

SOME REMARKS ON THE SMALL-FLOWERED FORGETMENOTS

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In early botanical history the conception of species concerning the small-flowered forgetmenots was still indefinite and uncertain. Even the genus *Myosotis* was only differentiated in 1719 by J. J. DILLENIUS from *Cerastium*, *Echium*, and *Alsine*. The latter genera were considered synonyms by authors such as M. LOBELIUS (1581) and C. BAUHIN (1671). Similarly, C. LINNAEUS did not differentiate between the small-flowered species of *Myosotis*. He records in his "Species Plantarum" (1753), besides species that are less relevant in this connection:

M. scorpioides: *M. feminibus nudis foliorum apicibus callosis*
α arvensis
 Myosotis foliis hirsutis
β palustris
 Myosotis foliis glabris.

Fortunately I had the opportunity to view some specimens of his collection. The Herbarium of the Hortus Cliffortianus (BM) contained *M. scorpioides α arvensis* and *M. scorpioides β palustris*. The former was a young plant, in early flower, but as far as foliage, hairiness and habit were concerned, it undoubtedly belongs to *M. arvensis* (L.) Hill. The Linnean Herbarium (LINN) contained some forgetmenots which are recorded in Savage's Catalogue as:

180, *M. scorpioides*
180, 2 K(alm)
180, 3 *M. foliorum apicibus callosis* Gmelin

After studying these plants I am of the opinion that they can be named as follows:

180, 1 *M. hispida* Schldl.
180, 2 *M. discolor* Pers.
180, 3 3 specimens of the *palustris* group
 1 specimen *M. arvensis* (L.) Hill.

Although Linnaeus did not regard these specimens as separate species they belong to species subsequently described by other authors.

The following small-flowered forgetmenots are found in the Netherlands:

M. arvensis (L.) Hill (1764)
M. discolor Pers. (1797)
M. micrantha Pall. ex Lehm. (1817)
M. hispida Schldl. (1814).

The nomenclature of the above-mentioned species, however, is rather confused. In Dutch floras certain synonyms lasted a long time, notably:

instead of *M. arvensis* (L.) Hill: *M. intermedia* Link (1821)

instead of *M. discolor* Pers.: *M. versicolor* (Pers.) Sm. (1797)

instead of *M. micrantha* Pall. ex Lehm.: *M. arenaria* Schrad. (1819)

instead of *M. hispida* Schldl.: *M. collina* Hoffm. (1791).

The name *M. versicolor* has been used until recently by many authors. A. E. WADE revealed in 1952 that "the name *M. versicolor* Sm. (1813, Eng. Bot. sub t. 2558) is antedated by *M. discolor* Pers. (in 1797 Syst. Veg. ed. 15 p. 190 in obs.) which must, therefore, be adopted in its place." G. STROH (1942), however, in his nearly complete list of all synonyms of the species of *Myosotis*, already mentioned *M. discolor* as being synonymous with *M. versicolor* (Pers.) Sm.

The name *M. micrantha* was re-introduced by STROH (1934-'35) when he called attention to LEHMANN (1817) who quoted from the letters of PALLAS.

The epithet *collina* Ehrh. was first used by G. F. HOFFMANN in 1791. It was not clear, however, which taxon was meant. H. G. L. REICHENBACH (1822) was the first to use *M. collina* Ehrh. beside *M. versicolor* Roth. From the description and the quoted synonyms it is evident that Reichenbach's *M. collina* belongs to *M. hispida*. F. C. MERTENS and W. D. J. KOCH (1826) observe, however, that the sample from Ehrhart's Herb. 51 is actually a specimen of *M. discolor*. A. E. WADE is of the same opinion and considers the name *M. collina* a nomen ambiguum (1951), as stated in article 62 of the International Rules of Botanical Nomenclature (1935) (cf. art. 65 Int. Code of Bot. Nom. 1956). Therefore the name *M. collina* cannot be adopted instead of *M. discolor*.

