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_Lomelosia solymica (Dipsacaceae)_ , a new chasmophyte from the Western Taurus Mts, Turkey

Abstract

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_Lomelosia solymica_, a plant of montane, sea facing cliffs of the Tahtalı Dağı in the Western Taurus Mts south of Antalya is described as a species new to science and illustrated. Its isolated taxonomic position within the genus and its peculiarities, such as the awnless calyx, are discussed. We interpret the latter character within the chasmophytic syndrome and develop the hypothesis that it facilitates dispersal by ants into narrow rock fissures.

In summer 2004, the pharmacist Robert Ulrich, Tübingen, Germany, forwarded two specimens of a low, cushion-forming chasmophyte collected in upper montane elevations of Tahtalı Dağı to the senior author with the request for identification. Scrappy, partly sterile, partly still in bud as they were, their identity could only be narrowed down to, most likely, a few genera of _Dipsacaceae_, and they could have been named only if encountered in the field before. Since this was not the case, a digital image of a specimen was sent to Özkan Eren, who studied, among others, the flora and vegetation of Tahtalı Dağı within the frame of his PhD at Akdeniz University, Antalya. He, too, never came across such a plant, but offered to re-collect it. Investing this labour appeared promising, because no matching or similar species are included in Flora of Turkey (Davis 1972). This was surprising, since Tahtalı Dağı, the ancient Solyma, which is known for its local endemics (Davis 1958, 1971, Parolly & Nordt 2001), is a very well explored mountain range (see e.g., the collections cited in Flora of Turkey). The second author succeeded in gathering the unknown, now flowering species close to Ulrich’s locality at an altitude of about 1600 m in August 2004. His collection confirmed that we were dealing with an undescribed, scabiosoid _Dipsacaceae_, set apart from all others by the absence of calyx setae as well as the pygmy and compact chasmophytic habit (Fig. 1-2). The last step, again, was done by Robert Ulrich, who later in the year collected ripe fruits and added two (satellite) localities on the occasion of two field trips (in September and October), now making a full treatment possible. We describe the novelty here within the genus _Lomelosia_ Raf. (= _Scabiosa_ sect. _Trochocephalus_ Mert. & Koch).
Lomelosia solymica Parolly, Ö. Eren & Nordt, sp. nov.

Holotype: Turkey, C3 Antalya, Tahtalı Dağı, SW Kemer, ascent from Beycık, 36°31' 55.6"N, 30°26'14.2"E, 1630 m, vertical limestone cliffs, 6.8.2004, Eren 387/04 & Taylan (Adnan Menderes University Herbarium, Aydın; isotypes: B, E, GAZI, HUB, herb. Parolly).

Species insignis, ab omnibus Lomelosiis habitu compacto pulvinato et statura minima, foliis glaberrimis hyalino-marginatis, tantum 8 bracteis involucratis, corona regulari et calycibus non setosis differt.

