Hieracium decipientiforme (the *H. nigrescens* group) – an interesting species of the Ukrainian Carpathians

***Hieracium decipientiforme* (okruh *H. nigrescens*) – zajímavý druh ukrajinských Karpat**

Jindřich Chrtek jun.

Institute of Botany, Academy of Sciences of the Czech Republic, CZ-252 43 Průhonice, Czech Republic

Chrtek J. jun. (1997): *Hieracium decipientiforme* (the *H. nigrescens* group) – an interesting species of the Ukrainian Carpathians. – Preslia, Praha, 69: 121–128.

Hieracium decipientiforme (Wołoszczak et Zahn) Šljakov, most probably an endemic taxon of the Ukrainian Carpathians, was found to be agamospermous tetraploid (2n=36). It occurs in mountain meadows, open places in krummholz stands and in subalpine grasslands in altitudes 1580–1900 m a.s.l. in the Gorgany Mts, the Černohora Mts and the Marmaros Mts. Important distinguishing characters and relations to other related species groups are briefly discussed.

K e y w o r d s : *Hieracium decipientiforme*, *H. nigrescens* group, *H.* section *Alpina*, the Carpathians, Ukraine

Introduction

The *H. nigrescens* group (*H. nigrescens* Willd. s.l.) is highly polymorphic aggregate taxon possessing intermediate position between *H. alpinum* L. and *H. murorum* L. It occurs in Greenland, Island, in the British Isles, and through Scandinavian mountains to NW Russia. In central Europe it has a discontinuous distribution being found in the Alps, the highest Sudeten Mts, and in the Carpathians; an isolated population occurs in the Harz Mts (Germany) (cf. Hultén et Fries 1986 – the map inaccurate, many areas of distribution are lacking). Included taxa inhabit mountain meadows, *Nardus* grasslands, open places in krummholz stands, stony slopes, and topmost open-canopy grasslands. In the Ukrainian Carpathians two species can be probably distinguished within the *H. nigrescens* group, i.e. *H. decipientiforme* and *H. gymnogeniforme*.

Historical

Zahn (1921–1923) recognized more than 150 subspecies of *H. nigrescens* s.l., three of them he recorded from the territory of the Ukrainian Carpathians – *H. nigrescens* subsp. *decipiens* (Tausch) Zahn, subsp. *gymnogeniforme* Zahn and subsp. *nigrescens*. Later on, Zahn (1922–1939, *H. nigrescens* s.l. 1936) gave 5 subspecies from the same area – *H. nigrescens* subsp. *nigrescens*, subsp. *decipiens*, subsp. *gymnogeniforme*, subsp. *decipientiforme* Wołoszczak & Zahn, and subsp. *pseudoscitulum* Zahn. Juxip (1960) adopted the narrow species concept and recognized 2 species (*H. nigrescens, H. decipiens*) from the Ukrainian Carpathians; his "splitting" approach is followed by Čopyk (1976, 1977) and generally also by Šljakov (1989; *H. decipiens, H. decipientiforme* (Wołoszczak & Zahn) Šljakov, and *H. nigrescens*).

Fig. 1. – *Hieracium nigrescens* subsp. *decipientiforme* Wołoszczak et Zahn, neotype specimen (herb. W). Original label transcription: "Hieracium decipiens ×Fritzei, Na Gorganie Ilemskim (między Swicą i Lomnicą) Karp. wschodnie., 27. lipca 1890, Wołoszczak" [Mt. Gorgan Ilemski (between the Swica and Lomnica rivers), the East Carpathians, 27 July, 1890, Wołoszczak]

Examination of floristic literature has revealed many records of taxa of the *H. nigrescens* group from the Ukrainian Carpathians. Nevertheless, many of them are based on wrong identification, due to poor knowledge of variation pattern and lack of taxonomic concept of the group as well as due to ill-defined borders between the *H. nigrescens* group and other morphologically similar groups (see below). Only literature records based on available herbarium specimens are cited in the list of localities.

