

Chromosome number and DNA ploidy level reports from Central Europe – 2

edited by Patrik MRÁZ*

Abstract: Second part of commented chromosome number and DNA ploidy level reports from Central Europe comprising the whole Carpatho-Pannonian region includes the data for following taxa: *Tephroses aurantiaca* ($2n = 96$), *T. capitata* ($2n = 64$) and *T. integrifolia* ($2n = 48$) by J. KOCHJAROVÁ from Poland and Slovakia (reports nos. 12–14); *Urtica dioica* and *U. kioviensis* (both $2n = 26$) by M. KOLNÍK & K. GOLIAŠOVÁ from Slovakia (nos. 15–16); *Viola hirta* ($2n = 20$), *V. odorata* ($2n = 20$), *V. reichenbachiana* ($2n = 20$), *V. riviniana* ($2n = 40$, $2n \sim 8x$, based on $x = 5$), *V. suavis* ($2n = 40$) and *V. ×bavarica* [*V. reichenbachiana* × *V. riviniana*] ($2n \sim 6x$, based on $x = 5$) by P. MEREĎA jun., I. HODÁLOVÁ, P. MÁRTONFI & V. KOLARČÍK from Slovakia (nos. 17–22); *Fallopia ×bohemica* [*F. japonica* × *F. sachalinensis*] ($2n = 66$), *Thladiantha dubia* ($2n = 18$) and *Hieracium longifoliosum* ($2n = 36$) by P. MRÁZ from Romania and Slovakia (nos. 23–25); *Amsinckia calycina* ($2n = 34$) by M. PERNÝ & H. ŠIPOŠOVÁ from Slovakia (no. 26).

Key words: Asteraceae, Boraginaceae, Cucurbitaceae, flow cytometry, Polygonaceae, *Reynoutria*, *Senecio*, Urticaceae, Violaceae

Reports (12–14) by Judita KOCHJAROVÁ

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12. *Tephroses aurantiaca* (HOPPE) GRISEB. & SCHENK (Asteraceae)

$2n = 96$ KOCHJAROVÁ

Localities: 1. Slovakia, Muránska planina Mts, village of Muránska Huta, mountain ridge Tesná skala, 750 m a.s.l., coll. and det. J. KOCHJAROVÁ, 1996 (BBZ *s.n.* – Herbarium of the Botanical Garden of the Comenius University in Blatnica). 2. Slovakia, Muránska planina Mts, village of Muráň, Mt. Muráň, 930 m a.s.l., coll. and det. J. KOCHJAROVÁ, 1997 (BBZ *s.n.* – Herbarium of the Botanical Garden of the Comenius University in Blatnica). 3. Slovakia, Šarišská vrchovina Mts, village of Vysoká, Mt. Homôlka, ca 700 m a.s.l., coll. J. KOCHJAROVÁ, 1997, det. J. KOCHJAROVÁ (BBZ *s.n.* – Herbarium of the Botanical Garden of the Comenius University in Blatnica).

For this species, the chromosome numbers $2n = 48$, $2n = 96$ and $2n = \text{ca } 90\text{--}100$ are known from the Central Europe (cf. SKALIŇSKÁ et al., 1978; KOCHJAROVÁ, 1997).

13. *Tephroses capitata* (WAHLENB.) GRISEB. (Asteraceae)

$2n = 64$ KOCHJAROVÁ

Locality: Poland, Tatry Zachodnie Mts, town of Zakopane, Mt. Giewont, above the valley dolina Stražyska, ca 1500–1550 m a.s.l., coll. J. KOCHJAROVÁ & P. TURIS, 1996, det. J. KOCHJAROVÁ (BBZ *s.n.* – Herbarium of the Botanical Garden of the Comenius University in Blatnica).

Two different chromosome numbers for this species have been published: $2n = 64$ from the West Carpathians (VÁCHOVÁ, 1970; KOCHJAROVÁ, 1997; KOCHJAROVÁ, 2005), and $2n = 96$ from the Southwest Alps (FAVARGER, 1965; ZICKLER, 1968), South (KOCHJAROVÁ, 2005) and West Carpathians (UHRÍKOVÁ & DÚBRAVCOVÁ, 1997).

