

Hieracia balcanica V. A new diploid species in *Hieracium* sect. *Naegeliana* (Asteraceae) from Macedonia

Zbigniew Szeląg

Institute of Botany, Jagiellonian University, Kopernika 31, PL-31-501 Kraków, Poland (e-mail: azszelag@wp.pl)

Received 17 Nov. 2009, revised version received 8 Dec. 2009, accepted 23 Dec. 2009

Szeląg, Z. 2010: *Hieracia balcanica* V. A new diploid species in *Hieracium* sect. *Naegeliana* (Asteraceae) from Macedonia. — *Ann. Bot. Fennici* 47: 315–319.

Hieracium renatae Szeląg (Asteraceae), distinguished by its glabrous involucre bracts, is described from the alpine belt of the Jakupica Mountains in Macedonia. It is the first known diploid in *Hieracium* sect. *Naegeliana*.

Key words: angiosperms, chromosome number, endemism, taxonomy

Introduction

Many morphologically distinct taxa of *Hieracium* occurring in refugial areas of southern Europe, including some principal species, are represented exclusively by polyploid populations. The problem of the ‘missing diploids’ was pointed out first by Merxmüller (1975), who considered this was a result of the poor karyological knowledge in *Hieracium*, especially in south-eastern Europe. Intensive karyological studies carried out recently on the Balkan *Hieracia* resulted in discoveries of diploid populations of species previously only known as polyploids (Schuhwerk & Lippert 1998, Vladimirov & Szeląg 2001a, 2001b, Szeląg 2007, 2008, Szeląg *et al.* 2007) as well as some diploid species new to science (Vladimirov 2003, Vladimirov & Szeląg 2006).

One of the principal species known only from triploid populations is *H. naegelianum* (Merxmüller 1975, Grau & Erben 1988, Buttler 1991, Vladimirov & Szeląg 2001a, Niketić *et al.* 2003, Chrtek *et al.* 2007). It was described from the Komovi Mountains in Montenegro (Pančić

1875); it grows in the highest calcareous massifs of Albania, Bosnia and Herzegovina, Bulgaria, Greece, Kosovo, Macedonia and Montenegro and in disjunct localities in central Italy (Fig. 1; Zahn 1938, Gottschlich 2009). *Hieracium naegelianum* is a very distinctive and morphologically relatively uniform species and belongs to the monotypic *H. sect. Naegeliana* (Szeląg 2003). Its infraspecific taxonomy is based on the density of indumentum of the involucre bracts, rosette leaves and upper part of the stem. Based on combinations of these characters, five subspecies within *H. naegelianum* are distinguished (Zahn 1938).

On the Balkan Peninsula, 15 intermediate species of supposed hybrid origin between *H. naegelianum* and taxa from other sections are present (Zahn 1938). The most frequent species belong to hybrids with *H. gymnocephalum*, *H. pannosum* and *H. villosum*. The presence of these hybrids which occur throughout the whole range of *H. naegelianum* was an incentive to seek for a diploid species in *H. sect. Naegeliana*. During the field work in Macedonia in 2009, one

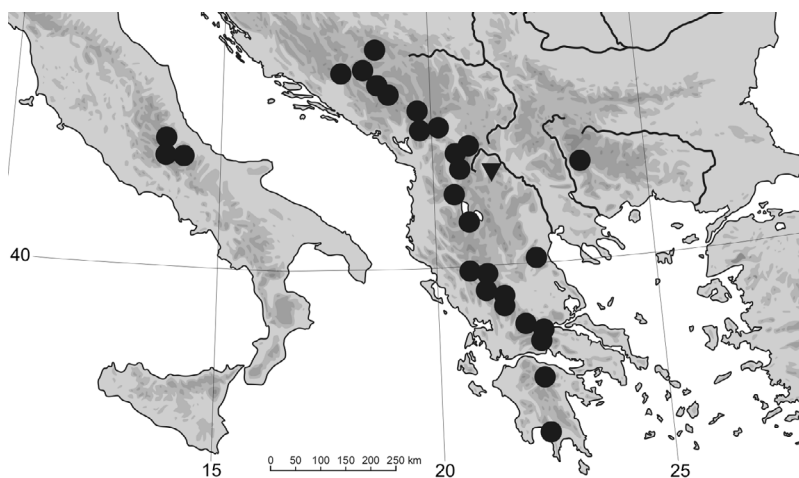


Fig. 1. Distribution of *Hieracium naegelianum* (dots) and *H. renatae* (triangle).

such diploid was found, and is here described as a new species.