Material and methods

Chromosome number and mode of reproduction were determined on plant material cultivated in the experimental garden of the Institute of Botany, Průhonice, and originated from the following localities in Ukraine:

1. Oblast' Zakarpats'ka, Rajon Rachivs'kyj, Čornohora Mts: Breckulska polonyna, 16 km NE of Bohdan vill., open places in krummholz stands, 1740 m alt., 48°08'57"N, 24°29'42"E, 27.VII.1996, leg. J. Chrtek jun. et al.
2. Oblast' Zakarpats'ka, Rajon Rachivs'kyj, Marmaros Mts: Mt. Pip Ivan (1940 m), small glacial cirque on NE slopes, 1860 m alt., 47°55'36"N, 24°19'22"E, 22. VII. 1994, leg. J. Chrtek et al.

The karyological examination was made on root-tips of mature plants. The squash temporary slides stained by lacto-propionic orcein were used for chromosome counts. To ascertain the mode of reproduction upper part of young flower heads were cutted off ("emasculation"); 20 plants of each locality were taken into study. Plants bearing (nearly) complete seed set are suggested to be agamospermous.

Hieracium decipientiforme (Wołoszczak et Zahn) Šljakov in Cvelev, Flora Evropejskoj časti SSSR 8: 286, 1989.

≡ *H. nigrescens* subsp. *decipientiforme* Wołoszczak et Zahn Magy. Bot. Lap. 10: 155, 1911. Ind. loc.: "Ukiernia ad Mszana in ditione fl. Lomnica Carpath. orient.". Neotypus (hoc loco designatus): Na Gorganie Ilemskim (miedzy Swica i Lomnica) Karp. wschodnie, 27.VII.1890, leg. Wołoszczak", herb. W sub no 15298.

– *H. nigrescens* subsp. *pseudoscitulum* Zahn in Graebner fil. Syn. Mitteleur. Fl. XII/3, 133. Lieferung, 1936, nom. invalid. (Art. 36.1, descr. german.)

Nomenclatural note

Hieracium nigrescens subsp. *decipientiforme* Wołoszczak et Zahn was described from the Ukrainian Carpathians (that time part of Austro-Hungarian monarchy). Although two authors are given, the original description was only made by K. H. Zahn; he followed his manner, where the first author of the name is only collector of the original specimen(s). It seems to be clear that Zahn based his description upon one herbarium specimen, which he had received from E. Wołoszczak. This specimen was most probably placed into Zahn's collection. After Zahn's death in 1940, his large *Hieracium* collection was deposited in Berlin-Dahlem (B) and shortly after then burned during World War II. Therefore the present author turned attention to Wołoszczak's collection. Extensive search in herbaria KRAM, LW, W was unsuccesfull. No sheet bearing label with the name *H. nigrescens*