Compact, pulvinate chamaephyte, forming flat cushions to 40 cm in diam. and 3-5 cm height, with numerous flowering and sterile rosettes. Rootstock branched, fairly stout, 0.5-1 cm in diam., densely clothed by the imbricately arranged petiolar remains of the previous years’ leaves. Stems short, including the peduncle (10-)15-35(-45) mm long, 1-1.5 mm in diam. at the base, ascending to erect, simple, somewhat flattened and indistinctly 2-winged at the base, very densely white-pubescent with short (c. 0.1 mm) retrorse hairs (sometimes in addition with c. 0.02-0.05 mm long hairs). Leaves vividly green, (sub)coriaceous, most of them in the basal rosette, entire, with a distinct, occasionally somewhat undulate, 0.1-0.2 mm wide hyaline margin, mostly glabrous, exceptionally with scattered marginal setae, midvein whitish (green), very prominent especially on the lower surface; leaf bases flattened and expanded to form paler leaf sheaths, c. 2-4 mm long. Rosette leaves (10-)15-35(-40) × 2-6 mm, narrowly obovate to spathulate or oblanceolate, tapering into a narrow base, apex mostly acute, less often mucronulate to obtuse. Stem leaves similar, but smaller in size than rosette leaves, very few, often reduced to bracts. Peduncle 1-2 cm long, c. 0.7 mm in diam., leafless. Capitula solitary, in flower flattened-hemispherical, radiant, (15-)20-25(-30) mm in diam., in fruit globose, 12-17 mm in diam. Involucral bracts 8, in two series, distinctly (3-)5-7-veined outside, variable in shape and density of the indumentum, outer surface thinly to densely pubescent, inner surface often glabrous; outermost bracts green, mainly with paler centres and purplish margins, ovate to ovate-lanceolate, often gibbous in the middle, 4-6 × 2-3 mm, apex apiculate to obtuse; innermost bracts similar but smaller in size, gradually merging into the receptacular bracts. Receptacular bracts white, with purplish or green tips, scale-like, keeled, oblanceolate to narrowly ovate, 3-5 × 1.2-2 mm, herbaceous with a hyaline membranous margin clearly dilated towards the base or only with herbaceous tip and vein, apex ± rounded, hairs as in involucral bracts but thinner. Florets 14-20, pale mauve, lilac to pinkish, the outer strongly radiant, 11-13 mm long. Corolla with a narrowly infundibuliform, white-lanate tube, c. 4.5-7 mm
long and with (4-)5 very unequal lobes, outside loosely lanate-pubescent, inside with scattered stalked glands; lobes of the 3 lower segments elliptic, obovate to narrowly ovate, 4.5-5.5 × 3-4 mm, the 2 upper broadly obovate, 2-2.5 × 2-2.5 mm. Stamens 4(-5), long exerted; filaments whitish to rarely pale purplish in upper part, 6-12 mm long, flattened, winged; anthers pale pinkish
mauve, (narrowly) elliptic, c. 1.8-2 × 0.5-0.7 mm, finely but distinctly papillose. Style purple, 10-13 mm long, glabrous; stigma capitate. Involucel with a conspicuous, membranous, cup-shaped, symmetrical corona, 4 mm long and 5-7 mm in diam; corona veins 17-25, pale brown to purple, not or shortly excurrent; involucel tube broadly cylindrical, c. 3-4 × 2 mm, with 8 deep, elongate, whitish pits, each c. 1.3 mm long, densely pilose with white, spreading hairs, 2-3 mm long. Calyx shorter than corona, c. 2 mm long and 2 mm in diam., connate at the base, forming an irregularly 5-lobed green disc covered inside by scattered glandular hairs; calyx setae absent.

Etymology. – The epithet is derived from Solyma, the ancient name of Tahtalı Dağı, or, as pars pro toto, of the whole Beydağlar (Davis 1958), the massif to which Tahtalı Dağı belongs.

Distribution. – The present records of Lomelosia solymica are confined to Tahtalı Dağı and are from three different cliffs within the reach of a few kilometres at altitudes between 1350 and 1650 m.


Phenology. – Lomelosia solymica is a late-flowering species whose anthesis starts in late July and which has plentiful flowering cushions still in mid October; fruit-set begins in September. The last fruits were collected in early December. The cushions grow luxuriantly in early summer, while still in bud, and also produce the longest leaves at that time. Later in the year, general appearance is less lush, with an increasing number of decaying and withering basal leaves.

Synecology. – Lomelosia solymica grows in sun-drenched, vertical cliffs (Fig. 2) composed of hard, compact Mesozoic limestone of the Tahtalıdağ nappe ( Şenel 1997a-b) in montane elevations. Some of the cliffs are enormously towering rock walls rising 200-400 m from extensive scree fans in the middle of the mountain forest belt. Being at the right place, L. solymica is a fairly abundant appearance, forming large cushions covering both rock edges and fissures of the vertical rock and step crevices. Occurrences at the feet of the rocks were also observed.

If not developing pure stands, it mainly grows together with two local paleoendemics, Asyneuma pulvinatum P. H. Davis and Globularia davisiana O. Schwarz, in “noble isolation” from the more common rock plants (Ulrich, pers. comm., 22.10.2004). More rarely it is found as-
associated with *Hirtellina lobelii* (DC.) Dittrich, *Asyneuma lycium* (Boiss.) Bornm. (endemic of the E Beydağlar), *Salvia caespitosa* Benth. (in the Tahtalı and Teke Dağı encroaching to rock fissure communities, whereas everywhere else in the Taurus inhabiting dwarf-shrub and thorn-cushion communities; see also Quézel 1973) and, on only a single rock base, with *Origanum* cf. *solymicum* P. H. Davis. *L. solymica* forms the core of a yet unnamed, steno-endemic cliff community of the *Silenion odontopetalae* Quézel 1973 alliance (limestone rock fissure communities of the Western Taurus, see Eren & al. 2004, Quézel 1973 and especially Hein & al. 1998; see Table 1).

