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Research article

The taxonomic history of *Pilosella floribunda* (Asteraceae), a common hybridogenous aggregate of central, northern and eastern Europe

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The taxonomic history, nomenclature and application of one of the oldest species names in *Pilosella* are reviewed. *Hieracium floribundum* originally included a hybrid swarm with the participation of *Pilosella lactucella*, *P. caespitosa*, *P. praealta* and partly *P. officinarum*, and was interpreted either as a binary (*P. lactucella* × *P. caespitosa*) or triple (*P. lactucella* × *P. caespitosa* × *P. praealta*) hybrid. The original material of *H. floribundum* from Silesia, Poland includes plants of the triple hybrid which are designated as its lectotype in conformity with the usage of the species name that has been predominant during its history. The lectotype belongs to a morphotype in which the diagnostic characters of *P. lactucella* are dominant, and which is not typical of northern and eastern Europe. A further lectotype from the same hybrid complex is designated for *H. floribundum* var. *subcymosum*.

Keywords: Asteraceae, botanical nomenclature, exsiccata, historical collections, lectotypification, *Pilosella*

Introduction

The taxonomy of *Pilosella* Hill is highly complicated by a notorious ability of nearly all species of this small genus to produce interspecific hybrids, which frequently appear in nature and may locally prevail over the parental taxa (Fehrer et al. 2007, Urfus et al. 2014, Krahulcová et al. 2018). Bräutigam and Greuter (2007) recognised only 20 'species aggregates' of *Pilosella* in Europe, meaning those taxa that can be considered 'basic', or non-hybridogenous at least in the recent evolutionary perspective. At the same time, these authors listed 122 hybridogenous 'collective species', i.e. derivates of interspecific crosses between certain combinations of two or more (up to four) 'basic' taxa.

As already observed by classical authors (Peter 1884, Nägeli and Peter 1885, Zahn 1923), interspecific hybrids between the same species of *Pilosella* may appear highly different, being similar to either of the parents, or, in some cases, may have an intermediate morphology. Hybrids of the same origin can be numerous and unstable, but

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sometimes stabilised morphotypes may emerge which deserve the status of 'intermediate' species (Krahulcová et al. 2018).

Some regional variation in the hybridisation patterns of *Pilosella* has been detected in Europe. For example, the species frequently hybridising in Bulgaria differ from those involved in hybridisation in central Europe, and the frequency of hybridisation between various species highly differs in these regions (Krahulcová et al. 2018). Such regional hybridisation patterns may potentially result in different stabilised 'intermediate' species (c.f. Tyler 2017).

The biological complexity of the genus *Pilosella* has motivated contrasting taxonomic approaches which still compete for acceptance. The classical Central European tradition, associated with the monographs of Nägeli and Peter (1885) and Zahn (1923), recognised relatively few non-hybridogenous and hybridogenous species, but countless subspecies within nearly every species. Similarly, the classical Nordic tradition (Norrlin 1906) adopted this system but mostly elevated the subspecies to the species rank. Both traditions accepted minor segregates within *Pilosella* in the same way as in the taxonomic concept of narrow splitting that was elaborated for *Hieracium*, despite the different mating systems in these genera which caused different types of apomixis and, consequently, dramatically different degrees of mutual separation of the segregates: sexual reproduction is common in *Pilosella* and prevents the evolutionary formation of stable microspecies in this genus (Fehrer et al. 2007).

With the understanding that the separation of endless unstable morphotypes is practically impossible, other, and more recent, classifications applied various levels of lumping as compared to the classical schemes. Schljakov (1989) retained the splitting within presumably non-hybridogenous taxa but lumped the hybrids according to their origin and morphology, thus accepting only one or a few morphotypes arosen from the same hybrid combination, like in Zahn (1923). Sell and West (1976) accepted a system of 'basic' species which were subdivided into subspecies, and numerous hybridogenous nothospecies which were defined on the basis of their origin, disregarding deviations in their morphology. Bräutigam and Greuter (2007) followed this approach but grouped the species and hybrids into aggregates; they recognised one or more taxa within an aggregate based on their morphology, even when the hybrid origin was presumed to be the same. Finally, a radically lumping approach was presented by Tyler (2001), who reduced even some former 'basic' taxa to subspecies because of their ability to commonly hybridise in nature, thus making the taxonomic limits completely blurred; however, in other works (Tyler 2017) he accepted stabilised hybrids at the species level also in his system.