14. *Tephroses integrifolia* (L.) HOLUB (Asteraceae)

$2n = 48$ KOCHJAROVÁ

Localities: 1. Slovakia, Slovenský kras karst, village of Jelšavská Teplica, Mt. Muteň, ca 450 m a.s.l., coll. J. KOCHJAROVÁ & J. KLIMENT, 1996, det. J. KOCHJAROVÁ (BBZ *s.n.* – Herbarium of the Botanical Garden of the Comenius University in Blatnica). 2. Slovakia, Nízke Tatry Mts, village of Podkonice, Mt. Vysoká, coll. P. TURIS, 1997, det. J. KOCHJAROVÁ (BBZ *s.n.* – Herbarium of the Botanical Garden of the Comenius University in Blatnica).

Several ploidy levels were detected for *Tephroses*

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integrifolia s. l. group. For *T. integrifolia* (L.) HOLUB from the territory of West-Carpathians, only the hexaploid chromosome number, $2n = 48$ has been published (cf. KOCHJAROVÁ, 1997).

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Reports (15–16) by Martin KOLNÍK & Kornélia GOLIAŠOVÁ

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15. *Urtica dioica* L. (Urticaceae)

$2n = 26$ KOLNÍK

Locality: Slovakia, village of Závod, NR Abrod, along stream Porec, 150 m a.s.l., coll. K. GOLIAŠOVÁ, H. ŠIPOŠOVÁ & M. KOLNÍK, 29. VI. 2005, det. M. KOLNÍK (SAV *s.n.*, stated on 3 plants).

This species apparently has two cytotypes, namely $2n = 4x = 52$ (LÖVE & LÖVE, 1975; SKALIŇSKA et al., 1974; Missouri Botanical Garden, 2005), eventually $2n = 4x = 48$ (SKALIŇSKA et al., 1974; MÁJOVSKÝ et al., 1987) both distributed commonly throughout Europe and $2n = 2x = 26$ previously reported only by WOODLAND et al. (1976). The diploid chromosome number $2n = 26$ was revealed for Slovakia for the first time.

16. *Urtica kioviensis* ROGOW. (Urticaceae)

$2n = 26$ KOLNÍK

Locality: Slovakia, village of Svätý Jur, NR Šúr, 130 m a.s.l., coll. K. GOLIAŠOVÁ, I. HODÁLOVÁ & V. FERÁKOVÁ, VI. 2005, det. M. KOLNÍK (SAV *s.n.*, stated on 2 plants).

This is the first chromosome count for this species from Slovakia and agrees with those of GELTMAN (1984) and DOBEŠ & HAHN (1997). A chromosome number $2n = 52$ reported for *U. kioviensis* by MURÍN (1978; from the same locality) and FOTHERGILL (1936) most probably refers to *U. dioica*.

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Reports (17–22) by Pavol MEREĎA jun.¹, Iva HODÁLOVÁ¹, Pavol MÁRTONFI² & Vladislav KOLARČÍK²

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17. ¹ *Viola hirta* L. (Violaceae)

$2n = 20$ HODÁLOVÁ & MEREĎA jun.

Locality: Slovakia, Burda Mts, slopes above the village of Kamenica nad Hronom, 200 m a. s. l., 47°49'57" N, 18°44'16" E (8178c), coll. and det. I. HODÁLOVÁ & P. MEREĎA jun., 2. IV. 2003 (SAV *s.n.*, 1 plant, cult. no. 5A).

Two chromosome numbers, namely $2n = 20$ (commonly distributed cytotype, cf. BOLKHOVSKIKH et al., 1969; STEPANOV & MURATOVA, 1995 etc.) and $2n = 18$ (STEPANOV & MURATOVA, 1995) have been reported for *V. hirta*. Our tetraploid count $2n = 20$ from single plant of *V. hirta* confirms the previously published data from Slovakia (VÁCHOVÁ, 1976).

18. *Viola odorata* L. (Violaceae)

$2n = 20$ HODÁLOVÁ & MEREĎA jun.

Locality: Slovakia, Východoslovenská nížina Lowlands, village of Hrušov, 105 m a. s. l., 48°26'10" N, 21°51'41" E (7597c), coll. and det. I. HODÁLOVÁ, 10. IV. 2003 (SAV *s.n.*, 1 plant, cult. no. 28A).

