

Three hawkweeds (*Hieracium*, Asteraceae) from the Netherlands typified and raised to species rank

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After a short sketch of Dutch hieraciology, three taxa belonging to *Hieracium* sectt. *Vulgata* and *Tridentata* that were described from the Netherlands at the rank of subspecies or variety by Zahn are typified and raised to species rank. *Hieracium meppelense* (Zahn) Haveman comb. et stat nov. is found in the province of Drenthe in the northeastern part of the country, *H. limburgense* (Zahn) Haveman comb. et stat nov. in south-Limburg in the southernmost part and *H. macrodontophyllum* (Van Soest et Zahn) Haveman comb. et stat nov. in the surroundings of Nijmegen and Arnhem, and further north in the central sand area. Photographs of the types as well as maps with the hitherto known distribution of these three species are included.

The sections *Vulgata* (Griseb.) Willk. & Lange and *Tridentata* (Fr.) Arv.-Touv. are the two largest sections of *Hieracium* (subgenus *Hieracium*) in the Netherlands. The last one who made a comprehensive review of the genus in the Netherlands was Van Soest in the late twenties of the last century. Working in the central-European tradition (Schuhwerk 2002), Van Soest (1926, 1927, 1928, 1929a) recognised four species of *H.* sect. *Vulgata* in the Netherlands: *H. lachenalii* Suter ('*H. vulgatum* Fr.' sensu Van Soest), *H. vulgatum* Fr. ('*H. levicaule* Jord.' sensu Van Soest), *H. maculatum* Schrank and *H. diaphanoides* Lindeb. The apomictic lineages were described as subspecies under these taxa, 32 in total. Of these subspecies, three were newly described in these publications by Zahn, with whom Van Soest worked in close co-operation. Furthermore, ten new varieties were described from the Netherlands, in addition to the one that was described on the basis of Dutch material by Zahn already in his overview in Engler's 'Das Pflanzenreich' (Zahn 1921–1923). Within *H.* sect. *Tridentata*, Van Soest listed 24 subspecies under *H. laevigatum* Willd., ten of which were new to science at the time. Besides these subspecies, several varieties and formae were newly described.

Later on when Van Soest shifted activities to *Taraxacum*, Dutch *Hieracium* taxonomy died an early death, and for about 70 years hardly any attention was paid to this apomictic genus. As a consequence, no recent information about the status and conservation value of the Dutch *Hieracium* taxa is available. In a paper about lumping apomict taxa and the consequences thereof for phytosociological research and nature management (Haveman et al. 2002), it was decided to organise excursions within the framework of the Dutch

Phytosociological Society, in order to elucidate both the taxonomy and the ecology of the apomictic *Hieracium* taxa. As a result of these excursions, additional field trips as well as herbarium studies, it became clear that several of the taxa described by Zahn in Van Soest's papers merit recognition at the species level, being independent apomictic lineages with a distinct morphology, and having a wider distribution than previously assumed. In this paper, three of these taxa, two of which were described at the rank of subspecies and one at the rank of variety, are raised to species rank and lectotypified. Both taxa of *H.* sect. *Vulgata* and *H.* sect. *Tridentata* are concerned, viz. *H. vulgatum* Fr. ssp. *meppelense* Zahn, *H. vulgatum* Fr. ssp. *argillaceum* (Jord.) Zahn var. *limburgense* Zahn, and *H. laevigatum* Willd. ssp. *macrodontophyllum* Van Soest & Zahn, respectively. Most of the other taxa described in Van Soest's papers are still under evaluation, and a final decision on their status cannot be made until further research has been done. Only *H. weverianum* (Zahn) Haveman has previously been lectotypified and raised to species rank (Haveman 2006). Typification and evaluation of the other taxa are part of an ongoing project.