Today it is clear that the taxonomic diversity in 'basic' taxa of *Pilosella* is limited, and no 'microspecies' can be recognised in this genus because of the extensive interfertility. The classification proposed by Bräutigam and Greuter (2007), which is currently in use in the Euro+Med PlantBase (Bräutigam and Greuter 2007–2009), provides a good operational basis for an overview of the taxonomic diversity of this genus in Europe, although the rank of subspecies used in this work, inherited from the system of Sell and West (1976), could be better changed to species because the subspecies of Bräutigam and Greuter (2007) are easily recognisable by morphological characters and have their own distribution areas, and therefore meet the criteria of species-level classification (Grant 1981).

I agree with the classification of hybrid aggregates according to their morphology, as already employed by Zahn (1923) who taxonomically separated morphotypes belonging to the same hybrid formula but sharing a different proportion of morphological characters with individual parents. For example, Zahn (1923) treated as separate taxa two variants of hybrids between *P. officinarum* F. Schultz and Sch. Bip. and *P. echioides* (Lumn.) F. Schultz and Sch. Bip.: *P. bifurca* (M. Bieb.) F. W. Schultz and Sch. Bip. (morphologically approaching the first parent) and *P. rothiana* (Wallr.) F. W. Schultz and Sch. Bip. (morphologically approaching the second parent). This distinction is practical not only because of the apparent morphological differences but also because these hybrids share ecological niches with their morphologically similar parents and may be evolutionarily connected with these parents by introgressive hybridization. Apart from Schljakov (1989), for the same practical reasons this approach was accepted by Bräutigam and Greuter (2007).

Pilosella floribunda (Wimm. and Grab.) Fr. (syn. *Hieracium floribundum* Wimm. and Grab.), which presumably originated from interspecific crosses between *P. lactucella* (Wallr.) P. D. Sell and C. West (syn. *H. lactucella* Wallr.) and *P. caespitosa* (Dumort.) P. D. Sell and C. West (syn. *H. pratense* Tausch; *P. aurantiaca* subsp. *dimorpha* (Norrl.) T.Tyler) (Sell and West 1976, Tyler 2001, Bräutigam and Greuter 2007–2009), belongs to the most common hybrids of *Pilosella* in southern Finland (Jalas 1998). According to Bräutigam and Greuter (2007–2009), it is widely distributed in northern, central and eastern Europe. In this circumscription, adopted after Sell and West (1976), this taxon is supposed to include every morphotype originated from the hybridisation between the same parental species; alternatively, the hybrids of the same parentage but morphologically resembling *P. lactucella* are recognised separately as *P. cochlearis* Norrl. (syn. *P. cochleatum* (Naeg. and Peter) Norrl.) (Zahn 1923, Bräutigam and Greuter 2007–2009).

Despite the currently wide acceptance of this species name, there are other approaches to the taxonomy and interpretation of this plant group that require attention and consideration. Many earlier authors (Reichenbach 1860, Nägeli and Peter 1885, Schneider 1890, Zahn 1910) applied the name *P. floribunda* to, or interpreted it as, a triple hybrid, with the participation of *H. florentinum* All. (now *P. piloselloides* (Vill.) Soják). *Pilosella piloselloides* is replaced in central and northern Europe by its common race with prominent stellate hairs in the synflorescence, which is currently accepted as *P. praealta* (Vill. ex Gochn.) F. Schultz and Sch. Bip. (Sell and West 1976, Schljakov 1989). However, Nägeli and Peter (1885) included many other hybridogenous taxa from northern Europe in their broadly defined *H. floribundum* (e.g. *H. suecicum* Fr., *H. fennicum* (Norrl.) Norrl.), and this inclusion

may probably have prompted its subsequent re-interpretation (Zahn 1923 etc.).

On the other hand, even in recent treatments the actual application of this species name may differ from its intended circumscription. For example, Schljakov (1989) circumscribed *P. floribunda* as a binary hybrid in agreement with the treatment of Sell and West (1976), but indicated diagnostic characters that matched with the triple hybrid as discussed above. Similarly, Bräutigam and Greuter (2007) declared that they interpreted this taxon as a binary hybrid, but included (Bräutigam and Greuter 2007–2009) many synonyms in its circumscription, which partly disagree with the declared parentage.