Besides the count $2n = 20$ (which is the most commonly distributed cytotype (cf. BOLKHOVSKIKH et al., 1969; ALDASORO, 1992 etc.)), three other counts have been reported for *V. odorata*, namely $2n = 18$ (GERSHOY, 1928), $2n = 20 + 0 - 1B$ (LÖVKVIST & HULTGÅRD, 1999) and $n = 30$ (KOSHY & MATHEW, 1990). Our tetraploid count $2n = 20$ from single plant of *V. odorata* confirms the previously published data from Slovakia (VÁCHOVÁ, 1976).

19. *Viola reichenbachiana* JORD. ex BOREAU (Violaceae)

$2n = 20$ MÁRTONFIOVÁ & MÁRTONFI

Locality: Slovakia, Košice, Botanical Garden, decorative area (plant not cultivated), 223 m a. s. l., 48°44'06" N, 21°14'18" E (7293c), coll. and det. P. MÁRTONFI 2685, 17. IV. 2003 (KO *s.n.*, 1 plant, cult. no. M23).

Two chromosome numbers have been reported for *V. reichenbachiana*: the most frequent one $2n = 20$ (cf. BOLKHOVSKIKH et al., 1969; LÖVKVIST & HULTGÅRD, 1999 etc.), and $2n = 40$ (BAMFORD & GERSHOY, 1930; PARFENOV & DIMITRIEVA, 1987). The reports of the latter chromosome count require critical revision. From the territory of Slovakia the counts $2n = 20$ have been

¹ All species of *Viola* L. reported here belong to section *Viola*. The basic chromosome number for this section has been traditionally interpreted as $x = 10$. However, as obvious from recent allozyme studies, the $2n = 20$ species of section *Viola* should be regarded as tetraploids and $2n = 40$ species as octoploids, based on $x = 5$. The diploid chromosome counts ($2n = 10$) are not known within this section (cf. MARCUSSEN & BORGAN, 2000).

reported by VÁCHOVÁ (1978) and HRUŠOVSKÁ (1987). The count of VÁCHOVÁ (1974) $2n = 40$ is most probably erroneous, because later VÁCHOVÁ (1978) published $2n = 20$ for *V. reichenbachiana* collected from the same locality (voucher specimens to these two records were not found in the herbarium SLO).

20. *Viola riviniana* RCHB. (Violaceae)

2n = 40 HODÁLOVÁ & MEREĎA jun.; $2n \sim 8x$ MÁRTONFI, MEREĎA jun., HODÁLOVÁ & KOLARČÍK (internal reference: *V. reichenbachiana*, cult. no. M23, $2n = 4x$, peak ratio 1.9–2.0)

Localities: **1.** Slovakia, Strážovské and Súľovské vrchy Mts, town of Nová Dubnica, chalet's settlement above the village of Veľký Kolačín, Markovica hill, W slope, 330 m a.s.l., 48°55'42" N, 18°10'27" E (7075c), coll. and det. P. MEREĎA jun., 25. IV. 2004 (SAV s.n., 1 plant, cult. no. 404, $2n \sim 8x$). **2.** Slovakia, Strážovské and Súľovské vrchy Mts, town of Nová Dubnica, upper part of the village of Veľký Kolačín, SW slope of cote 382.3, edge of the forest with *Pinus nigra*, 285 m a.s.l., 48°55'57" N, 18°10'12" E (7075c), coll. and det. P. MEREĎA jun., 25. IV. 2004 (SAV s.n., 1 plant, cult. no. 403, $2n \sim 8x$). **3.** Slovakia, Strážovské and Súľovské vrchy Mts, village of Košecké Podhradie, S part of the settlement Háj, edge of the forest with *Picea abies*, 440 m a.s.l., 48°57'52" N, 18°17'51" E (7075b), coll. and det. P. MEREĎA jun. & P. MEREĎA sen., 8. V. 2004 (SAV s.n., 1 plant, cult. no. 140B, $2n = 40$).

The octoploids $2n = 40$ of *V. riviniana* estimated here agree with previously published data of BOLKHOVSKIKH et al. (1969), ALDASORO (1992) and many others. Moreover, the counts $2n = 35$ (FERNANDEZ CASADO, 1984), $2n = 40 + 0 - 1B$ (TINAKOU, 1991), $2n = 40 + 5 - 8B$ [VALENTINE, 1941 and 1949, and three unpublished counts nos. 81, 82 and 83 from different authors (Botanical Society of the British Isles 2005)] have been also given for this species. The tetraploid count $2n = 20$ reported by ROMANO et al. (1987) most probably referred to different taxon. Our chromosome number and ploidy level $2n \sim 8x \sim 40$ confirms the previously published data $2n = 40$ from Slovakia (VÁCHOVÁ, 1978).