Among the four above-mentioned species, *Myosotis micrantha* Pall. ex Lehm. holds an exceptional place in being rather uniform in its morphological characteristics throughout its distribution. Although a comprehensive treatment of the characteristics is here impossible, a few of them have been selected for discussion. I have attempted to support my taxonomic concepts by carrying out measurements on a few morphological features. It has been known for a long time that the ratio of the length of the lower fruit pedicel to that of the lower fruit calyx is small as compared with the other three species. From measurements it appeared that this ratio lies far below 0.5 and averages 0.26 (50 measurements).

The oblong form of the fruit calyx itself which can be expressed as an index, is also very characteristic (though *M. discolor* approaches this index most).

These two characteristics, combined with the very different hairiness, show an unmistakable difference with those of *M. hispida* (Fig. 1). We emphasize this on purpose because, especially in the Dutch herbaria, these two species: *M. micrantha* and *M. hispida*, especially a form which usually grows on sand dunes but also elsewhere, have

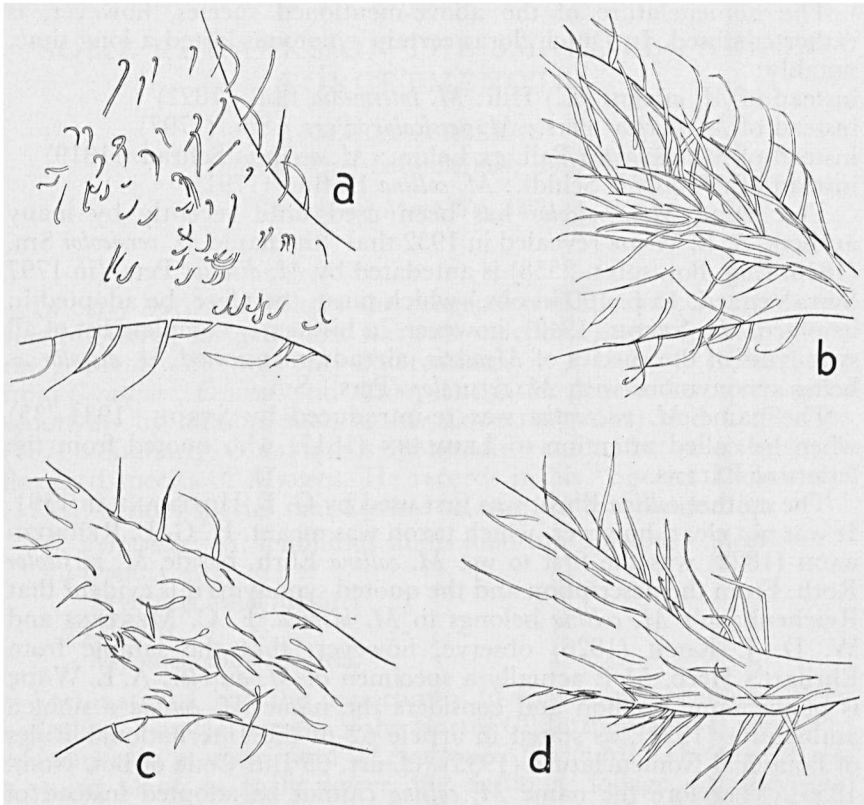


Fig. 1. Hairiness on the under-surface of the leaf—a. *M. micrantha* Pall. ex Lehm.; b. *M. hispida* Schldl.; c. *M. arvensis* (L.) Hill; d. *M. discolor* Pers.

been confused. This form shows a resemblance to *M. hispida* var. *dunensis* Buchenau. BUCHENAU (1881, p. 100) described it from the West- and East-Frisian Islands, as being characterized by short pedicels and a slender habit. This confusion probably originated because of these short fruit pedicels, although — in my opinion — this dune form is, apart from this, still in other ways different from the typical form of *M. hispida*. The differences in the habit are as follows: The plant is shorter and less leafy; the lower fruit calyx is shorter and the index fruit-pedicel/fruit-aclyx is less than the typical form; the fruit calyx is more closed.

To support my description with exact data, measurements were carried out on several organs of the typical form of *M. hispida* and its "dune form"; likewise of *M. micrantha*. The results were compared and tested according to WILCOXON (1955). For this purpose the following items come into consideration (each time 50 measurements; Fig. 2):

1. absolute length of lower fruit-calyx (a)
2. index length pedicel/length fruit-calyx (a/b)

3. index width fruit-calyx/length fruit-calyx (c/a). If the calyx was bulging the maximum width was measured., if not then measurement was made half-way the calyx-height.
4. index width on top of the fruit calyx/width of fruit calyx (d/c).