**Recommended IUCN threat category.** – Although being extremely localised, any direct threat of *Lomelosia solymica* can be excluded for the moment due to its abundance in high, inaccessible rock walls. Monitoring the stands, however, seems appropriate in the view of a widely developed plan to establish a ski circus, including a cabin ski elevator, on the summit of this unique mountain. The construction activities could well damage the few sites. We thus suggest to classify our species as “Vulnerable” (VU) according to criterion D2 of the IUCN threat categories (IUCN 2001).

**Relationship.** – Verlaque’s important studies on *Dipsaceae* (1984a-b, 1985a-b, 1986a-b) paved the way for Devesa (1984) and Greuter & Burdet (1985) to draw taxonomic conclusions by splitting the polyphyletic *Scabiosa* s.l. into more natural genera corresponding to the sections of *Scabiosa* as circumscribed by Verlaque (1986a-b). The main carpological characters (e.g., elongated horizontal epidiaphragma, a deeply foveolate epicalyx, second sclerenchyma ring, see Fig. 3) place our plant clearly into *Lomelosia*, those generic status was more recently supported by Caputo & Cozzolino (1994), Caputo & al. (2004) and Mayer & Ehrendorfer (1999, 2000). Within *Lomelosia* and L. sect. *Lomelosia* incl. *Tremastelma* Raf. and *Scabiosiopsis* Rech. fil., see Mayer & Ehrendorfer 1999), one is tempted to relate *L. solymica* to a group of fruticose, suffruticose to suffrutescent chamaephytes of the *L. cretica* agg. as first circumscribed and mapped by Davis (1953) and Greuter (1967). The West to Central Mediterranean *L. cretica* (L.) Greuter & Burdet s.str. excepted, it includes a complex of vicariads (*L. albocincta* (Greuter) Greuter, *L. hymettia* (Boiss. & Brunner) Greuter & Burdet, *L. minoana* (P. H. Davis) Greuter & Burdet, *L. variifolia* (Boiss.) Greuter & Burdet) spread along the Aegean Arc (Greuter & al. 1986). The *L. cretica* group shares, with a few exceptions, with our plant the entire leaves, a chamaephytic habit and the preference for rocky sites. Moreover, the members of this group have diminutive calyces,

| Table 1. *Lomelosia solymica* community. Phytosociological relevés with *L. solymica* at the type locality [Turkey, C3 Antalya, Tahtalı D.], 6.8.2004. |
|-----------------|---|---|---|
| Relevé [no.]    | 1 | 2 | 3 |
| Altitude [m]    | 1625 | 1625 | 1625 |
| Exposure        | SW | SW | S |
| Inclination [°]  | 80 | 85 | 85 |
| Cover of herb layer [%] | 25 | 25 | 30 |
| Square size [m²] | 3 | 2 | 2 |
| Character species of the community | | | |
| *Lomelosia solymica* | 1 | 1 | 1 |
| *Asyneuma pulvinatum* P. H. Davis | 1 | 1 | 1 |
| *Globularia davisiiana* O. Schwarz | 1 | + | . |
| Character species of the *Silenetalia odontopetalae* and *Asplenietea trichomanis* | | | |
| *Hirtellina lobelii* (DC.) Dittrich | 1 | 1 | 1 |
| *Silene leptoclada* Boiss. | 1 | 1 | . |
| *Galium serotinum* Boiss. & Heldr. | 1 | 1 | . |
| *Inula heterolepis* Boiss. | 1 | + | . |
| *Asyneuma lycium* (Boiss.) Bornm. | + | + | . |
| *Arabis deflexa* Boiss. | + | . | . |
| * Arenaria deflexa* Decne. | + | . | . |
Table 2. Differential characters of *Lomelosia solymica* and related species. – Measurements and features taken from the literature (Bornmüller 1908, Davis 1953, Greuter 1967, Huber-Morath 1963, Jahn & Schönfelder 1995, Matthews in Davis 1972, Meikle 1985, Tan & Iatroú 2001) and specimens kept at B; unique characters discriminating one species are in bold face.