Typification of the new names given by Zahn and Van Soest in the revisions by Van Soest (1926, 1927, 1928, 1929a) is rather straightforward in most cases. The names were based on material in the herbarium of the Dutch Botanical Society which was kept in L. It was sent to Zahn in Karlsruhe by Van Soest, and after identification and annotation by Zahn it was sent back. The herbarium of the now Royal Dutch Botanical Society is still kept in L, which makes typification rather easy. Only in the fourth volume of his revision, Van Soest (1929a) sent additional material from private collections, and these were sent back to the original collectors,

e.g. Kern and Reichgelt (Nijmegen), and De Wever (Nuth). Most of this material is stored in the Dutch National Herbarium now, except for the important collections of the latter. F. C. A. de Wever (1874–1947) was a medical doctor in Nuth near Valkenburg in south-Limburg and a very active botanist. His herbarium, comprising about 20 000 collections, is preserved in the herbarium of the Natuurhistorisch Museum Maastricht (MAAS). Besides, in the collection of the museum three school exercise books are kept in which De Wever meticulously noted all his *Hieracium* finds; these exercise books are a very valuable reference for the historical distribution of *Hieracium* taxa in south-Limburg.

Material and methods

For the designation of types, the collection in the Dutch National Herbarium in Leiden (L) and the herbarium of De Wever in the collection in the herbarium of the Museum for Natural History in Maastricht (MAAS) were examined for the presence of original species mentioned by Van Soest (1926, 1929a). For the distribution maps, various sources were used: specimens mentioned by Van Soest (1926, 1929a), specimens in the above mentioned herbaria, the exercise books of De Wever, as well as own field notes and vegetation relevés. The latter are stored in the Dutch National Vegetation Database (Jansen et al. 2011). The distribution maps are made in ArcGIS 10, using the so-called 5 × 5 km ‘hour blocks’ of the Dutch RD grid, which are the common unit for Dutch botanical and zoological inventories (Mennema et al. 1980). A list of all records on which the maps are based is given in Appendix 1.

Hieracium meppelense (Zahn) Haveman comb. et stat. nov. (Fig. 1)

Basionym: *Hieracium vulgatum* Fr. subsp. *meppelense* Zahn in Van Soest (1926), *Het geslacht Hieracium in Nederland I – Nederlands Kruidkundig Archief* (1925, p. 180, Fig. 30).

Based on the same type: *Hieracium lachenalii* Suter subsp. *meppelense* (Zahn) Zahn (1930–35 [1934], p. 180).

Lectotype (designated here): Herbarium Jansen and Wachter, “20488/90, *Hieracium tridentatum* × *vulgatum*?, Unio bij Meppel, Leg. Janssen and Wachter, VII 1917”, in L, no. 8–01280. The herbarium sheet bears a handwritten Latin description and an annotation label by Zahn. Three plants are mounted on the herbarium sheet, all belonging to the same species. According to the ICBN art. 8.2 (McNeill et al. 2007) there is no need to designate one of the plants as lectotype specifically; this is not changed in the ICN (Melbourne code, see Knapp et al. 2011 for major changes from the Vienna code). The handwritten word ‘Typus’ has been added on the original label.

Stem 3–4 dm tall, the lower part with dense eglandular hairs, becoming few to fairly numerous upwards. Leaves phyllopodous; basal leaves elliptic or oblong-lanceolate, acute at apex, narrowed at the base, with lower side mostly reddish, hairy on both sides or glabrescent above,

serrate-denticulate; petiole short, with dense, sometimes yellowish eglandular hairs; cauline leaves ca 3, oblong-lanceolate or lanceolate, often rather small, sharply serrate-denticulate. Inflorescence squarrose with 2–3(–4) branches, each bearing 1–4 capitula only; peduncles short, with dense stellate hairs and sparse short glandular hairs; acladium 15–30 mm with small bracts. Involucrum 9–10 mm; the outer involucral bracts rounded, the inner ones acute at apex, dark green with lighter margin, with fairly numerous pale eglandular hairs, occasional short glandular hairs, and scattered stellate hairs. Styles yellowish–brown, and finally dark.