Material and methods

A total of 68 herbarium sheets of *Hieracium naegelianum* in BEO, BP, BRNM, CL, KRA, KRAM, PR, PRA, PRC, SOM, W, WU, WRSL and in my herbarium from the entire range of the species' distribution have been studied. The distribution map (Fig. 1) of the species is based on these specimens as well as on the localities published by Zahn (1938), Buttler (1991) and Gottschlich (2009).

The chromosomes were counted by Tomasz Ilnicki at mitotic phase in seven wild-collected plants grown in my experimental garden. The root tips were incubated in a saturated water solution of α -bromonaphthalene overnight at 4 °C, next fixed in 1:3 acetic alcohol, then hydrolyzed with 1 N HCl at 60 °C and squashed in 45% acetic acid. The chromosomes were stained with 0.1% aqueous solution of toluidine blue.

The description of the new species is based on ca. 50 herbarium specimens collected on Mt. Solunska Glava in the Jakupica Mountains in August 2009.

Results

During a botanical exploration of the Jakupica Mountains in Macedonia, I found a large popula-

tion of a taxon very similar to *H. naegelianum* in the alpine belt of Mt. Solunska Glava. It differed from *H. naegelianum* in having glabrous involucral bracts and relatively small capitula (Fig. 2). In addition to the morphological characters, it was also found that all randomly collected plants from this population were diploids ($2n = 18$). These plants, therefore, merited description as a new species. It is the first diploid in *Hieracium* sect. *Naegeliiana*.

Hieracium renatae Szeląg, sp. nova (Figs. 2A and 3)

Species nova e Hieraciorum sectione Naegeliiana, Hieracio naegelianum et omnibus subspeciebus huius simillima, sed involucri glabris distincta (Fig. 2). *Caulis monocephalus, epilosus et eglandulosus, 7–15 cm altus. Involucra subglobosa, (6–)7–9(–10) mm longa, glabra. Squamae imbricatae, lanceolatae, ad basim 1.1–1.3 mm latae, atrovirides, exteriores apice subobtusae vel obtusae, inferiores apice acutae vel subacutae, dilute marginatae. Pedunculi glabri, atrovirides. Bractee 2–5 glabrae in squamas laxas minores angustiores ad involucri basim transeuntes. Folia basalia numerosa, sessilia, integerrima, ad marginem undulata, canovirida, in margine disperse pilosa (pili 0.8–1.8 mm) vel glabra, exteriora minora 0.5–1.5 cm longa et 4–5 mm lata, obovato–lanceolata, spatulata, obtusissima, inferiora 2–5 cm longa et 3–5 mm lata, lanceolata et acuta vel oblongo–lanceo-*



Fig. 2. Capitula of (A) *Hieracium renatae* (from the holotype) and (B) *H. naegelianum* from the type locality in the Komovi Mts.



Fig. 3. Holotype of *Hieracium renatae*.

lata et subacuta. Folia caulina 1–3, sessilia, glabra, inferiora ad 2.5 cm longa, lanceolata, acuta, superiora valde reducta, subulata, ad 5 mm longa. Ligulae luteae, apice epilosae. Styli lutei. Achaenia straminea 3.2–3.3 mm longa. Pappus albus. Pollen numerosum, regulariter sphaericum. Planta diploidea chromosomatum numero somatico 18. In regione alpina montium Solunska Glava, Macedoniae crescit. Species haec in honorem uxoris meae oblata.