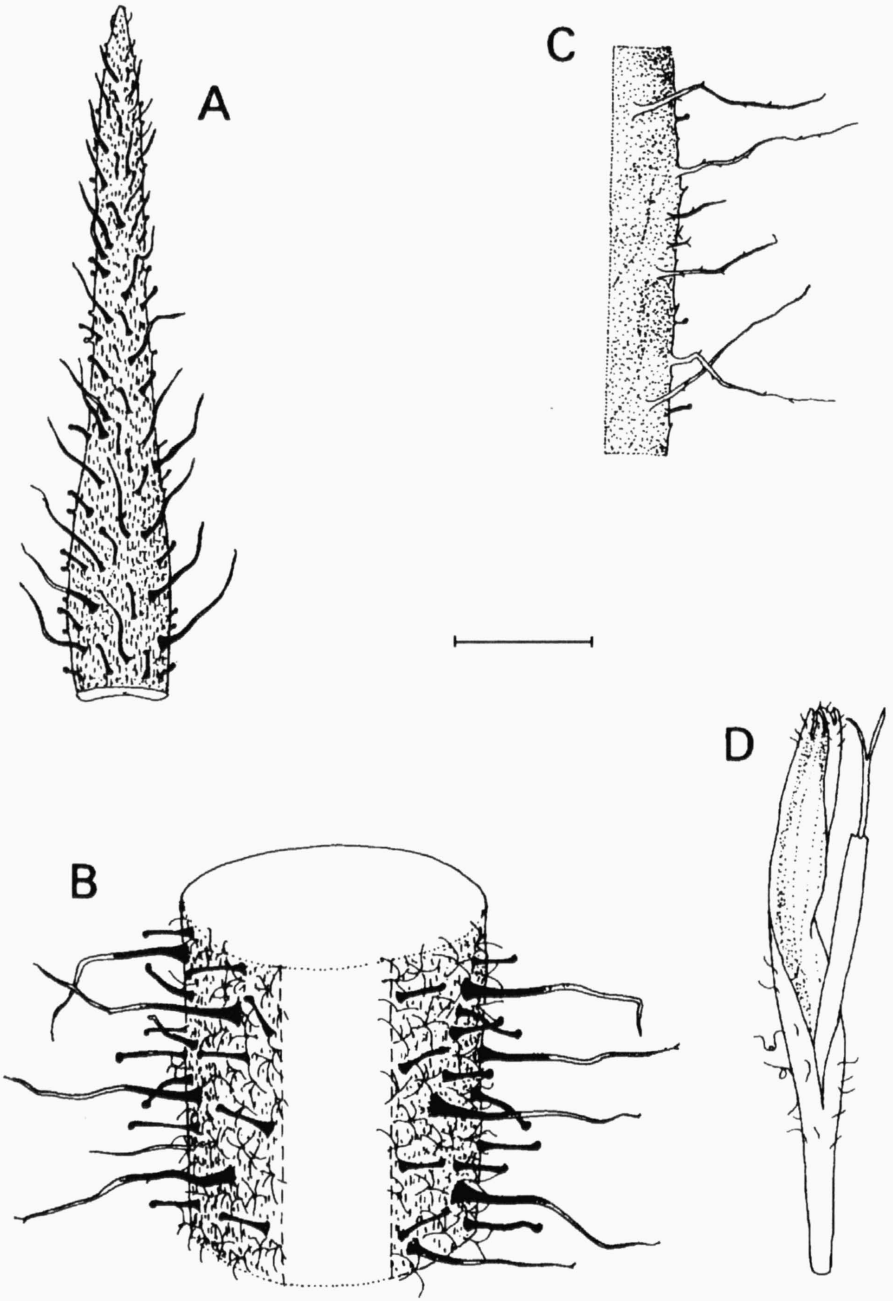

Fig. 2. – *Hieracium decipientiforme*; A) median involucral bract, B) peduncle, C) leaf margin, D) ligule. Scale bar = A) 2 mm, B), C) 1 mm, D) 2 mm.

subsp. *decipientiforme* and no any specimen from the original locality have been found. However, Zahn's detailed description gives a good impression of the identity of the taxon. I have found some herbarium specimens perfectly matching the protologue and originating from the same geographical area. I designate the specimen from Mt. Gorgan Ilems'ki (see above) as a neotype of the name *H. nigrescens* subsp. *decipientiforme* (see Fig. 1).