Similar species

Hieracium meppelense is similar to *H. neopinnatifidum* Pugsley, but differs in having dark instead of yellow stigmas, a conspicuously squarrose inflorescence with only few capitula, less abundant and shorter glandular hairs and more stellate hairs on the outer involucral bracts. The dentation on the leaf tend to be shorter and more serrate than those of *H. neopinnatifidum*.

Notes

This taxon was described by Zahn (in Van Soest 1926) on the basis of only one gathering, made by Janssen en Wachter at the Unio-excursion in 1917 to Meppel, in the southwestern part of the Dutch province of Drenthe. No further locations were mentioned by Van Soest in the last part of his revision (Van Soest 1929a), but it was collected several times in the 1940s just south of the city of Groningen, and also further south near Borger. In 2004, it was rediscovered during a vegetation mapping project at the military training area ‘De Haar’, just south of Assen, the capital of Drenthe. Probably *Hieracium meppelense* still grows in other localities in the northern part of the Netherlands. The hitherto known distribution is depicted in Fig. 2a.

Hieracium limburgense (Zahn) Haveman comb. et stat nov. (Fig. 3)

Basionym: *Hieracium vulgatum* Fr. subsp. *argillaceum* (Jord.) Zahn var. *limburgense* Zahn (1921–1923 [1921], p. 365).

Based on the same type: *Hieracium lachenalii* Suter subsp. *argillaceum* (Jord.) Zahn var. *limburgense* (Zahn) Zahn (1935, p. 531).

Neotype (designated here): “*Hieracium caesium*, Gulpen, 23 Jul 61” in L. Apart from a handwritten label the sheet bears a printed label with the collectors (v.d. Bosch, v.d. Sande Lacoste, Suringar), and the date (U.I. 21–23 Jul 1861), as well as a handwritten annotation label by Zahn.

Stem 3–5 dm tall, the lower part with dense long eglandular hairs, upwards quickly becoming hairless. Leaves phyllopodous, with upper surface sometimes bluish-green; basal leaves broadly ovate to elliptic-lanceolate, at both ends equally attenuate, with numerous small teeth, on the upper surface with scattered hairs to almost hairless; petiole often (very) short; cauline leaves 3–4, remote, upwards quickly becoming smaller, entire or finely serrate. Inflorescence corymbose with 3–5 long branches which are branched in



Figure 1. Lectotype of *Hieracium vulgatum* Fr. subsp. *meppelense* Zahn in L.

the upper half only; capitula relatively few, ± 10–15. Involucral bracts narrowly lanceolate, acute at apex, with moderate to numerous moderately fine and short glandular hairs, and scattered stellate hairs only in the lower half. Styles yellow.

Similar species

Hieracium limburgense was originally described as variety of *H. vulgatum* Fr. subsp. *argillaceum* (Jord.) Zahn. In his magnum opus, Zahn (1930–1935) moved all the taxa, which



Figure 2. Distribution of the three typified *Hieracium* species in the Netherlands. (a) *H. meppelense*, (b) *H. limburgense*, (c) *H. macrodontophyllum*.

he earlier considered subordinate to *H. vulgatum*, to the 'Hauptart' *H. lachenalii* Suter, thus the name of the taxon here concerned became *H. lachenalii* Suter subsp. *argillaceum* (Jord.) Zahn var. *limburgense* (Zahn) Zahn. In comparison to *H. argillaceum*, the glands on the involucre bracts are shorter and less dense, the leaf margin is only rather finely serrate instead of the typical pinnatifid teeth of *H. argillaceum*, and normally the leaves are smaller, less hairy, and have only very short petioles. Besides the morphological distinctness, it occupies a distinct and well described range in the southernmost part of the Netherlands. Although the Zahnian varieties generally seem to comprise phenotypical variation only, this apparently is not the case with his var. *limburgense*. Morphological distinctness and a distinct geographic area justify its recognition as a separate species, as effectuated here.

