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Studies on the cryptogamic vegetation of loess cliffs, VIII. *Dicranella howei* Ren. & Card., a new addition to the Hungarian bryoflora

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Introduction

When collecting mosses in a churchyard in Mecseknádasd (southern Hungary, ca. 30 km NE of Pécs) I found a moss that I tentatively referred to *Dicranella varia* in the field. Microscopic examination, however, revealed that it was not that species but a closely related but distinct one, viz. *Dicranella howei*, a species not recorded before from Hungary. Because I was not aware of this species when I identified the *Dicranella*-specimens collected during the fieldwork with T. Pócs and co-workers from 1996-2000 on the cryptogamic vegetation of loess cliffs in the Pannonian Basin (Pócs 1999) I re-examined all specimens which were identified as *D. varia*. Out of 22 re-examined specimens I found two, both from north-western Hungary (Komárom county), which have to be referred to *D. howei*.

Dicranella varia (Hedw.) Schimp. (syn. *Anisothecium varium* (Hedw.) Mitt.; *Dicranella rubra* (Lindb.) Moenk.) is an holarctic species which is common in Europe from northern Scandinavia and Iceland to the northern edge of the Mediterranean region. It is also recorded from Macaronesia, North Africa, temperate Asia (Siberia, Himalaya, China) and North- and Central America. It is mainly a lowland plant, but reaches in the Alps an altitude of ca. 2500 m (Grims 1999). In the Mediterranean area *D. varia* is restricted to the mountains. In the lowlands and lower mountains of that region it is replaced by *D. howei* Ren. & Card. *D. varia* grows on a wide range of neutral and basic soils, such as humid sand, clay, loam and loess, often in disturbed areas along roads and stream-banks or in quarries. In Hungary the species is common in various habitats, such as the shaded bases of loess cliffs and hollow roads (Boros 1968, as *D. rubra*).

D. howei is a common plant in the lowland and lower mountain belt of the Mediterranean region. It occurs also in Macaronesia, western France, Iran and California (Crundwell & Nyholm 1977). In Germany the species reaches its northern boundary in North Rhine-Westfalia and Saxony-Anhalt (Sauer 2000). The species has not been recorded from Austria (Grims 1999). It grows in similar habitats as *D. varia*.

I wish to thank S.J. Pistor (Ribeira de Porches, Portugal) for drawing my attention to *Dicranella howei*.

Distinctions between *Dicranella varia* and *D. howei* (Fig. 1)

Both species look very similar and are difficult to recognize in the field. Microscopically, however, they are clearly distinct as shown by Crundwell & Nyholm (1977). In *D. howei* the nerve of the leaves is very broad (80-100 µm) and occupies about one third of the width of the leaf base and is ill-defined. The lamina has several two-layered longitudinal strips at each side of the nerve. Moreover the leaf margin of *D. howei* is plane or sometimes very slightly recurved in the lower part of the leaf and than usually only on one side. In *D. varia* the leaf margin is narrowly recurved on both sides to near the apex. The nerve is narrower (50-80 µm), well-defined and occupies ca. one-fifth of the width of the leaf base. The lamina is completely one-layered. The sporophytes of the two species are very similar, but there is a distinction in the thickenings of the walls of the exothecial cells. These cells are in *D. howei* firm-walled and the longitudinal walls are not or scarcely thicker than the transverse walls. In *D. varia* the exothecial cells have strongly thickened longitudinal walls whereas the transverse walls are not or scarcely thickened.

I did not see the sporophytes of *D. howei* of Hungarian specimens. The above mentioned characteristics are taken from a Portuguese specimen from the Algarve, Ribeira de Porches, leg. S. J. Pistor s.n., 13-02-2003 (herb. B.O. van Zanten).

Collecting details of Hungarian specimens of *Dicranella howei*

Hungary, Komárom County, Gerecse Mts., E of Neszmély village, loess cliff on the W edge of Pap Hill with rich steppe on the hilltop (47°43' N, 18° 21.5' E), 200 m alt. at shaded base of exposed cliff, leg. T. Pócs, B.O. van Zanten, G. Kis & A. Szabó, 5-11-1996, No. 96.111/R (herb. EGR & B.O. van Zanten).

Hungary, Komárom County, Gerecse Mts., Vöröskő (or Kőpíte) Hill S. of Dunaalmás village, loess layer

on top of huge limestone (travertine) cliff (47°43' N', 18° 20' E), 250 m alt. at exposed base of loess cliff, faced to ENE, leg. T. Pócs, B.O. van Zanten, G. Kis & A. Szabó, 6-11-1996, No. 96.155/P (herb. EGR & B.O. van Zanten).

Hungary, Mecseknádasd, Szent István churchyard, ca. 30 km NE of Pécs, ca. 300 m alt., on sandy clay among graves with *Aloina aloides* var. *ambigua* and *Pseudocrossidium hornschuchianum*, leg. B.O. van Zanten, 18-10-2002, No. 02.10.74A (herb. EGR & B.O. van Zanten).