Description

Phyllopodous. Stem 15–25(–30) cm high, slender to ± robust, with few to scattered, towards the base sometimes numerous 1–3 mm long simple eglandular hairs, in the middle part with scattered, towards the top numerous (0.2–)0.3–0.5 mm long glandular hairs and with scattered, towards the top numerous to dense stellate hairs; simple single-headed or with 1 branch developing from axil of the second lowest stem leaf (occasionally with 2 branches, the second one developing from the lowest leaf axil), sometimes stem branched in the upper part. Leaves grass-green above, with few, on the margins scattered pale simple eglandular hairs and with scattered minute (< 0.25 mm) glands. Basal leaves usually 2–4, irregularly remotely mucronate-denticulate, sometimes with few larger falcate teeth in the lower part; primordial leaves obovate, rounded at apex, cuneate at base, petiolate; later (narrowly) oblanceolate to narrowly elliptical, 8–12 × 0.8–1.4 cm, long attenuate to acute apex, cuneate at base (the innermost long attenuate to the base), petiolate. Cauline leaves 2–4; the lowest cauline leaf oblong or narrowly oblong-elliptical, 3.5–11.0 × 0.5–1.0 cm, long attenuate to acute apex, attenuate below to petiole, subentire or occasionally with fine denticulation; the second lowest resembles the lowest one (but with shorter petiole to ± sessile) or linear-oblong; upper leaf (leaves) linear, bract-like. Heads 2–5(–6) or sometimes solitary; peduncles with scattered 1.0–1.7 mm long, dark-based simple eglandular hairs, numerous 0.3–0.6 mm long dark glandular hairs and numerous to dense stellate hairs. Involucres 14–16 mm long; involucral bracts linear lanceolate, in the middle ca 1 mm wide, acute at apex, with scattered simple eglandular hairs and scattered 0.2–0.3 mm long dark glandular hairs. Ligules yellow, flat or shortened, tubular, ca 1 cm long, and then with exserted styles, styles melleous-yellow to olivaceous. Achenes 3–4 mm long.

Chromosome number: 2n = 4x = 36

First chromosome number report in this taxon. There have been relatively few chromosome studies in the *H. nigrescens* group. Nevertheless, tetraploids no doubt markedly prevail in this group, less frequent are triploids. Unique is the existence of pentaploid taxa (Stace 1995, Chrtek et al. 1996).

Mode of reproduction: agamospermous, seed set after "emasculation" 96.8–99.5 %.

Pollen absent.

Germination of achenes after 3 months stratification at 4°C very good (79–94 %).

Systematic position of *Hieracium decipientiforme*

H. decipientiforme is quite easy distinguishable within the *H. nigrescens* group. Moreover, it seems to be probably that only two taxa of this group, i.e. *H. decipientiforme* and *H. gymnogeniforme* occur in the Ukrainian Carpathians (the latter is widespread in the Rumanian Carpathians, the stations in Ukraine must be confirmed). The main distinguishing features are listed in Table 1.

Table 1. – Diagnostic characters of *Hieracium gymnogeniforme* and *H. decipientiforme*

H. gymnogeniforme	*H. decipientiforme*
capitula solitary, occasionally 2	capitula 1-5(-6)
stems in the middle part with scattered simple eglandular hairs	stems in the middle part with rare simple eglandular hairs
leaves usually deeply irregularly dentate, with scattered, on the margins and below on the midrib numerous simple eglandular hairs (on the margin more than 20 hairs/1 cm of the length)	leaves subentire to denticulate, sometimes with few teeth, on both surfaces with few simple eglandular hairs to ± glabrous (on the margin less than 20 hairs/1 cm of the length)
stem leaf (leaves) oblanceolate	stem leaves oblong to oblong-elliptical
involucral bracts with numerous, to 3 mm long simple eglandular hairs	involucral bracts with scattered, 1.0-1.5 mm long simple eglandular hairs
outer ligules to 20 mm long	outer ligules ca 10 mm long

Table 2. – Diagnostic characters of *Hieracium scitulum* and *H. decipientiforme*

H. scitulum	*H. decipientiforme*
peduncles with 2.5-4.0 mm long simple eglandular hairs	peduncles with 1.0-1.7 mm long simple eglandular hairs
bracts with numerous to dense simple eglandular hairs (20-30 hairs/2 mm of the length in the medium part)	bracts with scattered simple eglandular hairs (10-16 hairs/2 mm of the length in the medium part)
outer ligules to 20 mm long	outer ligules ca 10 mm long
stem purplish towards the base	stem not purplish towards the base
peduncles and bracts with few to scattered glandular hairs	peduncles and bracts with numerous to dense glandular hairs

Surprisingly, the major difficulty in the *H. nigrescens* group taxonomy in the area under study is the delimitation from the *H. scitulum* group (*H. scitulum* Wołoszczak s.l., *H. nigrescens* – *H. fritzei*). The limits are ill-defined; of the distinguishing characters emphasis is placed at the indumentum (for more details see Table 2).

