

Lectotypifications in *Elatine* (Elatinaceae) and some taxonomic remarks

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Elatine orthosperma Düben, *E. spathulata* Gorski, *Elatine hydropiper* L. subsp. *gyrosperma* Fr. and *E. triandra* Schkuhr var. *callitrichoides* Nyl. are lectotypified, and an epitype is selected for the lectotype of *E. spathulata*. The synonymizing of *E. spathulata* with *E. hydropiper* is supported. — *Flora Nordica* Notes 36.

Key words: Elatinaceae, *Elatine*, nomenclature, taxonomy, typification

Elatine orthosperma Düben

Bot. Notiser 1839: 88 (November 1839). — *E. hydropiper* subsp. *orthosperma* (Düben) Fr., *Novit. fl. suec. mant.*: 187. 1842. — *E. hydropiper* var. *orthosperma* (Düben) Hartm., *Handb. Skand. fl.*, ed. 4: 126. 1843. — *Elatine hydropiper* f. *orthosperma* (Düben) Saelan, Kihlm. & Hjelt, *Herb. mus. fenn.* 1, ed. 2: 64, 135. 1889. — *Alsinastrum orthospermum* (Düben) Rupr., *Fl. ingr.*: 196. 1853. — LECTOTYPE (designated here). “*Elatine (Hydropiper) orthosperma* Düb. in *Bot. Not.* 1839, 88 [Sweden, Bohuslän, Göteborg] Gothoburgi: Göta elf. Sept. [1839] Leg. Lib. Bar. M. W. von Düben” [Fries, *Herbarium Normale*, Fasc. 6, no. 29 (1839; distributed in 1840)] (UPS V-094094!; isolectotypes at least C!, H 1380227!, 1380228!, S 2 sheets, TU!, UPS V-104524!, V-106637 p.p.!).

Von Düben collected the type material in September 1839, as is apparent from the description and the *Fries exsiccata Herbarium Normale* label. Hence the material had undoubtedly been in his possession before publication of the description in the November 1839 issue (no. 7) of the first volume of *Botaniska Notiser*.

The exsiccata were published in a good number of copies and distributed to various

public herbaria and also as incomplete sets to school herbaria, etc. (R. Moberg pers. comm.). Each *Elatine* specimen consists of a few rather small pieces of flowering and fruiting plants, which are loose in an envelope. Eventually this material largely ended up in public herbaria, so that in UPS there are three sheets of the number, and in both H and S there are two. UPS V-106637 also contains shoots of *Elatine triandra* and is mounted on the same sheet as no. 30 of Fasc. 6 (*E. triandra*).

All of the Nordic *Elatine* material in 18 Nordic Herbaria, including C, O, S, UPS, GB, LD, H and TUR, was checked and only one additional collection of *E. orthosperma* by M. von Düben was found, viz. one sheet belonging to E. Fries' Herbarium (UPS).

C. J. Hartman (1841) listed *E. orthosperma* as a new taxon for his flora, but considered its specific rank questionable. Next year Fries (1842) lowered the rank to subspecies. In the fourth edition of Hartman's flora (C. J. Hartman 1843) the rank was lowered to variety (*E.*

hydropiper β *orthosperma*). Fries (1845) marked *orthosperma* with an asterisk, indicating that the variety rank had been assigned to the taxon by other authors, but that he did not share this opinion himself. This probably refers to Hartman's treatment of the taxon in his flora. In the fifth edition of Hartman's flora (C. J. Hartman 1849), the rank was changed to follow Fries, to subspecies (*E. hydropiper* * *orthosperma*). In addition, a new variety (β *submersa*) was described under *E. hydropiper*. The subspecies rank was maintained until edition 10 (C. J. Hartman 1870). In edition 11 (C. Hartman 1879), the taxon was reduced to the variety level once again (β *orthosperma*). Subsequently it has been treated as a variety in most of the Swedish and Finnish floras and checklists (e.g. Neuman & Ahlfgvengren 1901, Lindman 1926, Hylander 1955, and Lönnrot & Saelan 1866, Lindberg 1901, Cajander 1906, Hiitonen 1933). However, in addition to distinct morphological characters in fruits and seeds there are other differences, though slight, in vegetative morphology, ecology and distribution, and I consider specific rank to be most appropriate (Uotila 1978, 2009).

***Elatine spathulata* Gorski**

in Eichwald, Skizze: 173. 1830. — LECTOTYPE (designated here): [Belarus, Brest Region, Berezovo District (earlier Grodno Region, Slonim District), Lake Sporovskoye] “*Inveni lacu dicto Sperowskie jezioru circa Sperow districtu Slonimscensi parte illius septentrionali ad ripas. 1824, 16. August*”. Gorski 5231 (2816, G) (WI!).