Notes on typification

The original material of *Hieracium limburgense*, collected by De Wever near Valkenburg (Zahn 1921–1923, p. 365), could not be retrieved from the herbarium of De Wever in MAAS, nor from the herbarium of the Dutch Botanical Society in L. Possibly, Zahn kept the early material he got from De Wever in his own herbarium, which was later included in the Berlin-Dahlem Herbarium and which was destroyed during the allied bombing raid on Berlin early March 1943. In the school exercise books in which De Wever kept record of all his *Hieracium* finds and which are conserved in MAAS there is no record of *H. limburgense* from Valkenburg though. Since the original description was only based on this sole collection, a neotype has to be chosen. In his revision of the Dutch hawkweeds, Van Soest (Van Soest 1926, p. 173) mentioned three collections from which one could be retrieved



Figure 3. Lectotype of *Hieracium vulgatum* Fr. subsp. *argillaceum* (Jord.) Zahn var. *limburgense* Zahn in L.

in L. The sheet bears one specimen, after which the drawing in Van Soest's revision (1926, Fig. 22) was made. This plant was collected by Van de Bosch, Vandesande-Lacoste, and Suringar in 1861 near Gulpen and it was seen by

Zahn, who identified it as *H. lachenalii* ssp. *argillaceum* var. *limburgense*, as is clear from a handwritten revision label. The plant resembles the protologue well, so I designate this plant as neotype.



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Figure 4. Lectotype of *Hieracium laevigatum* Willd. subsp. *macrodontophyllum* V. Soest & Zahn in L.

Ecology and distribution

Hieracium limburgense appears to be rather frequent in a small area, comprising the southernmost part of the Dutch province of Limburg (Fig. 2b). This area is recognised as a

separate flora district by Dutch florists (Weeda 1989), forming the northernmost part of the 'Maasdistrict' of the Belgian florists (Lambinon et al. 1998, Van Landuyt et al. 2006), characterised by its calcareous substrate and loess soils.

Probably it can be found in the adjacent parts of Belgium around Liege and Germany around Aachen too, as was suggested by Van Soest (1929b) already on a hand-drawn map in a manuscript on the geography on Dutch hawkweeds which is kept in the Berlin-Dahlem herbarium (Lack 1978).

Hieracium limburgense is found especially in fringe communities in abandoned grasslands and forest edges. It seems to avoid the most calcareous parts of the landscape and has his optimum probably at circumneutral soils. In some places, it grows together with a peculiar mix of species of calcareous and acidic soils, like *Brachypodium pinnatum*, *Carex caryophylla*, *Viola canina*, *Campanula rotundifolia*, *Agrostis capillaris*, *Danthonia decumbens*, *Teucrium scorodonia*, *Carex pilulifera* and *Holcus mollis*; this vegetation is usually referred to as *Betonico-Brachypodietum* (Swertz et al. 1996).

***Hieracium macrodontophyllum* (Van Soest et Zahn) Haveman comb. et stat nov. (Fig. 4)**

Basionym: *Hieracium laevigatum* Willd. subsp. *macrodontophyllum* Van Soest et Zahn in Van Soest (1927), Het geslacht *Hieracium* in Nederland II – Nederlands Kruidkundig Archief (1926, p. 186, Fig. 44).

Lectotype (designated here): Herbarium Van Soest no. 485 “*Hieracium laevigatum* Willd. s. gr. *rigidum* (Hartm.) Z., Diependalseweg, Arnhem, 26 VII 1923 leg J.L.v.S.” in L. The sheet bears a handwritten annotation label by Zahn: “*Hieracium laevigatum* Willd. ssp. *macrodontophyllum* Zahn n.ssp. f. *normale!*, *involucrum pilosis et glandulosis!*, Z. 1924”, as well as two typed labels by Van Soest.

Taxonomic synonym: *Hieracium laevigatum* Willd. subsp. *macrodontophyllum* Van Soest et Zahn f. *glandulosum* Zahn ex Van Soest (1927, p. 188) cum Dutch descr.”

