranum transsylvanicum* with leaves typically crowded at the apex, erecto-patent to spreading, spirally twisted and weakly undulate.

Etymology – The species name refers to the area, Transylvania, where it was found. The area reminds us of Dracula and his vampires, as also do the long teeth of the lamina and the lamellae of this species.

DISCUSSION

Dicranum transsylvanicum is a very distinct and unmistakable species. Its habit is somewhat intermediate between *D. scoparium* and *D. polysetum* and in its microscopic characters it is similar to *D. crassifolium*. It shares with both *D. sco-*

parium and *D. crassifolium* the lamellose costa and with the latter also the partially bistratose leaf laminae in the upper half. This character immediately precludes any alliance with *D. scoparium* in which the leaf lamina is consistently unistratose. *D. transsylvanicum* differs from *D. crassifolium* and from other species of the genus in its strongly spinose-dentate leaf margin. The marginal teeth are usually long, composed of up to six cells, hook-shaped and often with additional spines at margins. Moreover, the dorsal side of the lamina and dorsal lamellae of the costa are spinose, a feature unknown in any European species of the genus. A further difference from *D. crassifolium* and *D. scoparium* is the triangular stem with a distinct central strand clearly visible in cross-section.

Up to now, *D. transsylvanicum* is only known from a single station, but it is likely that additional specimens may exist misnamed in herbaria. Therefore the European material of the *D. scoparium* complex is urgently in need of revision and this may result in discovery of additional specimens of both *D. transsylvanicum* and *D. crassifolium*. It seems that the genus is underinvestigated in Europe and the recent discovery of another new species, *D. dispersum*, in Germany (Engelmark, 1999) is the best confirmation of this statement.

Acknowledgments. I am grateful to Michael Sauer and Thor-Björn Engelmark who verified my examination of the specimen and supported my opinion that it was a new species. I am also much indebted to Ryszard Ochyra, who compared my material with various species of *Dicranum* from outside Europe and made me sure that a new species was at hand. He also encouraged me to complete this paper and helped me with the Latin diagnosis and improvements in the text. The excellent drawings of Halina Bednarek-Ochyra I always consider as an inspiring paragon. I thank also Brian O'Shea for correcting my English. Special thanks are due to Albert Reif, who invited me to participate in the expedition to Romania.

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