When some original material of *H. floribundum* was uncovered in the Herbarium of the Komarov Botanical Institute, it was possible to clarify this taxonomic problem with the lectotypification of this species name and the comparison of this taxon with plants occurring in central Europe. The protologue and the history of its interpretation support the proposed lectotypification as presented below.

Material and methods

Historical herbarium collections were examined *de visu* at the Komarov Botanical Institute (LE). The nomenclature of Finnish *Hieracium* taxa is based on Sennikov (2002). Plant morphology, variability and distributions were evaluated on the basis of the herbarium collections of H and LE and personal field observations. The species-level taxonomic concept generally follows Zahn (1923), Schljakov (1989) and Bräutigam and Greuter (2007–2009).

Plant names are applied according to their nomenclatural types, except for *Pilosella praealta* and *P. caespitosa* whose types are currently lacking, which are traditionally used in agreement with Sell and West (1976), Schljakov (1989) and Bräutigam and Greuter (2007–2009).

Nomenclatural evaluations and decisions are based on the current International Code of Nomenclature for algae, fungi, and plants (Turland et al. 2018).

Results

Taxonomic backbone

To characterise the non-hybridogenous species (*Pilosella caespitosa*, *P. lactucella*) and identify their hybrid parentage by morphology, a synopsis of diagnostic characters can be used (Table 1), summarised from field observations, herbarium collections and main published sources (Sell and West 1976, Schljakov 1989, Jalas 1998).

Considering these diagnostic characters, a violet colouration of the stem base with numerous red-based hairs indicate the hybrid influence of *P. caespitosa*, together with the typical occurrence of dark styles and stellate pubescence on the lower side of dark green leaves, and a larger size of flowering heads. The participation of *P. lactucella* is recognisable by the pale glaucous colour of leaves, which tend to be spathulate, undulate, yellowish-glaucous and glabrescent, by low and slender stems, and by numerous slender glandular hairs in the synflorescence and along the stem; a prominent feature of this species is the sulphureous tint of its flowers, which is often recognisable in hybrids. Hybridisation with *P. praealta* may be observable in taller stems, rigid, long, narrow and acute leaves, which tend to become glaucous and glabrescent, smaller flowering heads, poorly developed simple and glandular hairs on stems and branches, and greenish tips of the flower teeth.

Taxonomy and nomenclature

Pilosella floribunda (Wimm. and Grab.) Fr. (Fries and Lagger 1865, Pilosella No. 17)

H. floribundum Wimm. and Grab. (Wimmer and Grabowski 1829: 204). – Type: Poland. 'E Silesia' [Günther, Grabowski and Wimmer, Herb. Siles. XV: 23] (LE, middle flowering plant, lectotype designated here) (Fig. 1, 2).

= *H. floribundum* var. *subcymosum* Wimm. and Grab. (Wimmer and Grabowski 1829: 204). – Type: Poland. 'E Silesia' [Günther, Grabowski and Wimmer, Herb. Siles.

Table 1. Diagnostic characters for *Pilosella caespitosa*, *P. lactucella* and *P. praealta*.

Character	*P. caespitosa*	*Pilosella lactucella*	*Pilosella praealta*
Stem	robust, 25–40 cm long, dark green, base deep violet, with dense stiff simple hairs (red-based below)	slender, 15–25 cm long, yellowish-green, with numerous short glandular hairs and scattered thin simple hairs	robust, 30–50 cm long, straw-coloured, base pale to pink, with sparse stiff simple hairs
Leaves	oblanceolate, attenuate into a narrow petiole, dark green, margins ciliate, surfaces abundantly ciliate, stellate pubescence below	spathulate, gradually narrowed to a broad petiole, glaucous or yellowish-green, glabrous except for the basal part (margins and central nerve beneath long-ciliate)	narrowly lanceolate, gradually narrowed into a narrow petiole, glaucous or pale-green, glabrous except for the margins
Synflorescence branches	corymbose, with numerous glandular hairs, abundant long simple hairs and dense stellate pubescence	loosely aggregated, with abundant short glandular hairs and sparse to dense stellate pubescence	corymbose with supplementary branches, with sparse or lacking short glandular hairs and sparse to dense stellate pubescence
Phyllaries	8–9 mm long, with stiff glandular hairs and abundant simple hairs	6–7 mm long, with slender glandular hairs and single simple hairs	4.5–5 mm long, with rare to sparse short glandular and simple hairs
Flowers	dark-yellow	sulphureous	pale-yellow with greenish tips
Styles	black	yellow	yellow

XV: 23] (LE, left flowering plant, lectotype designated here) (Fig. 1, 2).