HOLOTYPE: Macedonia. Jakupica Mts., Mt. Solunska Glava NW slope, 2400 m a.s.l., 41°42'30.5"N, 21°24'31.1"E, 10.VIII.2009 Z. Szeląg (KRA; isotypes KRAM, Herb. Hierac. Z. Szeląg). — PARATYPES (in Herb. Hierac. Z. Szeląg): Macedonia. Jakupica Mts., above Gorno Begovo plateau, rocky slope along a road to summit of Mt. Solunska Glava, 2200 m a.s.l., 41°43'38.5"N, 21°24'20.2"E, 10.VIII.2009 Z. Szeląg; Jakupica Mts., on the ridge between Mt. Solunska Glava and the Grob pass, 2250 m a.s.l., 41°41'28.3"N, 21°24'28.2"E, 10.VIII.2009 Z. Szeląg; Jakupica Mts., summit region of Mt. Solunska Glava above the Nežilovska Stena cliff, 2520 m a.s.l., 41°42'52.3"N, 21°24'44.6"E, 10.VIII.2009 Z. Szeląg; Jakupica Mts., on the ridge between Mt. Solunska Glava and Mt. Pržal, 2370 m a.s.l., 41°43'07.1"N, 21°25'03.8"E, 10.VIII.2009 Z. Szeląg.

DISTRIBUTION AND HABITATS: *Hieracium renatae* is endemic to the Jakupica Mts. in central Macedonia (Fig. 1). It was found on several stations in the massif of Mt. Solunska Glava (2540 m a.s.l.), the highest peak of the mountain range. It occurs on the northern and western slopes of Mt. Solunska Glava at 2200–2500 m a.s.l. The population was composed of hundreds of flowering individuals growing in numerous clusters along a road leading to the summit and on a ridge leading towards Mt. Pržal (2339 m a.s.l.). *Hieracium renatae* grows also on the summit of Mt. Solunska Glava above the Nežilovska Stena cliff, at 2400–2520 m a.s.l., as well as on the ridge between Mt. Solunska Glava and the Grob pass (2135 m a.s.l.) at 2250–2350 m a.s.l. The habitat of *H. renatae* is alpine swards belonging to the *Edraiantho–Helianthemum alpestris*, *Diantho jakupicensis–Elynetum* and *Saxifrago–Potentilletum appenninae*.

I have not carried out floristical research on the high, calcareous peaks situated NW of Mt. Solunska Glava, where *H. renatae* should also be searched for.

The occurrence of *H. renatae* on the summit of Mt. Solunska Glava, at 2520 m a.s.l. is amongst

the highest elevations for *Hieracium* in the whole of the Balkan Peninsula. I have observed populations only of *H. naegelianum* at higher elevations on Mt. Olympus (Greece) at 2770 m a.s.l. and Mt. Vichren (Bulgaria) at 2710 m a.s.l. *Hieracium renatae* and *H. naegelianum* are the only calciphilous Balkan *Hieracia* that have the centre of their altitudinal ranges in the alpine belt. The adaptation of *H. sect. Naegeliana* taxa to the alpine climatic conditions suggests that their current, disjunct geographical range may have formed in the late Pleistocene, when lowering of the elevation of the vegetation belts made it possible for the high-mountain flora to migrate.

The discovery of a diploid species in *Hieracium* sect. *Naegeliana* suggests that the parentage of taxa intermediate between *H. naegelianum* and other sections can now be investigated more closely. For example, the enigmatic *H. andrasovszkyi* subsp. *semivillosiceps* (Zahn 1922), which has been interpreted as intermediate between *H. naegelianum* and *H. morisianum* [= *H. pilosum*] has been collected on Mt. Pepeljak (Zahn 1938) near the sites of *H. renatae* and may be of that parentage rather than of *H. naegelianum*.

