



## Notes on Early Land Plants Today. 18. Transfers of some taxa in *Nardia* (Gymnomitriaceae, Marchantiophyta)

JIRÍ VÁŇA<sup>1</sup>, LARS SÖDERSTRÖM<sup>2,4</sup>, ANDERS HAGBORG<sup>3</sup> & MATT VON KONRAT<sup>3</sup>

<sup>1</sup>Department of Botany, Charles University, Benátská 2, CZ-12801 Praha 2, Czech Republic; vana@natur.cuni.cz

<sup>2</sup>Department of Biology, Norwegian University of Science and Technology, N-7491 Trondheim, Norway; lars.soderstrom@bio.ntnu.no

<sup>3</sup>Department of Botany, The Field Museum, 1400 South Lake Shore Drive, Chicago, IL 60605–2496, USA; hagborg@pobox.com, mvonkonrat@fieldmuseum.org

<sup>4</sup>Author for correspondence

In recent years, molecular studies have shown that characters associated with reproduction (sexual as well as asexual) are much more important in separating taxa at higher level than generally believed 10–15 years ago. For example, the color of gemmae (red or yellow) is a character separating *Lophozia* (Dumortier 1831: 53) Dumortier (1835: 17) s.str. from *Lophoziaopsis* Konstantinova & Vilnet (2010: 66) (De Roo *et al.* 2007, Vilnet *et al.* 2011). Also, the presence and absence of a perigynium is shown to separate the two genera *Jungermannia* Linnaeus (1753: 1131) and *Solenostoma* Mitten (1865: 51), two genera that have mostly been treated as congeneric over the last 25–30 years (see Váňa & Long 2009).

Both *Nardia scalaris* Gray (1821: 694) and *Nardia geoscyphus* (De Notaris 1858: 486) Lindberg (1874: 371) occur with two types of perigynium. The main form of *Nardia geoscyphus* has the *Nardia geoscyphus*-type perigynium. However, there are also specimens with an *Isotachis*-type perigynium. Those plants correspond to “var. *suberecta*” (cf. Váňa 1976 who regarded them as synonyms of *Nardia geoscyphus*).

*Nardia scalaris* has predominantly *Isotachis*-type perigynium but plants from Japan with *Nardia geoscyphus*-type of perigynium are described as *Nardia scalaris* subsp. *harae*.

Until the differences in perianth type have been studied in more detail, preferably including molecular studies, we think a variety of each species could be recognized. Unfortunately, none of the taxa have been combined at variety level.

Schuster (1969) described *Nardia scalaris* subsp. *botryoidea* from three widely separated localities in North America based mainly on differences in the shape of the oil bodies compared to subsp. *scalaris*. The subspecies has not received much attention since then. Until the variation of oil bodies in *Nardia scalaris* is re-studied we prefer to treat it as a variety.

### Formal treatment

The format of this note follows what is outlined in Söderström *et al.* (2012).

*Nardia geoscyphus* var. *suberecta* (Lindb. ex Kaal.) Váňa, *comb. nov.* [C. Massal. et Carestia, Nuovo Giorn. Bot. Ital. 14: 223, 1882, unranked and nom. inval. (Art. 32.1.d; no description)].

Basionym:—*Nardia haematosticta* var.  $\beta$  *suberecta* Lindb. ex Kaal., *Nyt Mag. Naturvidensk.* 33: 395, 1893 (Kaalaas 1893).

Lectotype (Váňa 1976):—FINLAND. Kajana: Karanke, 1872 *Lackström* (H-SOL!).

***Nardia scalaris* var. *harae* (Amakawa) Váňa, comb. et stat. nov.**

Basionym:—*Nardia harae* Amakawa, *J. Jap. Bot.* 32: 38, 1957 (Amakawa 1957).

Type:—JAPAN. Ehime Pref.: Mt. Izishizuchi, 1790 m alt., 6 June 1952, *M. Hara 6101* (holotype NICH).

≡ *Nardia scalaris* subsp. *harae* (Amakawa) Amakawa, *J. Hattori Bot. Lab.* 21: 280, 1959 (Amakawa 1959).

***Nardia scalaris* var. *botryoidea* (R.M.Schust.) Váňa, comb. et stat. nov.**

Basionym:—*Nardia scalaris* subsp. *botryoidea* R.M.Schust., *Hepat. Anthocerotae N. Amer.* 2: 862, 1969 (Schuster 1969).

Type:—USA. Tennessee: Smoky Mts., Sevier Co., Charlies Bunion, on Appalachian Trail, 5300–5375 feet, 21 June 1960, *R.M. Schuster 45305* (with a few mature capsules) (holotype F-1767552).

## References

- Amakawa, T. (1957) Notes on Japanese Hepaticae (3). *Journal of Japanese Botany [Shokubutsu kenkyu zasshi]* 32: 34–41.
- Amakawa, T. (1959) Family Jungermanniaceae of Japan. I. *Journal of the Hattori Botanical Laboratory* 21: 248–291.
- De Notaris, G. (1858 “1859”) Appunti per un nuovo censimento delle epatiche italiane. *Memorie della reale accademia delle scienze di Torino, serie 2* 18: 457–498.
- De Roo, R.T., Hedderson, T.A. & Söderström, L. (2007) Molecular insights into the phylogeny of the leafy liverwort family Lophoziaceae Cavers. *Taxon* 56: 301–314.
- Dumortier, B.C. (1831) *Sylloge Jungermannidearum Europae indigenarum, earum genera et species systematice complectens*. J. Casterman, Tournay, 100 pp. <http://dx.doi.org/10.5962/bhl.title.22343>
- Dumortier, B.C. (1835) *Recueil d'Observations sur les Jungermanniacées. I. Révision des genres*. J.-A. Blanquart, Tournay, 27 pp.
- Gray, S.F. (1821) *Natural Arrangement of British Plants. Vol. I*. London, 824 pp.
- Kaalaas, B. (1893) Levermosernes udbredelse i Norge. *Nyt Magazin for Naturvidenskaberne* 33: 1–490.
- Konstantinova, N.A. & Vilnet, A.A. (2010 “2009”) New taxa and new combinations in Jungermanniales. *Arctoa* 18: 65–67.
- Lindberg, S.O. (1874) Manipulus muscorum secundus. *Notiser ur Sällskapetets pro Fauna et Flora Fennica Förhandlingar* 13: 353–417.
- Linnaeus, C. (1753) *Species Plantarum, ed. 1*. Impensis Laurentii Salvii, Holmiae [Stockholm], 1200 pp.
- Mitten, W (1865) The “Bryologia” of the survey of the 48th parallel of latitude. *Journal of the Linnean Society. Botany* 8: 12–55.
- Schuster, R.M. (1969) *The Hepaticae and Anthocerotae of North America. vol. II*. Columbia University Press, New York, 1062 pp.
- Söderström, L. Hagborg, A. & von Konrat, M. (2012) Notes on Early Land Plants Today. *Phytotaxa* 65: 41–42.
- Váňa, J. & Long, D.G. (2009) Jungermanniaceae of the Sino-Himalayan region. *Nova Hedwigia* 89: 485–517. <http://dx.doi.org/10.1127/0029-5035/2009/0089-0485>
- Vilnet, A.A., Konstantinova, N.A. & Troitsky, A.V. (2011 “2010”) Molecular insight on phylogeny and systematics of the Lophoziaceae, Scapaniaceae, Gymnomitriaceae and Jungermanniaceae. *Arctoa* 19: 31–50.