<table>
<thead>
<tr>
<th>Character</th>
<th><em>L. solymica</em></th>
<th><em>L. hololeuca</em></th>
<th><em>L. paucidentata</em></th>
<th><em>L. cyprica</em></th>
<th><em>L. hymettia</em></th>
<th><em>L. albocincta</em></th>
<th><em>L. minoana</em></th>
<th><em>L. varifolia</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Habit</td>
<td>pulvinate</td>
<td>suffrutescent, caespitose</td>
<td>suffrutescent, caespitose</td>
<td>fruticose</td>
<td>suffrutescent, caespitose</td>
<td>fruticose</td>
<td>fruticose</td>
<td>fruticose</td>
</tr>
<tr>
<td>Height [cm]</td>
<td>3-5</td>
<td>5-20</td>
<td>7-13</td>
<td>30-100</td>
<td>10-47</td>
<td>20-50</td>
<td>10-30</td>
<td>10-100</td>
</tr>
<tr>
<td>Leaf size [mm]</td>
<td>10-40 × 2-6</td>
<td>20-40 × 2-3</td>
<td>5-20 × 3-6</td>
<td>30-30 × 3-15</td>
<td>10-72 × 3-14</td>
<td>30-60 × 8-20</td>
<td>20-65 × 5-16,5</td>
<td>25-70 × 7-45</td>
</tr>
<tr>
<td>Leaf shape</td>
<td>oblong, acute; flat</td>
<td>ovate, subacute</td>
<td>ovate, obtuse; obtuse; flat</td>
<td>plicate</td>
<td>oblong to linear-lanceolate; flat</td>
<td>elliptic; flat</td>
<td>elliptic; flat</td>
<td>elliptic; flat</td>
</tr>
<tr>
<td>Leaf margin</td>
<td>entire, hyaline</td>
<td>entire</td>
<td>entire to serrate apex, or with 1-2 lobes</td>
<td>midvein prominent</td>
<td>entire to 3-flid to bipinnatifid</td>
<td>entire</td>
<td>entire or dentate near apex</td>
<td>reticulate</td>
</tr>
<tr>
<td>Leaf venation</td>
<td>parallel, midvein very prominent</td>
<td>?</td>
<td>?</td>
<td>0-1-2</td>
<td>0-1-3</td>
<td>3-5-7</td>
<td>(5-)</td>
<td>3-7</td>
</tr>
<tr>
<td>Lateral leaf veins</td>
<td>indistinct</td>
<td>?</td>
<td>?</td>
<td>0-1-2</td>
<td>0-1-3</td>
<td>3-5-7</td>
<td>(5-)</td>
<td>3-7</td>
</tr>
<tr>
<td>Leaf indumentum</td>
<td>glabrous</td>
<td>cano-sericose</td>
<td>spreading-pilose</td>
<td>densely silvery-sericose</td>
<td>densely silvery-sericose</td>
<td>pilose to glabrescent, denser on margin</td>
<td>densely sericose</td>
<td>glabrescent</td>
</tr>
<tr>
<td>Peduncle [cm]</td>
<td>1-2</td>
<td>0.5-2.5</td>
<td>5-30</td>
<td>(1.6-7-35)</td>
<td>(8-20-40)</td>
<td>6-15(20)</td>
<td>(1.5-2-8-11)</td>
<td></td>
</tr>
<tr>
<td>involucral bracts</td>
<td>8</td>
<td>10-14</td>
<td>9-16</td>
<td>12-18</td>
<td>(9-12-21)</td>
<td>(9-12-16)</td>
<td>9-16(19)</td>
<td></td>
</tr>
<tr>
<td>Floret colour</td>
<td>pale mauve, lilac</td>
<td>4-3</td>
<td>4-3</td>
<td>4-3</td>
<td>4.5 × 2</td>
<td>5 × 2.5</td>
<td>6-8 × 2.5-3</td>
<td></td>
</tr>
<tr>
<td>Involucel tube [mm]</td>
<td>3-4 × 2</td>
<td>?</td>
<td>5-2 × 3</td>
<td>5-2 × 3</td>
<td>4.5 × 2</td>
<td>5 × 2.5</td>
<td>6-8 × 2.5-3</td>
<td></td>
</tr>
<tr>
<td>Involucel indumentum</td>
<td>densely pilose</td>
<td>pilose</td>
<td>densely white-sericose</td>
<td>densely white-hirsute at base</td>
<td>densely pilose to white-hirsute</td>
<td>densely pilose to white-hirsute</td>
<td>densely pilose to white-hirsute</td>
<td></td>
</tr>
<tr>
<td>Corona shape</td>
<td>symmetrical</td>
<td>symmetrical</td>
<td>symmetrical</td>
<td>Symmetrical, margin plicate</td>
<td>asymmetrical</td>
<td>asymmetrical</td>
<td>asymmetrical</td>
<td></td>
</tr>
<tr>
<td>Corona diam. [mm]</td>
<td>5-7</td>
<td>?</td>
<td>(5-6-7)</td>
<td>9-10</td>
<td>8-11</td>
<td>10-12</td>
<td>10-12</td>
<td></td>
</tr>
<tr>
<td>Corona veins</td>
<td>17-25</td>
<td>26-30</td>
<td>28-33</td>
<td>25-28(38?)</td>
<td>21-30(34)</td>
<td>26-33</td>
<td>27-38</td>
<td></td>
</tr>
<tr>
<td>Calyx setae [mm]</td>
<td>absent, slightly exceeding corona</td>
<td>6-7, widely exceeding corona</td>
<td>included in corona</td>
<td>4-6, included in corona</td>
<td>5-6, widely exceeding corona</td>
<td>6-7, included in corona</td>
<td>4-5, included in corona</td>
<td></td>
</tr>
</tbody>
</table>
whose bristles are entirely included in the corona (being much shorter than the latter). Phyto-
gography seems to provide another argument: the Tahtalı Dağı area, as, is, as all of the Western
Taurus, the extension of the Aegean Arc into mainland Anatolia. However, the whole L. cretica
group is characterised by a probably synapomorphic asymmetric epicalyx corona (Table 2).