Description (based on the type specimens and collections from the type area)

Stems 30–40 cm tall, erect, firm; lowermost internode short, pale to deep violet; with numerous simple hairs up to 3.5 mm long and with little or no stellate pubescence below, with scattered glandular hairs 0.2–0.4 mm long, rare simple hairs and very lax stellate pubescence under the synflorescence. Creeping stolons short or rather long, with narrowly spathulate leaves almost lacking stellate pubescence on the lower surface. Leaves pale green, basal in a rosette; rosulate 5–13 × 0.9–1.2 cm, narrowly spathulate to oblong, shortly acute, shortly narrowed towards the base, with spiculiform teeth; cauline 1–2 (mostly in the basal part of the stem), like the basal but smaller and less narrowed to the base; all glabrous above, with some rigid, violet-based simple hairs along the middle nerve and the margin and solitary to rare stellate hairs along the middle nerve beneath, uppermost subglabrous. Synflorescence corymbiform, usually compact, with 7–10 capitula; branches rather firm, with abundant blackish glandular hairs 0.3–0.5 mm long, solitary simple hairs 2–2.5 mm long and dense stellate indumentum. Involucral



Figure 1. Lectotype of *Hieracium floribundum* (central plant) and *H. floribundum* var. *subcymosum* (left plant).

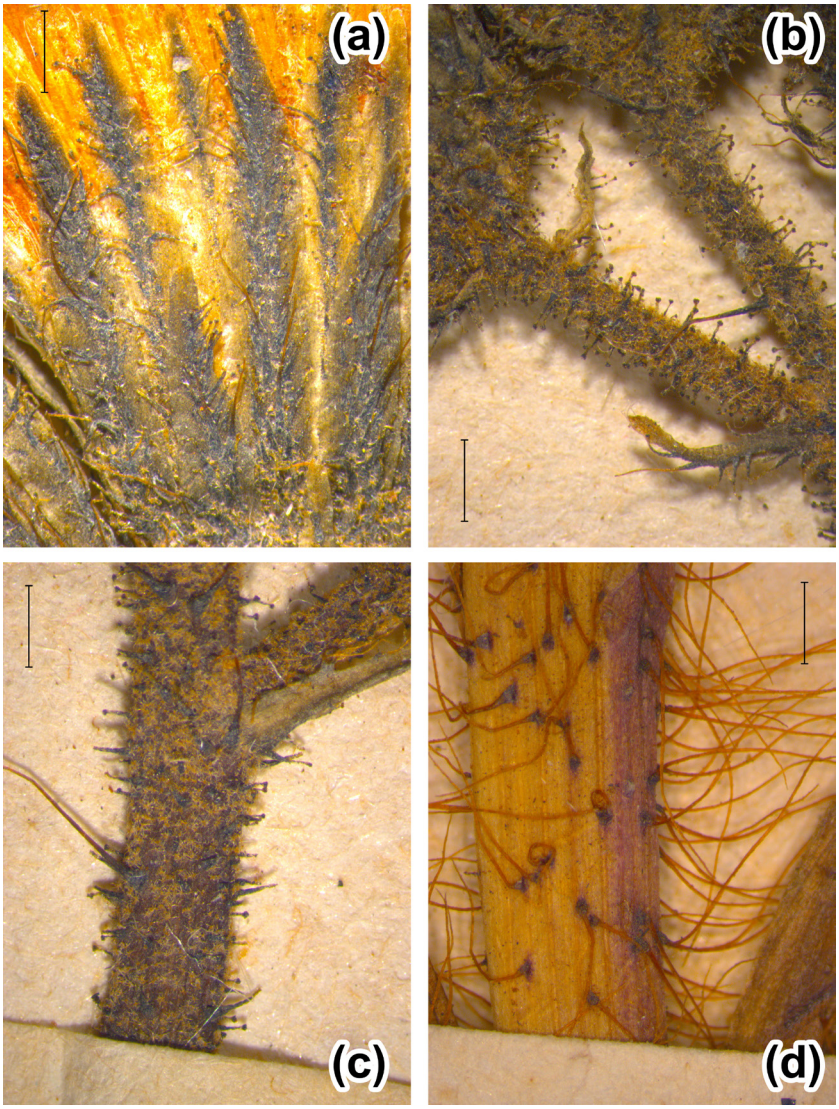


Figure 2. Lectotype of *H. floribundum*. (a) Detail of flowering head, (b) synflorescence branches, (c) stem under the synflorescence, (d) stem at the base. Scale bar: 1 mm.