Elatine spathulata was described by Gorski (Eichwald 1930) from a single locality on the basis of sterile plants. No flowers, fruits or seeds were described in the protologue and consequently the identity of *E. spathulata* is problematic.

It seems that Gorski originally intended to recognize his new species as a member of the new and monotypic genus *Klukia*, because the label of the lectotype specimen includes a long morphological description of that genus. The description and collecting information are in the same handwriting, written in a calligraphic style using ink. In different ink (or in pencil?), and in a less polished style, possibly by a dif-

ferent hand, is written: *Elatine spathulata Mihi in Eichw.* The name Gorski and some numbers have been added in a different handwriting in later inventories of the collection.

The description on the label includes a phrase concerning seeds: “*Semina curvula columnae centralium rotatim cingentia, reticulata*”. “*Semina curvula*” [seeds slightly curved] refers better to the apically slightly bent seeds of *E. orthosperma* than to the strongly curved seeds of *E. hydropiper*. However, “*columnae centralium rotatim cingentia*” may be understood as a misinterpretation of the strongly curved seeds of *E. hydropiper*, if the seeds were assumed to embrace the capsule's column.

The specimen consists of approximately 40 patch-like pieces of *Elatine*. A small number of the plants were received on loan to H and studied by me. All are without flowers and fruits. This is also the case for the rest of the material, as confirmed by Ms. Nijolė Kalinauskaitė, who studied it in late 2005 at WI. The lack of fruits and seeds is consistent with the lack of these characters from the description. On the other hand, the description of seeds written on the label cannot have been based on this material. Other material and specimens have not been traced at WI.

The specimen has a general appearance which better matches *E. hydropiper* than *E. orthosperma*. However, it is not possible to assign non-flowering or non-fruiting material to *E. hydropiper* or *E. orthosperma* with full certainty. The specimen was collected in mid-August, when *Elatine* plants usually have plenty of flowers and fruit. As this specimen lacks flowers and fruits, the colony has probably developed exceptionally late due to an increase in the water level in summer (a submerged habit is mentioned in the protologue). The identity of such individuals is still more difficult to decide.

The protologue and the original material are ambiguous and impossible to determine with certainty from the available morphological characters. Thus an epitype is selected here to support the lectotype specimen of *E. spathulata*. The epitype specimen is the same as the one selected to be the lectotype of *Elatine hydropiper* subsp. *gyrosperma* (see below).

Very few 19th century taxonomic treatments accepted *Elatine spathulata*. Ledebour

(1842) included Gorski's species in his flora. Also Ruprecht (1845) accepted *E. spathulata*, but commented on the lack of the critical fruit and seed characters in the description. Some years later (Ruprecht 1860) he preferred his *Alsinastrum orthospermum* [*Elatine orthosperma*] over *E. spathulata*. Finally, Gorshkova (1949) and Czerepanov (1981) reduced *E. spathulata* to synonymy with *E. orthosperma*. Even C. J. and C. Hartman seem to have considered these taxa to be conspecific. From ed. 5 to ed. 10 of Hartman's flora (C. J. Hartman 1849, 1870), *E. spathulata* is cited in parentheses as a synonym of *E. hydro Piper* subsp. *orthosperma*, referring to Walpers (1842), who was the first to synonymise these names. In Nordic herbaria only one collection of *Elatine* (a mixed specimen of *E. orthosperma* and *E. hydro Piper*) was originally named as *E. spathulata* (Sweden, Göteborg 1882 Hvang; AAU, S).

Paczoski (1897) had studied Gorski's specimen and considered *E. spathulata* conspecific with *E. hydro Piper* s. lato, referring to Nyman (1855), who included *E. spathulata* and *E. orthosperma* in *E. hydro Piper*, and to Ledebour (1842).

Tzvelev (1996) considered *E. spathulata* conspecific with *E. hydro Piper* s. stricto for the reason that there are no collections of *E. orthosperma* from Belarus or Lithuania. Following Tzvelev's opinion, Czerepanov (1995) tentatively synonymized *E. spathulata* with *E. hydro Piper*, indicating his doubt with a question mark.