For further comparison (Table 2) one could add a few species that may perhaps be the closest
relatives, namely L. paucidentata (Hub.-Mor.) Greuter & Burdet, localised around Finike, thus
very close to Tahtalı Dağı, and especially L. hololeuca (Bornm.) Greuter & Burdet, recorded
from the “Phrygian”, western part of Inner Anatolia (Huber-Morath 1963, Matthews in Davis
1972), and the Cypriot endemic L. cyprica (Post) Greuter & Burdet (Meikle 1985). However, the
Anatolian plants are imperfectly known. Because of their entirely different habit and phyto-
gography we have not extended our search for potential allies to species of the L. caucasia (M.
Bieb.) Greuter & Burdet group, with entire leaves and short calyx bristles.

It is evident that Lomelosia solymica stands apart from all others species by a combination of
highly discriminating features: the low height; the compact cushion habit; the always entire and
nearly always glabrous leaves both in young and adult state (only one specimen of Ulrich 24 has
two leaves with very few scattered marginal cilia); the constant low number of 8 involucral
bracts; the regular occurrence of both 4- and 5-fid corollae within one capitulum; the symmetric
corona (with fairly few veins); and finally, most remarkable and unique within the genus, the lack
of any calyx setae, resembling in this respect only Succisella Beck. and two W Mediterranean
heterocarpic therophytes of Scabiosa sect. Cyrostemma Mert. & Koch (= Sixsalix Raf.), viz. S.
arenaria Forssk. and S. semipapposa DC., the latter two with some of the fruits of a capitulum
without calyx setae (Devesa 1984, Meyer & Ehrendorfer 1999). In contrast, the calyx in all hith-
erto known Lomelosia species uniformly has five stiff and rough setae. It is persistent in all spe-
cies except for L. stellata (L.) Raf., another W Mediterranean therophyte (Meyer & Ehrendorfer
1999). Although we have made no detailed ontogenetic study, our material suggests that the calyx
setae are not precociously lost (as, e.g., in Pycnonom rutifolium (Vahl) Hoffmanns. & Link), but
are altogether absent (as all setae in Succisella and three or four of them in Scabiosa uniseta
Savi).

