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HIERACIUM SILESIACUM (ASTERACEAE) IN POLAND

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Abstract. *Hieracium silesiacum* E. Krause, a subendemic species of the subalpine belt of the Western Carpathians, has been rediscovered in the Polish part of the Tatra Mts after 36 years. The collection site, on the SE slope of Giewont Mt. below Kondracka Przełęcz pass (West Tatras), represents the only known recent locality in Poland. *H. silesiacum* is one of the rarest vascular plants of the Polish flora. The pattern of morphological variation and the general distribution show that *H. silesiacum* probably evolved in the Western Carpathians and subsequently migrated to the Eastern Sudetes, like other so-called Carpathian migrants. Tetraploidy (2n~4x) was determined in one analyzed plant by flow cytometry, in accordance with previously published chromosome counts.

Key words: Carpathians, Compositae, DNA ploidy level, *Hieracium sparsum* group

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During a field excursion in the West Tatras (Western Carpathians, Poland) in September 2004, the second locality of *Hieracium silesiacum* E. Krause in Poland was found; it is the first one based on a voucher specimen. This taxon was first discovered as a new element of Polish flora in 1968 (Pawłowska & Pawłowski 1970) above the Dolina Tomanowa valley (West Tatras), but this record is not accompanied by a voucher specimen (Chrtek *et al.* 2002).

NEW LOCALITY. POLAND, TATRY ZACHODNIE MTS, SE slopes of Giewont Mt., below Przełęcz Kondracka pass towards the Dolina Kondratowa valley, above the blue-marked hiking trail, 1673 m a.s.l., 49°14′49.0″N/19°56′01.1″E, 2 September 2004, P. Mráz (Hb. P. Mráz; Fig. 1).

The floristic composition is documented by the following relevé (S exposition, 25°, 3 × 3 m):

Calamagrostis villosa 4, *Vaccinium myrtillus* 3, *Calluna vulgaris* 1, *Nardus stricta* 1, *Avenella flexuosa* +, *Hieracium alpinum* +, *H. halleri* +, *H. pinetophilum* +, *H. silesiacum* +, *Homogyne alpina* +, *Luzula luzuloides* +, *Omalotheca norvegica* +, *Sempervivum montanum* subsp. *carpathicum* +

The nomenclature of taxa given in this paper follows Marhold 1998.

Hieracium silesiacum grows at a site in secondary meadows between dwarf-pine tickets (*Pinus mugo*) in a species-poor plant community which can be classified as *Vaccinio myrtilli-Calamagrostietum villosae* Sillinger 1933 (alliance *Calamagrostietum villosae* Pawłowski *et al.* 1928). The population was formed by six individual plants (three flowering, three sterile rosettes), but the larger surroundings of the locality were not searched exhaustively. Other plants may occur on the SE slopes of Giewont Mt. Nevertheless, *H. silesiacum*, with one recent site, is undoubtedly one of the rarest hawkweeds and one of the rarest vascular plant species in Poland (see also note in Pawłowska & Pawłowski 1970).

Hieracium silesiacum [syn. *H. sparsum* subsp. *silesiacum* (E. Krause) Zahn] is an easily recognizable type with a very interesting habit. Its set of morphological characters (stem leaves long, narrowly elliptical, light green with bluish or greyish tinge; involucral bracts darkly greyish green or greenish black, some flower heads pendant) places this taxon in *Hieracium* sect. *Cernua* R. Uechtr. (Szeląg 2003). The Balkan Peninsula, Southern Carpathians and Caucasus are considered the centers of diversity of this section (Szeląg 2003). *Hieracium silesiacum* is sometimes placed within

Fig. 1. *Hieracium silesiacum* E. Krause, specimen from SE slope of Giewont Mt. (Poland) (Hb. P. Mráz). Scale bar = 5 cm.

the separate *H. silesiacum* group, unlike the other representatives of this section which are placed in the *Hieracium sparsum* group (Sell & West 1976). Because *H. silesiacum* is the most northerly distributed taxon of the whole sect. *Cernua*, molecular markers should be used to clarify the evolutionary relationships between disjunctive populations of *H. silesiacum* and the mainly Balkan and Southern Carpathian representatives of the *Hieracium sparsum* group. Two taxa of *Hieracium* sect. *Cernua* are recognized also in the Alps (Szeląg 2004b).