Smaller one-headed plants from higher elevations come close to *H. alpinum* L. Nevertheless, they can be safely distinguished by dark styles (purely yellow in *H. alpinum*), at least one well developed oblong or oblong-elliptical cauline leaf (in *H. alpinum* cauline leaf one, linear, sometimes absent).

The delimitation of this group from the *H. atratum* group (*H. alpinum* < *H. murorum*) is very difficult. The groups can be distinguished on the basis of the length of flower heads (larger in *H. nigrescens* group), density and length of simple eglandular hairs on peduncles and involucral bracts (more abundant and generally longer in *H. nigrescens* group), shape of basal leaves (more roundish in *H. atratum* group) and number of flower heads (usually more heads in the members of *H. atratum* group).

The members of the *H. rohacsense* and *H. pietroszense* groups differ primarily in having scattered stellate hairs on involucral bracts. Taxonomy of both mentioned groups is very

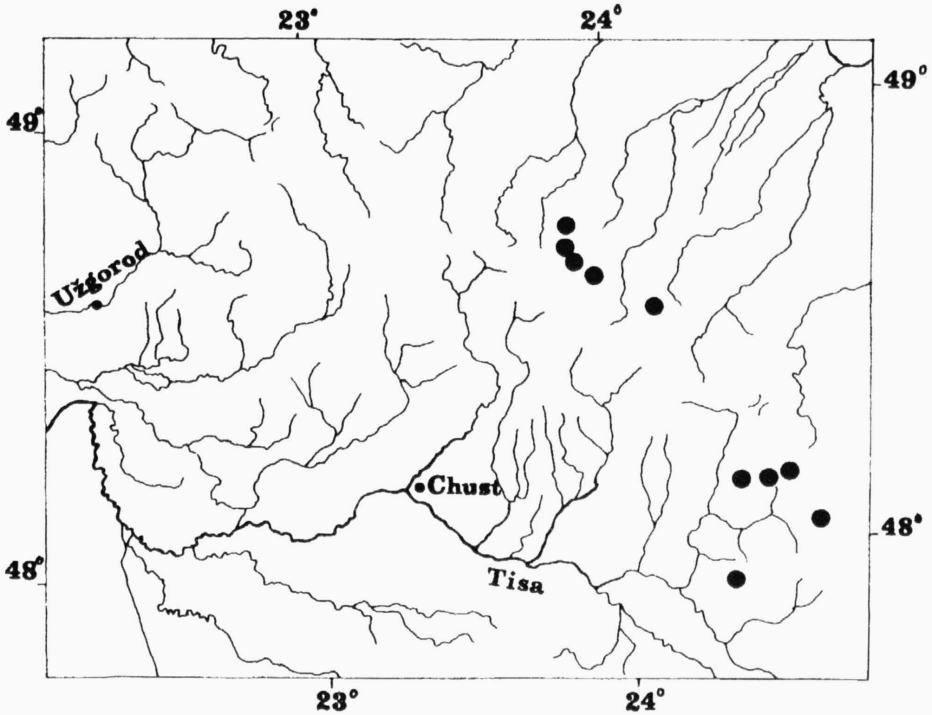

Fig. 3. – Map of the distribution of *Hieracium decipientiforme*.

poorly understood; each of them is most probably represented by one species in the Ukrainian Carpathians. *H. rohacsense* seems to be restricted to more refugial habitats, mostly in glacial cirques. *H. pietroszense* inhabits mountain meadows and krummholz stands, often influenced by sheep and cattle pasture; it often occurs together with *H. decipientiforme*. Extensive examination of these groups is now in progress (Mráz, pers. comm.).