Nevertheless, the similarity of the dune form and the typical form is still so evident that no mutual significant differences could be shown concerning points 1 and 3, but concerning points 2 and 4 significance was clear (Figs. 3 and 4). Therefore can be concluded (point 2) that the characterization of BUCHENAU is still applicable and that (point 4) the fruit calyx of the dune form is more closed.

Differences are to be seen in all the points mentioned between *M. micrantha* and the dune form of *M. hispida*.

Flower measurements have also been carried out. As yet it will only be said that there are significant differences between *M. micrantha* and the dune form, as far as the style length is concerned, and also between the dune form and the typical form. In this respect the dune form is intermediate between *M. micrantha* and the typical form of *M. hispida*, the latter having the longest styles.

Foreign and Dutch material as well as my own field observations indicate a positive correlation between this short form and its habitat: dunes, sandy open grounds, chalk cliffs, etc. This correlation suggests the presence of oecotypes but my experiments on this subject are still in progress.

On the other hand, the few specimens of *M. micrantha* from the Dutch dunes did not show any differences that could suggest a distinct form. The material examined, however, shows that since 1915 *M. micrantha* has no more been found in the dunes. In this respect, no conclusions can yet be drawn.

The existence of a distinct form of *M. arvensis* (L.) Hill is indicated by the Dutch and, to a less extent, by the Norwegian material. This form is characterized by a rigid appearance; the fruit pedicels on one plant do not differ much from each other, and the lower pedicel has an index pedicel/fruit calyx which is much less than that of other *M. arvensis*. *M. arvensis*, however, has several forms and is variable in such characteristics as foliage, diameter of the corolla, form and proportions of the fruit calyx. Nevertheless, my attention was drawn to the above-mentioned form, because D. LAKO, among others, has collected it and classified it as *M. hispida* var. *major* Lako (1916) in M.S.S. He gave the following description of this form in M.S.S.: "Large, well developed plants, with clearly visible inflorescence normally divided into two branches; the upper leaves rounded at the base; calyx teeth rather sharp." Height up to 0.40 m. Flowering-time May–September. Along roads and dikes, on cultivated grounds, on sand and clay soils."

The description as well as the flowering-time and given habitat point to *M. arvensis*.

Lako was not the only one who wanted to classify this form as *M. hispida*: many other collectors were of the same opinion, although

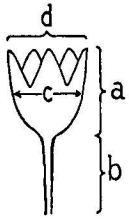


Fig. 2. Scheme.

Fig. 4. Width on top of fruit-calyx/width fruit-calyx—a. *M. micrantha* Pall. ex Lehm.; b. *M. hispida* Schldl., dune form; c. *M. hispida* Schldl., typical form.