bracts inner 7.0–8.5 × 0.9–1.1 mm, olive or blackish-green with dark margins, broadly acute at apex, with rare thin dark simple hairs ca 2 mm long, rather dense thin black glandular hairs 0.5–0.6 mm long and scarce stellate pubescence throughout. Flowers 12–13 mm long; ligules yellow with a sulphureous tint, teeth darker at the apices. Styles blackish.

Ecology

Natural and disturbed meadows, grasslands in secondary habitats (roadsides, yards, pastures).

Distribution

Pilosella floribunda aggr. (*P. lactucella* × *P. caespitosa*) is native to central, northern and eastern Europe; in Finland it is abundant in the south, extending northwards up to *Ostrobottnia ultima* and *Regio kuusamoensis*; in eastern Europe it occurs frequently northwards up to Russian Karelia (Schljakov 1989, Sennikov 2007). It is alien outside Europe: Russian Siberia (Tupitzina 2004), North America (Wilson et al. 2006). The morphotype corresponding to its lectotype specimen occurs in Central Europe (Schljakov 1989) and is not typical of Sweden (Tyler 2017), Finland and neighbouring Russia (Schljakov 1989; pers. obs.).

Discussion

Taxonomic interpretation of *H. floribundum*

To understand the original application of the name *H. floribundum*, the nomenclatural analysis starts from the protologue, in order to uncover a clue how to treat the original material. The diagnostic characters used by Wimmer and Grabowski (1829) are compared in Table 2. The comparisons demonstrate that their *H. floribundum* shared the diagnostic characters of *P. caespitosa* (oblanceolate leaves, hairy stems and

leaves) and *P. praealta* (spreading stolons tend to flower). The intermediate position of *H. floribundum*, which was placed between "*H. auricula*" (*P. lactucella)* and "*H. praealtum*" (*P. praealta)* by Wimmer and Grabowski (1829), is reflected in its morphological similarity to both those species.

To understand the original circumscription of *H. floribundum* in greater detail, its varietal structure (Wimmer and Grabowski 1829) was examined (Table 3). The first variety, *subcymosum*, included characters indicating the possible participation of *P. praealta* (stems less hairy in the lower part), but other characters indicate the influence of *P. caespitosa* (leaves broadly lanceolate) and *P. lactucella* (leaves folded at the apex). The second variety, *furcatum*, bears apparent characters of *P. officinarum* (few flowering heads in a long-branched synflorescence, leaves hairy above with stellate pubescence below). The third variety, *stoloniflorum*, apparently originated from crosses with *P. praealta* (numerous ascending stolons). The same conclusions regarding the two latter varieties were reached by Fries (1862).

Despite the brevity of its protologue, *H. floribundum* was interpreted as a hybrid between *Pilosella lactucella* (as '*H. auricula*') and *P. caespitosa* (as '*H. collinum*') by Patze et al. (1850). Later, Wimmer (1857) added an extensive discussion on the species due to its similarity to *P. praealta* and *P. lactucella*. He noted that his species differs from the former in having flowering heads almost twice greater in size and leaves broader, shorter and not so long attenuated. Wimmer also indicated a wide variability of his species in the width of leaves and the presence of flowers on stolons, apparently because of variable plants in the hybrid complex included. He also noted a possible hybrid influence from *P. officinarum* in one of the varieties. His expanded description and herbarium specimens distributed to various scientists were reflected in the colour portrait of the Silesian plant described by Wimmer (Reichenbach 1860). The coloured drawing in this work represents an apparent hybrid between *P. praealta* (stem, synflorescence, ascending lateral stems with flowers, glaucous leaves), *P. caespitosa* (short, broad and undulate leaves, larger flowering heads) and *P. lactucella* (intense sulphureous tint of flowers).