21. *Viola suavis* M. BIEB. (Violaceae)

2n = 40 HODÁLOVÁ & MEREĎA jun.

Locality: Slovakia, Burda Mts, slopes above the village of Kamenica nad Hronom, 200 m a.s.l., 47°49'57" N, 18°44'16" E (8178c), coll. and det. I. HODÁLOVÁ & P. MEREĎA jun., 2. IV. 2003 (SAV s.n., 1 plant, cult. no. 5B).

The chromosome number of *V. suavis* is the first count for this species from Slovakia and agrees with those stated by SCHMIDT (1961), ALDASORO (1992) and MARCUSSEN & NORDAL (1998).

22. *V. × bavarica* SCHRANK [*Viola reichenbachiana* × *V. riviniana*] (Violaceae)

2n ~ 6x MÁRTONFI, MEREĎA jun., HODÁLOVÁ & KOLARČÍK (internal reference: *V. reichenbachiana*, cult. no. M23, $2n = 4x$, peak ratio 1.4–1.5)

Localities: **1.** Slovakia, Strážovské and Súľovské vrchy Mts, town of Nová Dubnica, chalet's settlement above the part of Veľký Kolačín, Markovica hill, W slope, 330 m a.s.l., 48°55'42" N, 18°10'27" E (7075c), coll. and det. P. MEREĎA jun., 6. V. 2005 (SAV s.n., 1 plant, cult. no. 404C). **2.** Slovakia, Strážovské and Súľovské vrchy Mts, town of Nová Dubnica, Mt. Markovica, 0.4 km E from cote 382.3, exp. N, orchard, 370 m a.s.l., 48°55'56" N, 18°10'45" E (7075c), coll. and det. P. MEREĎA jun., 6. V. 2005 (SAV s.n., 2 plants, cult. nos. 405A, 405B). **3.** Slovakia, Strážovské and Súľovské vrchy Mts, town of Dubnica nad Váhom, Mt. Ostrý vrch, 0.6 km SW from the top, in the open part of forest, 370 m a.s.l., 48°56'22" N, 18°11'07" E, 7075c; coll. and det. P. MEREĎA jun., 6. V. 2005 (2 plants, cult. nos. 406A, 406B, without voucher specimens). **4.** Slovakia, Strážovské and Súľovské vrchy Mts, town of Dubnica nad Váhom, Mt. Ostrý vrch, 1 km NW from the top, 290 m a.s.l., 48°57'01" N, 18°11'03" E (7075a), coll. and det. P. MEREĎA sen., 6. V. 2005 (1 plant, cult. no. 407A, without voucher specimen). **5.** Slovakia, Strážovské and Súľovské vrchy Mts, village of Košecké Podhradie, S part of the settlement of Háj, edge of the forest with *Picea abies*, 440 m a.s.l., 48°57'52" N, 18°17'51" E (7075b), coll. and det. P. MEREĎA jun. & P. MEREĎA sen., 8. V. 2004 (SAV s.n., 2 plants, cult. nos. 140AA, 140AB).

The hexaploid level ($2n \sim 6x$) is revealed for this hybrid from Slovakia for the first time and agrees with those of KUTA (1978; $2n = 30, 35$) from Poland. This nothotaxon was omitted in the last checklist of vascular plants of Slovakia (MARHOLD, 1998). In Slovakia it is common in all sympatrical zones of both parental species. The hybrids collected in the field were intermediate in morphological characters and distinctly less fertile than their parents.

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23. *Fallopia* × *bohemica* (CHRTEK & CHRTEKOVÁ) J. P. BAILEY [*Fallopia japonica* × *F. sachalinensis*] (Polygonaceae)

2n = 66 MRÁZ

Locality: Slovakia, Volovské vrchy Mts, city of Košice, "Kalvária", near the crossroad of Stará spišská cesta street and Nitrianska ulica street, 255 m a.s.l., 48°43'50" N, 21°13'51" E (7293c), coll. and det. P. MRÁZ, VI. 2003 (Herb. P. MRÁZ *s.n.*, 1 plant).