Discussion – Lomelosia solymica, another paleo-endemic?
The woody saxatile habit and disjunct distribution of the Lomelosia cretica aggregate, taken by
Davis (1953) as a single, broadly defined species, Scabiosa cretica s.l., let him conclude that
“the Scabious is a Tertiary relict; it probably became differentiated into distinct subspecies as a
result of geographical isolation initiated in Pleistocene times”. Disregarding the altered classifi-
cation, this view may still be the state of the art, since no modern study considers more than one
species of the L. cretica agg. to achieve conclusions about their relationship. With some reserva-
tion, Tertiary relics may be also seen in the other subshrubby species found on Cyprus and in
Anatolia.

In view of the ecogeographical differentiation of the species in Table 2 one is easily tempted
to assign Lomelosia solymica to the paleo-endemics of Tahtalı Dağı. Its synecology, i.e. its asso-
ciation with undoubted other such species in well-protected sea facing cliffs of a never glaciated
mountain, seems to support this. The growth form of L. solymica with its basic architecture of a
compact half-domed cushion (Halbkugelpolster) is totally different from all other Lomelosia
species, encompassing besides many annuals also a wide range of semiscapose hemicyrpypho-
tes (e.g., L. argentea (L.) Greuter & Burdet), caespitose chamaephytes (L. graminifolia group)
and fruticoso nanophanerophytes to suffruticoso chamaephytes, the latter two forming at most
hollow cushion shrubs or shrublets (Hohlkugelpolster). L. solymica as pulvinate chamaephyte
contrasts sharply to the L. cretica agg. in this respect and the true chasmophytic habit could be
seen as derived. It should be mentioned that a pulvinate habit is also present in the narrow
amphi-Adriatic endemics L. crenata subsp. dallaportae (Boiss.) Greuter & Burdet, L. sphaciotica
(Roem. & Schult.) Greuter & Burdet and Scabiosa silenifolia Waldst. & Kit. (Caputo in litt.).
Recent studies (Mayer & Ehrendorfer 1999, Caputo & al. 2004) have contributed to the view that the adaptations in fruit dispersal have been a very strong driving force in Dipsacaceae evolution, with similar selective pressures causing convergent development of similar epicalyx shapes (e.g., in Lomelosia and Scabiosa) and dispersal types (meteorochory, epizoochory, stomochochory) in various taxa (Mayer & Ehrendorfer 1999, Caputo & al. 2004). It is therefore more likely to interpret the lack of calyx setae as derived rather than plesiomorphic.

Among all species compared (Table 2), L. solymica has the smallest corona (the asymmetric corona of some other species ought to be more strongly exposed to winds) in absolute values and in the ratio epicalyx body to corona, making an effective dispersal by wind fairly unlikely. We assume that L. solymica is ant-dispersed and may at least have myrmecochorous diaspores. The first author observed several times ants with fruits of L. micrantha (Desf.) Greuter & Burdet and L. rotata (Bieb.) Greuter & Burdet in Turkey. Wind-dispersal and subsequent transport by harvesting ants seems to be not infrequent in Scabiosa s.l. Small diaspores with small coronas and without spreading bristles doubtless would enable the transport into narrow clefts. Under this assumption, L. solymica may be interpreted as a ± modern upland taxon, derived from (sub)shrubby types with pterochorous diaspores (for speciation in Aegean cliff communities, see, e.g., Snogerup 1971). Further support for this hypothesis provides the ± horizontal orientation of the epidiaphragma, which is in L. cretica in a ± upright position in mature fruits, the latter character state considered as plesiomorphic by Mayer & Ehrendorfer (1999).

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References

Bornmüller, J. 1908: Species et varietates nonnullae e flora Phrygiae. – Feddes Repert. 5: 166-167.
Eren, Ö., Gökçeoğlu, M. & Parolly, G. 2004: The flora and vegetation of Bakırh Dağı (W Taurus Mts, Turkey), including annotations on critical taxa of the Taurus range. – Willdenowia 34: 463-503. [CrossRef]
[CrossRef]
[CrossRef]
Parolly, G. & Nordt, B. 2001: Seseli hortigii (Apiaceae), a new name for S. ramosissimum Hartvig & Strid, with carpological and ecological notes on this species. – Willdenowia 31: 87-93.

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