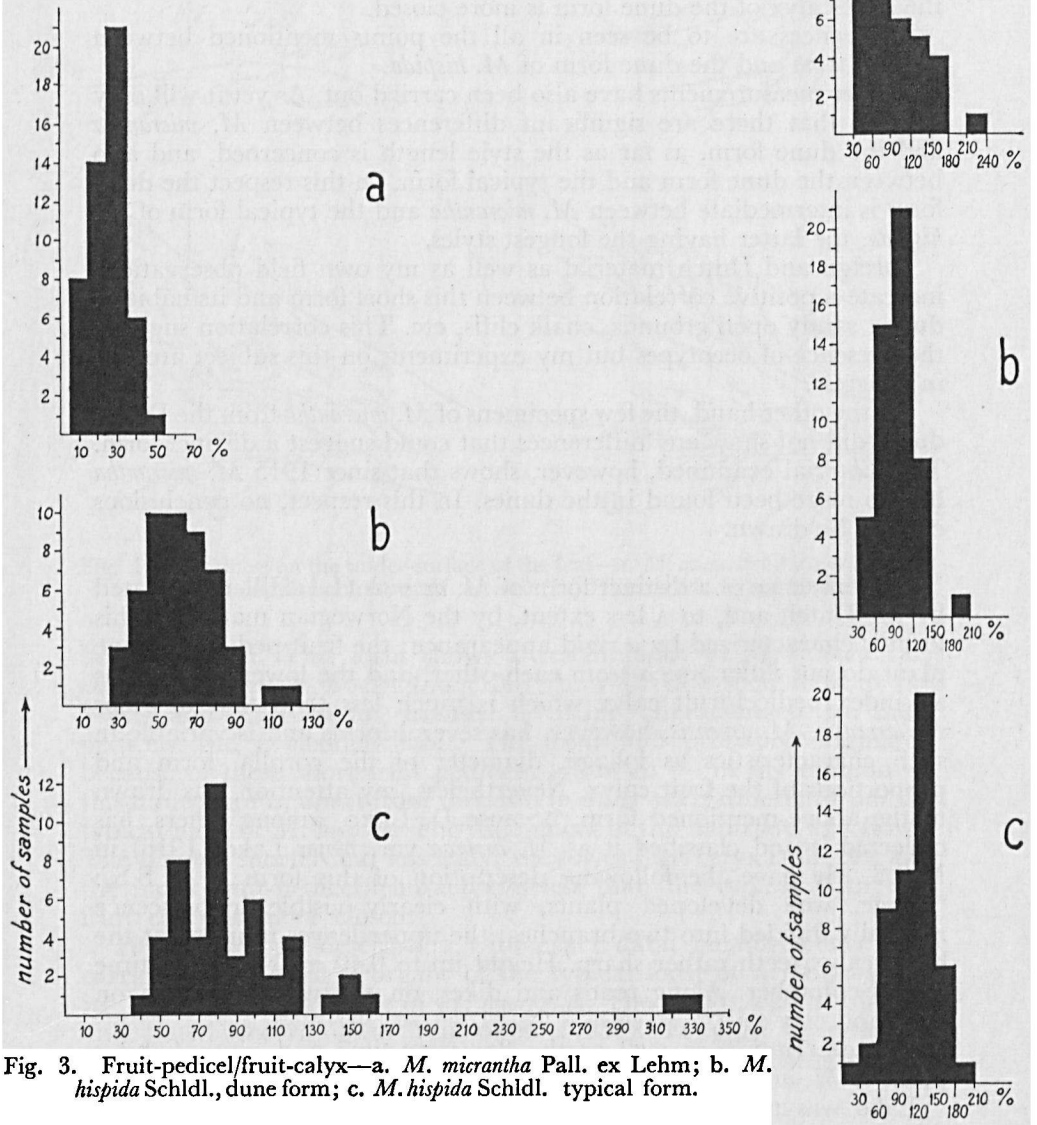


Fig. 3. Fruit-pedicel/fruit-calyx—a. *M. micrantha* Pall. ex Lehm.; b. *M. hispida* Schldl., dune form; c. *M. hispida* Schldl. typical form.

perhaps less consciously. In the whole pattern of characteristics, too much value is credited — in my opinion — to the relatively short fruit pedicels. For this reason many felt compelled to classify this form under *M. hispida*. In this way, other characteristics such as size of the plant, foliage and flowering-time were neglected. When these characteristics are analysed mathematically (each time 50 measurements) and tested according to WILCOXON (1955), the index fruit pedicel/fruit-calyx of this form appears to differ significantly from the remaining *M. arvensis* as well as from *M. hispida* (Fig. 5).

Regarding the length of the fruit calyx it is also evident that we are concerned with an intermediate form, the differences being significant. The dimensions of *M. "hispida var. major"* show more resemblance, however, with those of *M. arvensis*.

The ratio of width and length of fruit calyx showed peculiar results: between *M. arvensis* and *M. hispida* hardly any differences were to be seen. The above-mentioned form, however, shows a lower ratio than the other ones.