The total distribution range of *H. silesiacum* covers two isolated areas: the Western Carpathians (Poland and Slovakia) and Eastern Sudetes (Czech Republic) (Zahn 1938; Chrtek 2002; Szeląg 2004a). The distribution of this species, with detailed morphological descriptions and remarks on ecology, was recently given by Chrtek *et al.* (2002) and Szeląg (2004a) (see also Jasiewicz 1980, with a detailed morphological description of *H. silesiacum*). It is noteworthy that most localities in the Slovak part of the Western Carpathians are in the Západné Tatry Mts and the western part of the Nízke Tatry Mts. Only one locality is known in the Vysoké Tatry Mts. The high concentration of localities in the Západné Tatry Mts may be explained in part by extensive removal (burning and cutting) of the *Pinus mugo* canopy for grazing purposes in the past. This influence has been much less pronounced in the Vysoké Tatry Mts (Sokołowski 1928; Svoboda 1940). An endemic species of the Western Carpathians, *Hieracium rohacsense*, was found to have similar ecological affinities to meadows of secondary origin and former pastures, usually on S, SE, SW and W slopes (Mráz 2001).

While the distribution of *H. silesiacum* in the Eastern Sudetes is restricted to one isolated mountain range, the Hrubý Jeseník Mts, in the Western Carpathians it occupies a much larger area. Moreover, the plants from the Western Carpathians area exhibit higher morphological variation than the populations from Eastern Sudetes (Chrtek *et al*. 2002). These features indicate that this taxon may have evolved in the Western Carpathians and then migrated to the Hrubý Jeseník Mts (cf. Szeląg 2004a). Some level of floristic relationship between the Carpathian and mainly Eastern Sudetes flora has been demonstrated (e.g., Pawłowski 1969; Hendrych 1987). There are several Carpathian migrants (*sensu* Hendrych 1987) in the Eastern Sudetes, such as *Agrostis alpina, Avenula planiculmis* subsp. *planiculmis, Gallium anisophyllon, Helianthemum grandiflorum* subsp. *grandiflorum, Scrophularia scopolii* and *Thymus pulcherrimus*. According to Hendrych (1987), the highest number of Carpathian migrants in the Czech Republic is concentrated in the Hrubý Jeseník Mts (E Sudetes).

Hieracium silesiacum is a tetraploid taxon, 2n = 4x = 36 (cf. Chrtek 1996; Chrtek *et al.*

2004). The published counts for taxa from *Hieracium* sect. *Cernua* are mainly triploid, 2n = 27 (Hayırlıoğlu-Ayaz & İnceer 2004; Mráz & Szeląg 2004; Schuhwerk & Lippert 1998, 1999; Vladimirov & Szeląg 2001) and rarely tetraploid. Besides *H. silesiacum*, 2n = 36 was found in *H. vierhapperi* (Zahn) Szeląg (Szeląg 2004b) and *H. longifoliosum* Nyár. *ex* Szeląg (Mráz unpubl.). Only *H. sparsum* Friv. *s.str*. has been shown to be a diploid taxon (Christoff 1942; Vladimirov & Szeląg 2001).

The ploidy level of one cultivated plant of *H. silesiacum* from the Polish locality (cult. no. 1723) was estimated by flow cytometry by P. Mráz (Becton Dickinson cytometer, propidium iodide stain, karyologically counted plants of diploid *H. umbellatum* and triploid *H. sabaudum s.l.* as standards). The tetraploid level of the analyzed plant (2n~4x) agrees with karyological data given in the cited literature.

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