Acknowledgments

I am grateful to Dr. Tim Rich (Cardiff) for valuable remarks on the manuscript and English correction, to Dr. Krzysztof Pawłowski (Kraków) for checking the Latin description and to Dr. Tomasz Ilnicki (Kraków) for karyological analysis. This study was supported by the Polish Ministry of Science and Higher Education, grant no. NN303089734.

References

- Buttler, K. P. 1991: *Hieracium* L. — In: Strid, A. & Tan, K. (eds.), *Mountain flora of Greece* 2: 595–642. Edinburgh Univ. Press, Edinburgh.
- Chrtěk, J., Mráz, P., Zahradníček, J., Mateo, G. & Szeląg, Z. 2007: Chromosome numbers and DNA ploidy levels of selected species of *Hieracium* s. str. (Asteraceae). — *Folia Geobot.* 42: 411–430.
- Gottschlich, G. 2009: Die Gattung *Hieracium* (Compositae) in der Region Abruzzen (Italien). — *Stapfia* 89: 1–328.
- Grau, J. & Erben, M. 1988: Chromosomenzahlen griechischer *Hieracien*. — *Mitt. Bot. Staatssamml. München* 27: 97–98.
- Merxmüller, H. 1975: Diploide *Hieracien*. — *Anal. Inst. Bot.*

- Cavanilles* 32: 189–196.
- Niketić, M., Vladimirov, V. & Mráz, P. 2006: Chromosome numbers and taxonomic-chorological notes on selected species of *Hieracium* s. str. (Asteraceae) from Montenegro. — *Phytol. Balc.* 12: 85–97.
- Pančić, J. 1875: *Elenchus plantarum vascularum quae aestate a. 1873 in Crna Gora legit Dr. J. Pančić.* — Societas Erudita Serbica, Belgrade.
- Schuhwerk, F. & Lippert, W. 1998: Chromosomenzahlen von *Hieracium* L. (Compositae, Lactuceae) Teil 2. — *Sendtnera* 5: 269–286.
- Szeląg, Z. 2003: A synopsis of *Hieracium* sect. *Cernua* (Asteraceae). — *Polish Bot. J.* 48: 87–95.
- Szeląg, Z. 2007: *Hieracia balcanica* IV. The correct names for *Hieracium oreades* Heuff. (Asteraceae). — *Ann. Bot. Fennici* 44: 463–464.
- Szeląg, Z. 2008: Taxonomic and nomenclatural notes on *Pilosella alpicola* agg. (Asteraceae) in the Balkans and Carpathians. — *Ann. Bot. Fennici* 45: 301–306.
- Szeląg, Z., Ilnicki, T., Niketić, M. & Tomović, G. 2007: Diploid chromosome numbers in five *Hieracium* species from Serbia and Montenegro. — *Acta Biol. Cracov. Ser. Bot.* 49: 119–121.
- Vladimirov, V. 2003: A new diploid *Hieracium* (Asteraceae: Lactuceae) from Bulgaria. — *Bot. J. Linn. Soc.* 143: 213–218.
- Vladimirov, V. & Szeląg, Z. 2001a: Reports (1271–1277). — *Fl. Mediterr.* 11: 478–483.
- Vladimirov, V. & Szeląg, Z. 2001b: Chromosome numbers in selected species of *Hieracium* subgenus *Pilosella* (Asteraceae) from Bulgaria. — *Polish Bot. J.* 46: 269–273.
- Vladimirov, V. & Szeląg, Z. 2006: A new diploid species of *Hieracium* sect. *Pannosa* (Asteraceae) from Bulgaria. — *Bot. J. Linn. Soc.* 150: 261–265.
- Zahn, K. H. 1922: *Hieracium* L. — In: Engler, A. (ed.), *Das Pflanzenreich Regni Vegetabilis Conspectus* 8: 865–1146. Wilhelm Engelmann, Leipzig.
- Zahn, K. H. 1938: *Hieracium* L. — In: Graebner, P. fil. (ed.), *Synopsis der mitteleuropäischen Flora* 12(3): 1–708. Gebrüder Borntraeger, Berlin.