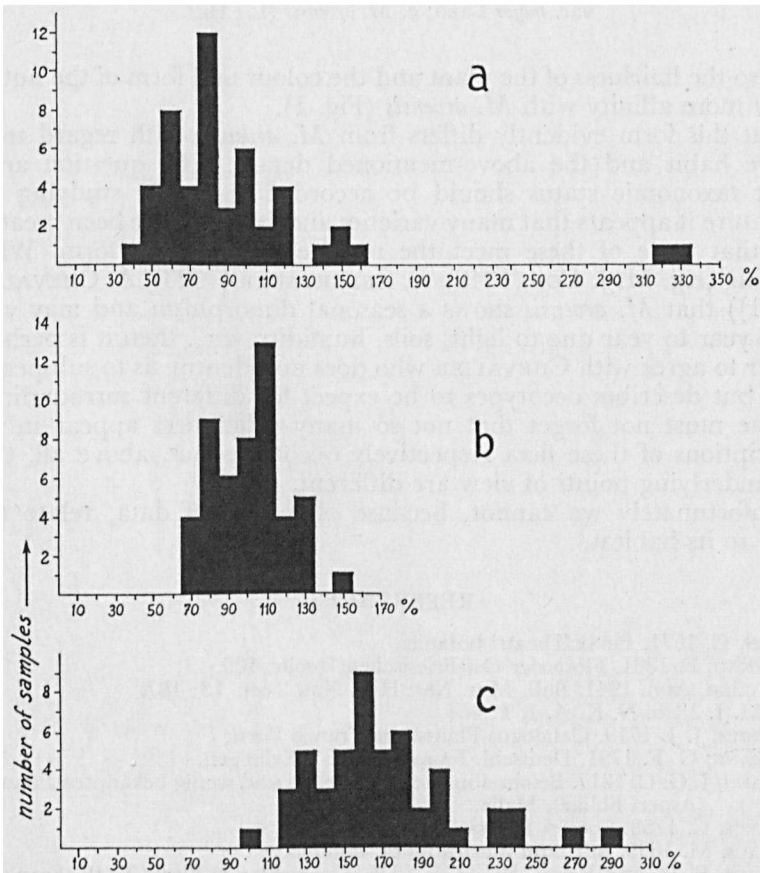


Fig. 5. Fruit-pedicel/fruit-calyx—a. *M. arvensis* (L.) Hill; b. *M. hispida* Schldl. var. *major* Lako; c. *M. hispida* Schldl., typical form.

The flower itself was measured too, but the material was insufficient to give any mathematical support. There are reasons to presume, however, that the form of the flower, the more or less flat corolla lobes and the related indices of corolla tube and total corolla length — which differ notably between *M. hispida* and *M. arvensis* — point to a relationship with *M. arvensis* (Fig. 6).

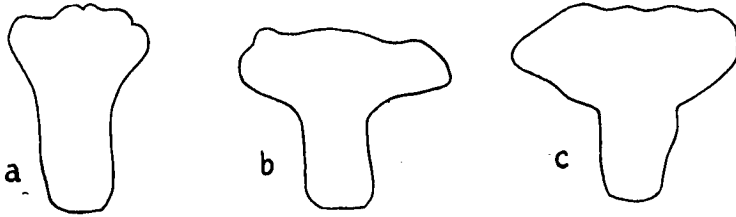


Fig. 6. Corolla shape—a. *M. hispida* Schldl., typical form; b. *M. hispida* Schldl var. *maior* Lako; c. *M. arvensis* (L.) Hill.

Also the hairiness of the plant and the colour and form of the nutlets show more affinity with *M. arvensis* (Fig. 1).

But this form evidently differs from *M. arvensis* with regard to its entire habit and the above-mentioned details. The question arises what taxonomic status should be accorded to it. By studying the literature it appears that many varieties and formae have been created, but that none of these meet the requirements of this form. When reading (e.g. M. J. COP (1846), E. ZEDERBAUER (1923), A. CHEVALIER (1941)) that *M. arvensis* shows a seasonal dimorphism and may vary from year to year due to light, soils, humidity, etc., then it is perhaps better to agree with CHEVALIER who does not identify as to subspecific taxa but describes oecotypes to be expect for different surroundings.

One must not forget that not so many differences appear in the descriptions of these taxa respectively oecotypes but, above all, that the underlying points of view are different.

Unfortunately we cannot, because of a lack of data, relate this form to its habitat.

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