Fries and Lagger (1865) distributed the specimens recently received from Silesia under the newly published name *P. floribunda*; these exsiccata were collected in 1862–1865 but distributed in the end of 1865 (Nägeli 1866), which is their date of effective publication for nomenclatural purposes. These specimens and the drawing published by Reichenbach seem to be the main sources of subsequent interpretations of the name *H. floribundum* in major taxonomic treatments of the 19th century (Nägeli and Peter 1885, Zahn 1910). These specimens also indicate the continuity of the Silesian taxonomic treatments (Wimmer 1857, Uechtritz 1881), which were established by Wimmer and Grabowski (1829).

Contrary to the majority of early works and his previous writing, Zahn (1923) interpreted *H. floribundum* as a hybrid between *Hieracium auricula* (now *Pilosella lactucella*) and *H. pratense* Tausch (now *P. caespitosa*). This interpretation was accepted by the major floristic compendium of the 20th century, Flora Europaea (Sell and West 1976), from which it entered recent European compilations (Bräutigam and Greuter 2007, 2007–2009).

Schljakov (1989) provided a vague taxonomic treatment, in which he seemingly accepted the interpretation of *Pilosella floribunda* after Zahn (1923) and Sell and West (1976). At the same time, he provided diagnostic characters of this taxon in an identification key, which (narrowly lanceolate leaves) unambiguously indicate that he modelled his species concept after specimens distributed from central Europe in the 19th century. The current species circumscription in central Europe (Bräutigam and Greuter 2007–2009) is imprecise and includes discordant elements, e.g. *H. suecicum* that is a binary hybrid (Sennikov 2024a) and *H. lobarzewskii* Rehmann that is a triple hybrid according to its current use and lectotype (Schljakov 1989, Tikhomirov 2000, 2002). This variability of taxonomic concepts means that a consensus regarding the application of the name *P. floribunda* in Europe is currently lacking.

Typification of *H. floribundum*

Wimmer and Grabowski (1829) indicated that *H. floribundum* was described from two localities in Silesia, then a province of the Kingdom of Prussia. The first locality is situated in the Sudetes foothills: 'zwischen Silsterwitz und Bankwitz am Zobtenberge [between Sulistrowice and Będkowice at Ślęża Mt.]', approximately at 50.86°N,

Table 2. Comparisons of the morphological characters used by Wimmer and Grabowski (1829) for *Hieracium floribundum* and similar species. Most important diagnostic characters are highlighted in bold.

Original species	*Hieracium auricula* (*Pilosella lactucella*)	*H. floribundum*	*Hieracium praealtum* (*P. praealta*)	*Hieracium pratense* (*P. caespitosa*)
Stems	scapo paucifloro	scapo **piloso**	scapo elato saepe glabrato	scapo elato tereti hirsuto superne tomentoso glandulosoque
Leaves	foliis lingulatis integerrimis grabris ciliatis subtus glaucis	foliis **oblongo-lanceolatis** glabris glaucescentibus **sparsim pilosis**	foliis obverse lanceolatis secundariis acutis glaucescentibus ciliatis	foliis **oblongo-lanceolatis** denticulatis hirto-pilosis
Synflorescences			floribus corymbosis	floribus cymosis, anthodio nigricante hirsuto
Stolons	flagellis reptantibus	flagellis reptantibus **floriferisve**		
Identity	*Pilosella lactucella*	*Pilosella lactucella* × *P. caespitosa* & *P. praealta*	*P. praealta*	*P. caespitosa*

Table 3. Comparisons of the morphological characters used by Wimmer and Grabowski (1829) for the named varieties of *H. floribundum*. Most important diagnostic characters are highlighted in bold.

Variety	*subcymosum*	*furcatum*	*stoloniflorum*
Stems	caule **inferne denudato** superne sparsim piloso (pilis nigris)	scapo toto pilis (pellucidis **albis**) longis ciliato	[similar to *subcymosum*]
Synflorescence	corymbo subcymoso	**dichotome diviso paucifloro**	[similar to *subcymosum*]
Leaves	foliis pagina glabris, folia **apice plicata, lato-lanceolata** vel **oblongo-lanceolata acuta**	foliis pagina **pilosis**, pagina **subtus etiam stellato-pubescentia** et pilis sparsis obsessa	[similar to *subcymosum*]
Stolons			**flagellis multis adscendentibus**
Hybrid influence with	*P. caespitosa* & *P. praealta*	*Pilosella officinarum*	more expressed characters of *P. praealta*

