DIPLOID CHROMOSOME NUMBERS IN HIERACIUM AND PILOSELLA (ASTERACEAE) FROM MACEDONIA AND MONTENEGRO

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Received August 24, 2011; revision accepted November 13, 2011

The authors report the first discovery of diploid populations of Hieracium naegelianum Panè. subsp. naegelianum and H. naegelianum subsp. ljubotenicum Behr & Zahn., and give the first chromosome counts for H. cernuum Friv., H. gymnocephalum Griseb. ex Pant., Pilosella pavichii (Heuff.) Holub and P. serbica (F. W. Schultz & Schultz-Bip.) Szeląg from Macedonia and/or Montenegro. A diploid chromosome count for Hieracium renatae Szeląg is confirmed based on material from the whole distribution range of the species. An emasculation experiment showed that all the analyzed diploid Hieracium taxa reproduce sexually.

Key words: Asteraceae, Balkan Peninsula, chromosome number, Hieracium, karyotype, mode of reproduction, Pilosella.

In Europe the genera Hieracium L. and Pilosella Vaill. (Hieracium sensu Zahn 1921–1923) are dominated by polyploids (triploids to pentaploids in Hieracium and triploids to octoploids in Pilosella) with a basic chromosome number of x = 9. Sexual diploids are very rare and restricted mainly to refugial areas of Southern Europe such as the Balkan Peninsula and Iberian Peninsula (Merxmüller, 1975; Schuhwerk and Lippert, 1998; Vladimirov, 2003; Vladimirov and Szelag, 2006; Chrtek et al., 2007, 2009). Looking for diploids, the first author carried out field research in the region of the former Yugoslavia, visiting sites including the highest massifs of Montenegro and Macedonia, the most refugial areas of mountain flora on the Balkan Peninsula (Horvat et al., 1974). During these studies many living plants of both genera were collected and analyzed karyologically. This paper presents the most significant results of this work focused on Balkan endemics.

Living plants were transplanted to an experimental garden of the first author, their chromosomes were counted at mitotic metaphase, and the mode of reproduction was tested with an emasculation experiment. Detailed information on the karyological procedure and experimental methods followed here is given in Joachimiak et al. (1999) and Szelag (2006).

Vouchers are stored in the herbarium of the first author (Herb. Hierac. Z. Szelag) and the plants analyzed karyologically remain in cultivation in his garden.

Hieracium cernuum Friv. 2n = 2x = 18, sexual Macedonia, Nidže Mts., along road to summit of Mt. Kajmakčalan, 2300 m a.s.l., alpine grassland on siliceous bedrock.

This is the first chromosome number for this species from Macedonia; it confirms the count recently published from Bulgaria (Ilnicki and Szelag, 2011).

Hieracium gymnocephalum Griseb. ex Pant. 2n = 2x =18, sexual Montenegro, Prokletije Mts., Mt. Maja Rosave, 1650 m a.s.l., calcareous grassland on western slope above Zastan Koliba military checkpoint.

This is the first diploid chromosome number for the species from Montenegro; it confirms the recently published count from Albania (Chrtek et al., 2009). A triploid chromosome number was reported from the Durmitor Mts. in Montenegro (Niketić et al., 2006).
Diploid chromosome numbers in Hieracium and Pilosella

Hieracium naegelianum Panč. subsp. naegelianum 2n = 2x =18, sexual (Fig. 1)

This is the first diploid chromosome number for this species, previously known only from triploid populations on the Balkan Peninsula (Merxmüller, 1975; Grau and Erben, 1988; Buttler, 1991; Vladimirov and Szelag, 2001a; Niketić et al., 2003, 2006; Chrtek et al., 2007), including plants from the locus classicus on Mt. Kom Vasojevićki in Montenegro (Ilńicki and Szelag, 2011). Until now the only known diploid in Hieracium sect. Naegeliana Zahn ex Szelag was H. renatae Szelag described from Macedonia (see below).

Hieracium naegelianum subsp. ljubotenicum Behr & Zahn 2n = 2x =18, sexual (Fig. 2)
Macedonia, Šarplanina Mts., Mt. Ljuboten 2300 m a.s.l., calcareous rock crevices.

Hieracium renatae Szelag 2n = 2x =18, sexual (Fig. 3)
Macedonia, Jakupica Mts.: 1. Mt. Solunska Glava NW slope, 2400 m a.s.l. (locus classicus); 2. above Gorno Begovo plateau, rocky slope along road to summit of Mt. Solunska Glava, 2250 m a.s.l.; 3. on ridge between Mt. Solunska Glava and Grob pass, 2250 m a.s.l.; 4. on ridge between Mt. Solunska Glava and Mt. Pržal, 2370 m a.s.l.; 5. summit region of Mt. Solunska Glava above Nežilovska Stena cliff, 2520 m a.s.l.

The present count is based on abundant material from the whole known range of H. renatae and confirms the diploid chromosome number published in the protologue of the species (Szelag, 2010).

Hieracium sparsum Friv. 2n = 2x =18, sexual
Macedonia, Nidže Mts., Redir ridge along road to summit of Mt. Kajmakcalan, 1650 m a.s.l., Picea abies forest margin on siliceous bedrock.

Figs. 1–4. Metaphase plates of: Fig. 1, Hieracium naegelianum Panč. subsp. naegelianum, 2n = 18. Fig. 2, Hieracium naegelianum subsp. ljubotenicum Behr & Zahn, 2n = 18. Fig. 3, Hieracium renatae Szelag, 2n = 18. Fig. 4, Pilosella serbica (F. W. Schultz & Schultz-Bip.) Szelag, 2n = 18. Bar = 10 μm.
This is the first karyological data for this species from Macedonia; it confirms the chromosome number for the species previously published from Bulgaria (Vladimirov and Szeląg, 2001) and Serbia (Szeląg et al., 2007).

_Pilosella pavichii_ (Heuff.) Holub 2n = 2x = 18

1. Macedonia, Jakupica Mts., siliceous rocks along road from Karadžica chalet to Mt. Krivul, 1720 m a.s.l.

This is the first karyological data for this species from Macedonia and Montenegro. Diploids were reported earlier from Bulgaria, Greece, Romania and Serbia (Christov and Popov, 1933; Strid and Frazén, 1981; Vladimirov, 2000; Mráz and Szeląg, 2004; Szeląg et al., 2007).

_Pilosella serbica_ (F. W. Schultz & Schultz-Bip.) Szeląg 2n = 2x = 18 (Fig. 4)

1. Macedonia, Korab Mts., Mt. Šiša Vort, 2040 m a.s.l., rocky places on granite.

This is the first chromosome number report for the species from Macedonia and Montenegro; it confirms the previously published count from Serbia (Szeląg et al., 2007; Szeląg, 2008).

REFERENCES