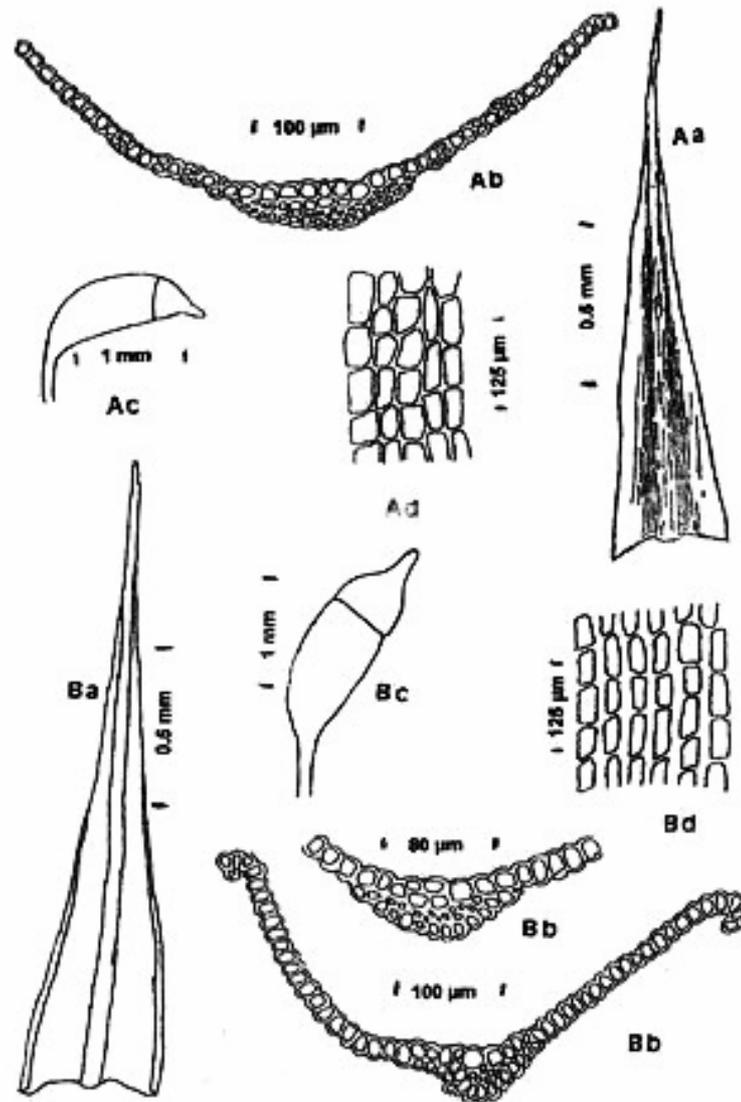


Fig. 1. A: *Dicranella howei* Ren. & Card. Aa – leaf; Ab – cross section of midleaf; Ac – capsule; Ad – exothecial cells. B: *Dicranella varia* (Hedw.) Schimp. Ba – leaf; Bb – cross sections of midleaf; Bc – capsule; Bd – exothecial cells.

D. howei drawn from Van Zanten 02.10.74A (Aa & Ab) and Pistor s.n. 13-02-2003 (Ac & Ad). *D. varia* from Van Zanten 82.11.04 (Netherlands, Prov. of Groningen, Haren, Hortus Botanicus, 3-11-1982 (herb. Van Zanten).

Discussion

Because two of the Hungarian specimens come from the north-central part of the country and one from the southern part it can be expected that the species will be found in more lowland regions of the country. It is not clear if the species extended its range from the Mediterranean region northwards in recent times as a response to the global warming or that it was not recognized and overlooked before because of the similarity with *D. varia* and the absence of the species in most older moss floras (like in Booros 1968, Orbán & Vajda 1986). In this view it would be interesting to check all older specimens of *D. varia* in Hungarian herbaria. An example of a Hungarian species which very likely extended its range as response to global warming is *Chenia leptophylla* (C. Muell.) Zander. This warmth-loving species was found for the first time in Hungary in 1998 (Balaton Highlands, Veszprém county, Mt. Szentgyörgyhegy, 350 m) in a formerly well-investigated region. Therefore it is very likely that the species extended its range in recent times (Zanten 2000). The same opinion was expressed by Pócs (2005) concerning several other thermophilous loess species in Hungary, which could not be traced among herbarium material collected prior to 1940.

In this respect it is interesting that in Baden-Württemberg the first finds of *D. howei* date from the 1990th and that it is now reported from several localities. It has its centre in the warm winegrowing regions, mainly between 120 and 300 m alt. It is not clear whether the species existed there already previously and was not recognized or overlooked or that it has extended its range northwards because of global warming (Sauer 2000).

Abstract

Dicranella howei is recorded for the first time from Hungary. It was found in three localities, one in Prov. Baranya, Mecseknádasd (southern Hungary) and two in Komárom County, Gerecse Mts. (north-central Hungary). It is not clear whether this warmth-loving species was overlooked before or that it expands its range northwards because of global warming.

Összefoglalás

Dicranella howei Ren. & Card. a magyarországi mozaflóra új tagja
ZANTEN, B. O. VAN

A mediterrán elterjedésű *Dicranella howei* Ren. et Card. lombosmohát, mint Magyarország mozaflórájára újat, mutatja ki a Szerző a mecseknádasdi temetőben, homokos agyagtalajról.

Megvizsgálva a Pannon Medence löszfalainak kutatása (lásd Pócs 1999) során begyűjtött anyagot, még két helyről azonosítja a Gerecséből, Neszmély és Dunaalmás közeléből, löszfalakról. Felveti a kérdést, hogy egy ilyen melegkedvelő, eumediterrán faj előfordulása vajon csak a *Dicranella varia*-hoz való hasonlósága miatt kerülte el a korábbi kutatók figyelmét, vagy pedig a globális felmelegedés során areájának észak felé való kitolódásáról van szó. A két faj megkülönböztetéséhez jó bélyegeket és ábrát ad.

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