Lectotype (designated here): Herbarium Van Soest 1854 “*Hieracium levigatum* Willd, Boschrand Warnsborn, Arnhem VIII 1925 leg J.L.v.S.” in L (bar code L0011909); on this label Zahn has written “ssp. *macrodontophyllum* v. Soest et Z. f. *glandulosum*”; a pink label designates this as isotype, but this was never published.

Stem 5–12 dm tall, near the base with moderate to scattered eglandular hairs, upwards with sparse eglandular hairs or without hairs. Leaves aphyllodous or pseudo-phyllodous; cauline leaves 8–30 or even more, elliptic-lanceolate to oblong-lanceolate, the lower long-attenuate into the petiole, the middle and upper ones shortly contracted at the base, (sub-)sessile, all (even the upper ones) with conspicuous teeth in the lower half, some of which are curved to the apex, long-attenuate at apex, with upper surface dark green, glabrescent and lower surface pale green, slightly hairy, midrib of the lower surface with denser hairs. Inflorescence paniculate or cymose-paniculate, with 5–10(–15) branches, and 5–numerous capitula, often partly aborted; acladium 2–3 cm; pedicels with sparse eglandular hairs and sometimes glandular hairs. Involucrum (8–)10–12 mm; involucral bracts acuminate, obtuse or slightly acute at apex, dark green with light green margins, with sparse stellate and pale eglandular hairs, and scattered glandular hairs of different length. Styles yellow to yellowish–brownish.

Similar species

Hieracium macrodontophyllum resembles the widespread *H. laevigatum*, but differs from this species in having hairs on the pedicels and outer involucral bracts, and long and slender, mostly forward curved (instead of irregular short triangular), sometimes pinnatifid teeth on the elliptical to long-lanceolate (instead of broadly lanceolate to ovate) leaves. It is a conspicuous species, which can be well over a meter high, with over 40 leaves.

Distribution and ecology

In the original description of subsp. *macrodontophyllum* seven collections are mentioned: four from the Arnhem area (Van Soest’s residence at the time), two from the Nijmegen area, and one from the very disjunct location Oosterbroek, east from the city of Groningen in the northeastern part of the country. The distribution in the Arnhem-Nijmegen region is well established, and the species still grows in the wider surroundings of these two cities, mainly in half-shaded road verges. Most probably, *H. macrodontophyllum* can be found in the Reichswald near Kleve at the German side of the border too. The material from Oosterbroek was collected in the nineteenth century by Van Hall, and is kept in L. Although it resembles *H. macrodontophyllum* in habit, it most probably does not belong to this species, because of the very dense hairs on the indumentum and pedicels. After ssp. *macrodontophyllum* was published, it was also collected from scattered locations on the Veluwe and the Achterhoek, the central sand regions in the Netherlands (Fig. 2c).

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Appendix 1. Records used for the construction of the distribution maps

This appendix gives a comprehensive list of all records used for the distribution maps of *Hieracium meppelense*, *H. limburgense*, and *H. macrodontophyllum* in this paper. They include herbarium material, records from the papers of Van Soest (indicated by ‘VS’, followed by the year of publication, and the page on which the record is to be found), records from the note books of De Wever (indicated by ‘NB DW’), and field notes and vegetation relevés by the author. All records are followed by a coordinate in the ‘Rijksdriehoeksstelsel’ used in flora and fauna surveys in the Netherlands.

Hieracium meppelense: – Herbarium Jansen and Wachter 1917, bij Meppel, no. 20488, 20489, 20490, lectotype, L: 207/522 – Herbarium Van Soest 1938, Drouwen, no. 11906, L: 249/552 – Herbarium Van Soest 1938, Heide Borger-Bronneger, no. 11909, L: 250/551 – Herbarium Van Soest 1953, ten zuiden van De Punt, no. 32531, 3254, L: 240/570 – Herbarium Van Soest 1953, ten zuiden van De Punt, no. 52542, L: 236/569 – Herbarium Van Soest, 1953, Taarlo, no. 32538, 32539, L: 238/516 – Herbarium Haveman, 2004, De Haar bij Assen, no. 2748: 231.187/551.222.