The first record from the area of Slovakia. This nothotaxon was omitted in the last checklist of Slovak Republic (MARHOLD, 1998, ELIÁŠ, 2004). Present count agrees with prevailing hexaploid level given by MANDÁK et al. (2003) from neighbouring Czech Republic, although tetraploid and octoploid populations are known in adventive distribution area too (BAILEY & STACE, 1992; BAILEY et al., 1996; MANDÁK et al., 2003). Recently published data on common occurrence of *Fallopia japonica* (HOULT.) RONSE DECR. from many localities in the city of Košice (SITÁŠOVÁ, 2002) are partly erroneous, in many cases it is a misidentification with hybrid taxon *F. × bohemica*.

24. *Hieracium longifoliosum* NYAR. ex SZELĄG (Asteraceae)

2n = 36 MRÁZ

Locality: Romania, Munții Retezatului Mts, on the ridge Culmea Lolaia, Săua Ciurila saddle, ca 1800 m a.s.l., coll. P. MRÁZ, 7. VII. 2001, det. Z. SZELĄG (Herb. P. MRÁZ *s.n.*, 1 plant, cult. no. 1036).

The first record for this species belonging to the *Hieracium* sect. *Cernua* R. UECHTR. (SZELĄG, 2003). Moreover, tetraploid ploidy level for three herbarized plants from the same collection was confirmed by flow cytometric analysis, but quality of the peaks, both standart (diploid *H. transsilvanicum* HEUFF., Herb. P. MRÁZ) and samples was very low (peak ratios 1.91–1.94). All Carpathian taxa of the sect. *Cernua* with known ploidy level are triploid ($2n = 27$; MRÁZ & SZELĄG, 2004), but one *H. silesiacum* E. KRAUSE, an endemic taxon of the W Carpathians and E Sudetes Mts, is tetraploid too (CHRTEK, 1996; CHRTEK et al., 2004). The third tetraploid species, *H. vierhapperi* (ZAHN) SZELĄG is confined to the Eastern Alps (SZELĄG, 2004).

25. *Thladiantha dubia* BUNGE (Cucurbitaceae)

2n = 18 MRÁZ

Locality: Slovakia, Volovské vrchy Mts, town of Gelnica, Turzovská ulica street, bellow Gelnica castle hill, 360 m a.s.l., 48°50'59" N, 20°55'47" E (7191b), coll. and det. P. MRÁZ, IX. 2003 (Herb. P. MRÁZ *s.n.*, 1 plant).

This rare allied taxon of Slovak flora is known in the surrounding of the town of Gelnica from at least three localities, for the first time being found in Gelnica by I. JAROLÍMEK in 1997 (BERNÁTOVÁ et al., 2002). The first chromosome count from Slovakia confirms the

data published e.g. by PROBATOVA & SOKOLOVSKAYA (1988) or TURALA-SZYBOWSKA (1991).

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26. *Amsinckia calycina* (MORIS) CHATER (Boraginaceae)

2n = 34 PERNÝ

Locality: Slovakia, Malé Karpaty Mts., city of Bratislava, Horský park, slope above the Drotárska cesta Street, disturbed by building activities, 7868b, coll. H. ŠÍPOŠOVÁ 20. VI. 2004, det. H. ŠÍPOŠOVÁ & M. PERNÝ (SAV *s.n.*, counted from seedlings originated from pooled sample of seeds collected from several plants).

This chromosome count is the first record for Slovakia and corresponds to the count by FRIEND (1982). This species is native of South America and southern part of North America. It has been considered as frequent casual in Northern and Western Europe (CHATER, 1972). The species was found by H. ŠÍPOŠOVÁ and T. REHÁČKOVÁ on the above mentioned locality in 2000. That was the first record of the species in Slovakia. Then, the population of several dozens of plants has been repeatedly found there in 2001–2005.

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BOOK REVIEW

SLAVÍK B. & ŠTĚPÁNKOVÁ J. (eds), Květena České republiky 7 [Flora of the Czech Republic 7]. Academia, Praha, 2004, 767 pp., with 128 full page plates and 53 maps. Price 490 Kč [ca 15 EUR]. ISBN 80-200-1161-7.

The present volume of the Flora of the Czech Republic, the 7th in order, covers probably the largest family in the Czech flora – Asteraceae s.l., and the second largest in the world (after Orchidaceae).