Ecology

Mountain meadows, open places in krummholz stands, subalpine grasslands.

Distribution

H. decipientiforme is confined to the East Carpathians. On the territory of Ukraine it occurs in the Gorgany Mts, the Černohora Mts and the Marmaroš Mts (Fig. 3). The distribution must be regarded as very local; the populations are endangered by extensive cattle and sheep pasture. The distribution area extends most probably to Rumanian Carpathians. Nevertheless, further careful comparison of plant material must be made in order to confirm this hypothesis.

List of localities (herbarium specimens from CL, KRA, KRAM, LW, PR, PRC and W were taken into account):

Ukraine, the Carpathians: Gorgany Mts: Mt. Syvulja (s.a. Rehmann W); Mt. Moloda (1889 Wołoszczak W); Mt. Grofa (1889 Wołoszczak LW); Mt. Gorgan Ilems'ki (1890 Wołoszczak W); Mt. Jajce Ilemske (1890 Wołoszczak W); Čornohora Mts: Mt. Šešul above Kvasy (1935 M. Deyl PR); Breckulska polonyna under Mt. Hoverla, 16 km NE of Bohdan, open places in krummholz stands near the path, 1740 m alt. (1996 Chrtek jun. et al. PR); Mt. Hoverla, N slopes, near the chalet (1888 Wołoszczak W); Mt. Pip Ivan Čornohirs'kyj (1887 Wołoszczak W); Marmaros Mts: Mt. Pip Ivan, small glacial cirque on NE slopes, 1860 m alt. (1994 Chrtek jun. et al. PR).

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Souhrn

Hieracium decipientiforme (Wołoszczak et Zahn) Šljakov (sekce *Alpina*, okruh *H. nigrescens*) je tetraploidní apomiktický druh, známý zatím pouze z ukrajinských Karpat. Roste na horských loukách při horní hranici lesa, ve světlinách mezi klečí a na subalpínských holích v pohořích Gorgany, Čornohora a Marmaroš.

References

Chrtek J. jun. (1996): Chromosome numbers in selected *Hieracium* species *(Compositae)* in the Sudeten Mts and West and Ukrainian East Carpathians. – Fragm. Florist. Geobot., Kraków, 41(2): 783–790.

Čopyk V. I. (1976): Vysokohirna flora Ukrajinskych Karpat. – Naukova dumka, Kyjiv. [300 pp.]

Čopyk V. I. [red.] (1977): Vyznačnyk roslyn Ukrajinskych Karpat. – Naukova dumka, Kyjiv. [436 pp.]

Hultén E. et Fries M. (1986): Atlas of North European vascular plants. Vol. 2. – Koeltz Scientific Books, Königstein.

Juksip A. J. (1960): Jastrebinka – *Hieracium* L. – In: Komarov V. I. [red.], Flora SSSR 30: 1–698, Moskva et Leningrad.

Šljakov R. N. (1989): Rod. 32. Jastrebinka – *Hieracium* L. – In: Cvelev N. N. [red.], Flora Evropejskoj časti SSSR 8: 140–300, Nauka, Leningrad.

Stace C. A., Gornall R. J., Squirrell J. et Shi Y. (1995): Chromosome numbers in *Hieracium* L. section *Alpina* (Fries) F. N. Williams. – Watsonia, London, 20: 367–377.

Zahn K. H. (1921–1923): *Compositae – Hieracium*. – In: Engler A. [red.], Das Pflanzenreich IV (280) (Hefte 75, 76, 77, 80, 82), Leipzig.

Zahn K. H. (1922–1939): *Hieracium*. – In: Graebner P. fil. [red.]: Synopsis der mitteleuropäischen Flora XII/1–3 + Registerband, Leipzig.

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