Hieracium limburgense: – Herbarium Nederlandse Botanische Vereniging 1861, Gulpen, neotype, L: 190/314 – VS 1926: 173, Herbarium Nederlandse Botanische Vereniging 1861, Gronsveld, L: 179/313 – VS 1926: 173, Herbarium Nederlandse Botanische Vereniging 1889, Schaesberg, L: 199/322 – VS 1926: 173, Herbarium Jansen and Wachter 1914, Valkenburg-Houthem, L: 183/320 – Herbarium J. Brand 1914, St Pietersberg Maastricht, L: 176/314 – Herbarium Joh. Jansen, Bovenste Bosch Epen, L: 190/307 – Herbarium Van Soest 1948, Hoensbroek, no. 25334, L: 193/326 – Field note R. Haveman 1994, Savelsbosch, Zure Dries: 180/312 – Herbarium Haveman 2004, Bemelen, no.

2756: 181.649/317.914 – Vegetation relevé R. Haveman 2007, Ubachsberg: 194.131/318.354 – NB DW w.o. yr, Schinnen, Thullerheide: 190/327 – NB DW w.o. yr., Wijnandsrade, bos richting “Blauwe Steen”: 189/323 – NB DW w.o. yr, Hoensbroek: 191/324 – NB DW w.o. yr, Hoensbroek: 192/324 – NB DW w.o. yr, Brunssum: 196/328 – NB DW w.o. yr, Epen, Bovenste Bosch: 190/307 – NB DW w.o. yr, Gronsveld, kiezelgroeve Savelsbosch: 180/312 – NB DW w.o. yr, Hulsberg, Wissegrachterhei: 189/322 – NB DW w.o. yr, Ronde Bosch, Houthem: 183/321 – Epen, kiezelgroeve Swijbergerbosch: 191/311.

Hieracium macrodontophyllum: – Herbarium der Vereniging voor de Nederl. Flora 1849, Roozendaal bij Arnhem, L: 194/446 – Herbarium Van Soest 1923, Oosterbeek, no. 484, L: 187/444 – Herbarium Van Soest 1923, Diependalse weg, Arnhem, no. 485, lectotype, L: 188/444 – Herbarium Kern & Reichgelt 1925, Hatert, L: 185/424 – Herbarium Van Soest 1925, Warnsborn, Arnhem, no. 1857, L: 188/445 – Herbarium Van Soest 1925, Warnsborn, Arnhem, no. 1854, L: 188/445 – Herbarium Van Soest 1925, Warnsborn, Arnhem, no. 1856, L: 188/445 – Herbarium Van Soest 1925, Warnsborn, Arnhem, no. 1855, L: 188/445 – Herbarium Van Soest 1926, Heijenoordsche weg, Arnhem, no. 483, L: 188/444 – Herbarium Kern & Reichgelt 1926, Kanaalwerken Graafsche Weg, Nijmegen, no. 12054, L: 184/426 – Herbarium A. Gorter 1934, Buunderkamp, Wolfheze, no. 198, L: 180/447 – Herbarium A. Gorter 1934, Wolfheze, no. 199, L: 182/446 – Herbarium A. Gorter 1934, De Groote Kweek, Arnhem, no. 197, L: 186/448 – Herbarium L. H. Siertsema 1936, Warnsborn, Arnhem, no. 3960, L: 186/447 – Herbarium H. J. van Hattum 1942, Apeldoorn, no. 906, L: 192/470 – Herbarium Van Soest 1946, Klaterweg Doornspijk, no. 14710, L: 184/489 – Herbarium Van Soest 1946, Oosteinderweg, Nunspeet, no. 14707, L: 183/488 – Herbarium H. J. van Hattum 1946, Gorssel, “De Pessink”, no. 4053, L: 210/471 – Herbarium Veth and Koopmans 1962, Apeldoorn, Berg en Bos, L: 192/470 – Herbarium Haveman 2003, Overasseltse Vennen, Heumense weg, no. 2692, L: 183.709/420.881.