16.75°E. The second locality belongs to the central Sudetes: 'auf den Reiserswaldauer Höhen bei Charlottenbrunn [on the Reiserswald hills by Jedlina-Zdrój]', which can be localised approximately at 50.73°N, 16.345°E. Specimens were collected from these localities to the exsiccata (Günther et al. 1822–1829), which were cited in the protologue, but labels of the cited no. 23 of Centuria XV, distributed and probably collected in 1829, do not include any certain locality data. Nevertheless, these exsiccata belong to a cited material that should take precedence over any uncited collections in lectotypification (Turland et al. 2018).

The Silesian herbarium of Wimmer, which was kept at WRSL and contained the main set of the classical exsiccata of the Silesian flora (Günther and Schummel 1811–1821; Günther et al. 1822–1829), was largely destroyed during the Second World War, and the concluding sets of the exsiccata did not survive in Wroclaw (Rostański 1963). However, a good and representative specimen of these exsiccata was found at the Komarov Botanical Institute (LE). This specimen was part of the private herbarium of Franz Carl Mertens (1764–1831), Professor of Handelsschule in Bremen, whose extensive collections included three bundles of the Silesian exsiccata (Oken 1832) and were purchased by the Imperial Botanical Garden in Saint Petersburg (Lipsky 1899).

The specimen found at LE (Fig. 1, 2) is highly heterogeneous, in agreement with the morphological diversity described in the protologue (Wimmer and Grabowski 1829). The specimen consists of four plant fragments, apparently derived from different individuals. A sterile rosette on the right has long hairy leaves and may belong to *H. floribundum* var. *pseudopratense* R. Uechtr. (Uechtritz 1881). Three flowering individuals widely differ in a set of characters: two plants on the left have a more delicate habit, sparse pubescence on stems, short, broadly oblong leaves, weak trailing stolons, larger flowering heads (phyllaries up to 8.5 mm long), synflorescence branches with abundant glandular hairs but lacking simple hairs, and intense colour of flowers with nearly concolour ligule teeth; one individual on the right has a robust habit, prominent pubescence on the stem except for its lowermost part, no trailing stolons (and well-developed leaves), smaller flowering heads (phyllaries up to 7 mm long), synflorescence branches with sparse glandular hairs and numerous long simple hairs, and paler flowers with dark ligule teeth. All these three plants have red-based simple hairs on the stem base and blackish styles. These characters unambiguously indicate that all these plants belong to the triple cross between *P. caespitosa*, *P. lactucella* and *P. praealta*. The two plants on the left show the prominent dominance of characters of *P. lactucella* and, to a lesser extent, *P. praealta*, whereas the third plant on the right and the rosette bear much more apparent traits of *P. caespitosa*.

The three flowering plants agree with the original description of *H. floribundum* (Wimmer and Grabowski 1829). As this description was based on a hybrid swarm of three parental species, any of these plants can be designated as a lectotype. To conform to the historical interpretation of the name *H. floribundum* and its current use in northern (Tyler 2017) and eastern Europe (Schljakov 1989), the middle (most developed) plant on the sheet is designated here as a lectotype of this species name. The left plant on the sheet matches the diagnostic characters of the first variety, '*subcymosum*' because of its apparently undulate leaves (Wimmer and Grabowski 1829) and is designated as a lectotype of the latter.

To date, it is not possible to ascertain the exact geographical origin of the original material of *H. floribundum* distributed in the exsiccata. Possible duplicates, should such be found in the future, must be considered very carefully because of the mixed nature of the material.

Conclusions

In the original circumscription, *H. floribundum* included a hybrid swarm between *P. caespitosa*, *P. lactucella* and *P. praealta*. The designated lectotype belongs to a morphotype with the dominating characters of *P. lactucella*. In contrast, the correct name for hybrids between *P. caespitosa* and *P. lactucella* is *P. suecica* (Sennikov 2010, 2024a, Tyler 2017).

The designated lectotype agrees with the current usage of the species name in northern (Tyler 2017) and eastern Europe (Schljakov 1989, Sennikov 2010). The current species circumscription in central Europe (Bräutigam and Greuter 2007–2009) is imprecise, but includes elements matching the lectotype of *P. floribunda*.

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Data availability statement

This article has no additional data.

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