Similarly to the preceding volumes, the present volume keeps the standard format and structure. After Preface, Introduction and Abbreviations, phytogeographical characteristics of selected taxa are given (translated also in English). The 53 phytogeographically interesting taxa were mapped using the grid of Central European mapping project. The special part contains the detailed description of 96 genera. The largest genus, in respect to the number of including species, is *Hieracium* s.l. (including *Pilosella*), containing 115 species treated on 161 pages. Generally, there are not many representatives of Asteraceae known as really economically important. On the other hand, Astereceae are characterized by high number of ornamentals, from which some are very invasive, and by number of taxonomically intricate genera like *Aster* s.l., *Centaurea*, *Erigeron*, *Hieracium*, *Pilosella*, or *Taraxacum* (however, the latter mentioned genus was excluded from present volume). Morphological descriptions and other characteristics (keys, nomenclature, ecology and cenology, notes on variability, distribution in the Czech Republic and briefly in total range, etc.) are usually very well-prepared. Enumeration of exsiccate herbarium specimens based on material coming from the Czech Republic, or in less extent also exsiccate specimens of foreign origin, is probably the welcome speciality of this project. Personally, I appreciate very much an exhausted list of literature sources accompanying each genus (or family), and also often very detailed notes on presence of secondary metabolites (usually prepared by consultant J. HARMATHA). An information quality of the Czech flora will be higher with supplementary information given on the type herbarium material and exact publication of typification, if the type was stated. In other case, also the information on geographic origin of original locality(ies) of a particular taxon could be included (like in the case of similar modern Flora of Nordica). From very few shortcomings of whole project of the Czech flora it should be mentioned the lack of maps of distributions of treated taxa. Although at the beginning of each volume some distributional maps for selected taxa are given, and in spite of existence of three published volumes of Phytogeographical synthesis of the Czech Republic, an informative value of the volumes will be undoubtedly higher with inclusion of the maps for all, or most of the taxa.

Generally, the illustrations of the plants or their details arranged in full pages are excellent (made by A. SKOUMALOVÁ-HADAČOVÁ and E. SMRČINOVÁ). However, the indumentum on the leaves and stems in mostly alpine

taxa of the genus *Hieracium* seems to me strange (much more dense than it is). There are also illogically arranged several drawings in the same genus. For example, the text part for two first taxa given in *Hieracium* – *H. villosum* and *H. grabowskianum* is placed on the pages 551–552, but their drawings we find on the page 615, etc. For users of this book it will be very helpful, if the number of each table reference with drawing of particular taxon given in the head of the text part could be accompanied also by the number of the page where this table is placed.

Adopted taxonomical concept varies according to contributors of particular genera. In the last century many narrowly treated genera were introduced and preferred in Czech (Czechoslovak) botanical works mainly due to two outstanding botanists J. DOSTÁL and J. HOLUB. Their influence is visible e.g. in the treatment of the family of Asteraceae, here divided in three separate entities – Asteraceae s.str., Ambrosiaceae and Cichoriaceae. According to the last knowledge, splitting Asteraceae to several families is not appropriate, and whole Asteraceae form one well-supported monophyletic group. On the other hand, in many cases this traditionally narrow concept used in Czech botanical literature of 20th was abandoned. From the most remarkable examples it could be mentioned the genus *Centaurea*. Appropriate taxonomic treatment however depends on availability of the phylogenetically informative data, which are usually not yet at disposal for most of taxa.

Starting in 1988, particular volumes of this most extensive encyclopaedia of the Czech botanical literature have appeared in incredible two-three year intervals. In such enviable rate, in respect to the extent of this project, we may attend the publishing of the last volume (in total, 9 volumes are planned) around the years of 2008/2009. The high scientific and formal quality of all appeared volumes of the Flora of the Czech Republic and high publishing speed is of course due to an enormous work of all participants on this project: editors in chief (or just editors), executive editors (charged mostly by editorial works and final corrections), contributors, illustrators, collaborators and consultants and of course reviewers. However, one person should be stressed the most, Bohumil SLAVÍK (1935–2004), who did not live to see the appearance of the present volume. He was the main coordinator of this project and co-editor of all published volumes, one of executive co-editors, author and co-author of treatments of many genera, author of phytogeographical chapters and all maps. To him and to S. HEJNÝ (1924–2001), a second one co-founder of the project of Flora of the Czech Republic, is dedicated present volume.