



## Notes on Early Land Plants Today. 52. Validation of *Tritomaria camerunensis* (Lophoziaceae, Marchantiophyta)

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When describing *Tritomaria camerunensis* Arnell (1958: 64), Arnell based it on more than one gathering (*Byström* 35*b* and 50*a*) and it is thus invalid according to ICN Art. 40.2 (McNeill *et al.* 2012), a rule effective from 1 January 1958 saying that “indication of the type ... can be achieved by reference to an entire gathering” and Ex. 1 explicitly states that. This error was overlooked by Váňa (1982) who selected a “lectotype” out of Byström’s collection. However, that did not validate the name. In order to be available for the forthcoming world checklist of hornworts and liverworts (Söderström *et al.*, in prep.) the taxon is here validated. As Arnell’s name is invalid, the description here is technically a new taxon. Schuster (1969: 639) did mention the close affinity to *Tritomaria exsectiformis* (Breidler 1894: 321) Loeske (1909: 13) “this may represent a disjunct phase of *T. exsectiformis*” but Váňa (1982) preferred to keep them separate until more material was studied. However, when the taxon needs to be validated, we prefer to do so at subspecific level. The new subspecies differs from subsp. *exsectiformis* in larger size of plants (mostly 2–2.5 cm long vs. 1.2–2.0 cm long), constantly prostrate, never ascending shoots, dorsally secund, mostly bilobed leaves (trilobed leaves rare, only on the top of shoots), somewhat smaller and longer cells (up to 20 × 30–40 µm) than is the average cells size of *Tritomaria exsectiformis* subsp. *exsectiformis*, and rounded, angular to polygonal, 1–2-celled (vs. constantly 2-celled, irregularly polygonal to pyriform) gemmae.

After 1982 the first author has had the opportunity to check two additional specimens of this taxon from Africa (Tanzania, Kilimanjaro Mt, S- and SW-face of Kibo, 4.3.1985 Pócs 6992/Q and 26.11.1989 Pócs 89240/B; EGR!, PRC!). Moreover, two very similar new species, *Tritomaria mexicana* (Bakalin 2008: 162), (isotypes in GOET! and PRC!) and *Tritomaria koreana* (Bakalin *et al.* 2009: 163) were recently described.

Comparing the morphological differences between *Tritomaria exsectiformis* subsp. *exsectiformis*, *Tritomaria exsectiformis* subsp. *arctica* Schuster (1969: 661), *Tritomaria camerunensis*, *Tritomaria mexicana* and *Tritomaria koreana* we found that there are no significant differences in the size of plants, cell size, cell walls [thick cell walls given for *Tritomaria camerunensis* is an error based on the cells of the intermixed plants of *Sphenolobus minutus* (Crantz 1770: 285) Berggren (1898: 22), cf. Váňa 1982], trigones and cell surface (cuticle), size and shape of oil-bodies (if the data are available). The orientation of shoots (prostrate or ascending to erect) and the orientation and insertion of leaves (spreading to erect-spreading, with transversely to subtransversely insertion vs. dorsally secund, with subtransversely to oblique insertion) may be caused by the habitat conditions. Some differences are only in the leaf shape and gemmae, as follows:

***Tritomaria exsectiformis* subsp. *exsectiformis*:**—leaves asymmetrically (2–)3-lobed, longer than wide, ovate; gemmae polygonal to pyriform, 2-celled, (13–) 14–18 (–20) × (16–) 17–26 µm, red brown.

***Tritomaria exsectiformis* subsp. *arctica*:**—leaves asymmetrically 2–3-lobed, wider than long, broadly orbicular; gemmae tetrahedral to polygonal, 2-celled, 9.5–14 (–16) × 11–18.5 (–20) µm, reddish to reddish brown.

***Tritomaria exsectiformis* subsp. *camerunensis*:**—leaves in upper parts of shoots asymmetrically bilobed, only terminal leaves of most developed shoots asymmetrically trilobed, longer than wide, ovate; gemmae rounded angular to polygonal, 1–2 celled, 14 × 14–22 µm, red brown.

*Tritomaria mexicana*:—leaves mostly equally (!) to slightly asymmetrically bilobed, longer than wide, ovate; gemmae angular, 1-celled, 18–23 × 20–26 µm, rusty red to blackish purple.

*Tritomaria koreana*:—leaves slightly asymmetrically bilobed, longer than wide, ovate; gemmae angular, 1-celled, 10–12.5 × 12.5–15 µm, green to greenish white.

All three taxa, *Tritomaria exsectiformis* subsp. *camerunensis*, *Tritomaria mexicana* and *Tritomaria koreana*, are geographically separated from *Tritomaria exsectiformis* with *Tritomaria exsectiformis* subsp. *arctica* representing the high Arctic phase of the species. Until more material of these taxa is available (the last two species are known only from the type specimens) and a population based molecular study undertaken, we prefer to keep them as separate species.

## Formal treatment

The format of this note follows Söderström *et al.* (2012).

*Tritomaria exsectiformis* Breidl. subsp. *camerunensis* S.W.Arnell ex Váňa, subsp. nov.

Based on:—*Tritomaria camerunensis* S.W.Arnell, *Svensk Bot. Tidskr.* 52: 64, 1958 (Arnell 1958), *nom. inval.* (ICN Art. 40.2; based on more than one gathering). Type:—CAMEROON. Cameroon Mountain, summit region, *Byström no. 35b* (UPS!, holotype), *Byström 50a* (UPS!, syntype). Note:—The reference to the description in Arnell (1958: 64), together with the reference to the single gathering here, validates the taxon.

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