Recently Dubovik (2005) mapped the threatened *Elatines* in Belarus, including four new and four old records of *E. hydro Piper* and no records of *E. orthosperma*. According to the Belarusian botanist Maxim Dzhus (pers. comm.), Lake Sporovskoye is now exceedingly eutrophicated as a result of intensive agricultural activities, and its shores harbor hardly any *Elatine* plants any more. Besides, *E. hydro Piper* and *E. orthosperma* frequently occur in the same localities in mixed colonies, so that the presence of one of them cannot exclude the occurrence of the other, and collecting again one species in a locality does not prove that the other is absent. The occurrence of *E. orthosperma* in Belarus is not impossible judging from its distribution area alone, as this species has a wide and fragmentary distribution.

***Elatine hydro Piper* subsp. *gyrosperma* Fr.**

Novit. fl. suec. mant.: 187. 1842. — *Elatine hydro Piper* var. *gyrosperma* (Fr.) Lange, Haandb. Danske fl.: 245. 1850. — *E. gyrosperma* (Fr.) Meinsh., Fl. ingr.: 66. 1878. — *Alsinastrum gyrospermum* (Fr.) Rupr., Fl. ingr.: 195. 1853. — *Elatine gyrosperma* Düben ex Rupr., Beitr. Pfl. Russ. Reich. 5: 57. 1845, nom. nud. — LECTOTYPE (designated here): "*Elatine hydro Piper*, [Sweden, Östergötland] Ög, Motala, Aug., H. Holmgren". [Fries, *Herbarium Normale*, Fasc. 9, no. 41 (1842; distributed in 1843)] (UPS (V-107893) 199429!; isolectotypes at least C, H 2 sheets!, S 2 sheets, TU!, UPS 2 sheets!).

In his description of *E. hydro Piper* subsp. *gyrosperma*, Fries (1842) refers to von Düben (1839) and *Herbarium Normale* Fasc. 9, no. 41. However, the word *gyrosperma* is included neither in von Düben (1839) nor von Düben (1841a, 1841b). Fries, *Herbarium Normale*, Fasc. 9, no. 41 was distributed in 1843 by the name *Elatine hydro Piper*, and the specimens seen in Nordic herbaria belong to *E. hydro Piper* s. stricto.

Without seeing von Düben's original paper, a reader gets from Fries (1842) the impression that *E. gyrosperma* was described there by von Düben as *E. orthosperma*. This may be the reason for the practice of attributing authorship of the epithet *gyrosperma* to von Düben by foreign authors (Ruprecht 1845, 1860, Lange 1850, Meinshausen 1878), but not Swedish ones, better familiar with *Botaniska Notiser*.

***Elatine triandra* var. *callitrichoides* Nyl.**

Notiser Sällsk. Fauna Flora Fennica 2: 210. 1852. — *E. callitrichoides* (Nyl.) Kauffm., Mosk. fl.: 97. 1866. — *Alsinastrum callitrichoides* (Nyl.) Rupr., Fl. ingr.: 196. 1853. — *E. triandra* f. *callitrichoides* (Nyl.) Saelan, Kihlm. & Hjelt, Herb. mus. fenn. 1, ed. 2: 64. 1889. — LECTOTYPE (designated here): "*Elatine triandra* Schk v. *callitrichoides* W. Nyl. [Finland, Varsinais-Suomi, Vihti, Kourula], Nylandia [corrected to Ab], in Vihtis ad Kourula in stagno ad viam. VIII.1851, W. Nylander" (H 503487!). Isolectotype: "*Elatine triandra* v. *callitrichoides* mihi [Finland, Varsinais-Suomi, Vihti], in stagno paroeciæ Wihtis, una cum *Chara gracili*, d. 20/viii [no year]" (UPS!).

The lectotype and isolectotype specimens have slightly different information on the labels; together the two labels include all details mentioned in the protologue. Specimen no. 49 ("*Elatine triandra* var., Fennia austr. Helsingfors. Leg.

Dr. W. Nylander”) in Fasc. 14 (1849–1852; distributed 1853) of Fries’s *Herbarium Normale* (C!, UPS V-108539!), referred to by Nylander and Saelan (1859), possibly also belongs to the same collection and is an isolectotype.

The taxon was still accepted at the species level in some Russian floras as late as Gorshkova (1949) and Sokolovskaya (1961), and also in older Swedish floras (Nyman 1867, Neuman & Ahlfgvengren 1901). In Finnish works it was accepted as a variety of *E. triandra* by Lönnrot (1860), Alcenius (1863), and Lönnrot and Saelan (1866). Later, Saelan *et al.* (1889) and Lindberg (1901) treated it as a form, while Cajander (1906) and Hiitonen (1933) considered it to be merely an environmental modification, the opinion I share.

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