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## IAPT/IOPB chromosome data 9

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Matthias Baltisberger\* &amp; Alexander Kocyan

Plant Ecological Genetics, Institute of Integrative Biology,  
ETH Zurich, Universitätstr. 16, 8092 Zurich, Switzerland

\*Author for correspondence: [balti@ethz.ch](mailto:balti@ethz.ch)

Material CHN; voucher in M.

The chromosome number of the genus (and the species) has been counted for the first time.

## HYPOXIDACEAE

*Hypoxidia rhizophylla* (Baker) F. Friedmann,  $2n = 22$ ; Seychelles, Mahé, Josef Bogner 1319.

Victor V. Chepinoga,\* Aleksandr A. Gnutikov,  
Ilya V. Enushchenko

Department of Botany & Genetics, Irkutsk State University,  
1 Karl Marks Str., 664003, Irkutsk, Russia

\*Author for correspondence: [Victor.Chepinoga@gmail.com](mailto:Victor.Chepinoga@gmail.com)

All materials CHN; collectors: VCH = V. Chepinoga, AG = A. Gnutikov, IE = I. Enushchenko; vouchers in IRKU, duplicates in VLA.

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## ALLIACEAE

*Allium microdictyon* Prokh.,  $2n = 16$ ; Russia, Irkutskaya Oblast', AG & VCH C209.

## APIACEAE

*Carum carvi* L.,  $2n = 20$ ; Russia, Irkutskaya Oblast', AG & V. Mozer C195.

*Cicuta virosa* L.,  $2n = 22$ ; Russia, Chitinskaya Oblast', AG & IE C595, AG & IE C590.

*Heraclium dissectum* Ledeb.,  $2n = 22$ ; Russia, Irkutskaya Oblast', AG & IE C526.

*Pleurospermum uralense* Hoffm.,  $2n = 18$ ; Russia, Irkutskaya Oblast', AG & A. Hoff C525.

*Stium suave* Walter,  $2n = 12$ ; Russia, Chitinskaya Oblast', AG & IE C611.

## ARACEAE

*Calla palustris* L.,  $2n = 72$ ; Russia, Irkutskaya Oblast', AG & IE C454.

## ASTERACEAE

*Antennaria dioica* (L.) Gaertn.,  $2n = 28$ ; Russia, Irkutskaya Oblast', AG & V. Mozer C170.

*Artemisia anethifolia* Weber ex Stechm.,  $2n = 16$ ; Russia, Buryatiya, AG & VCH C561.

*Artemisia dracunculul* L.,  $2n = 18$ ; Russia, Buryatiya, AG & VCH C566.

*Artemisia integrifolia* L.,  $2n = 36$ ; Russia, Chitinskaya Oblast', AG & IE C583.

*Artemisia ledebouriana* Besser,  $2n = 36$ ; Russia, Irkutskaya Oblast', VCH, A. Verkhovina & E. Kuznetsova C640.

*Carduus crispus* L.,  $2n = 16$ ; Russia, Irkutskaya Oblast', AG & IE C545.

*Carduus nutans* L.,  $2n = 16$ ; Russia, Irkutskaya Oblast', AG & IE C557.

*Cirsium helenioides* (L.) Hill,  $2n = 34$ ; Russia, Irkutskaya Oblast', AG & IE C542, AG & T. Chulizkaya C232.

*Erigeron acris* L.,  $2n = 18$ ; Russia, Irkutskaya Oblast', AG & VCH C220.

*Gnaphalium uliginosum* L.,  $2n = 14$ ; Russia, Irkutskaya Oblast', AG & A. Hoff C508.

*Mulgedium sibiricum* (L.) Cass. ex Less. (*Lactuca sibirica* (L.) Benth. ex Maxim.),  $2n = 18$ ; Russia, Irkutskaya Oblast', AG & IE C502.

*Parasenecio hastatus* (L.) H. Koyama (*Cacalia hastata* L.),  $2n = 60$ ; Russia, Irkutskaya Oblast', AG & A. Hoff C504, AG & VCH C208.

*Pteris impatiens* (L.) DC.,  $2n = 18$ ; Russia, Irkutskaya Oblast', AG & A. Hoff C505, AG & A. Mozer C204.

*Tanacetum vulgare* L.,  $2n = 18$ ; Russia, Irkutskaya Oblast', AG & A. Hoff C506, AG & V. Mozer C198.

*Trommsdorffia maculata* (L.) Bernh.,  $2n = 10$ ; Russia, Irkutskaya Oblast', AG & V. Mozer C199.

*Tussilago farfara* L.,  $2n = 60$ ; Russia, Irkutskaya Oblast', AG & IE C490.

## BORAGINACEAE

*Myosotis scorpioides* L.,  $2n = 22$ ; Russia, Irkutskaya Oblast', AG & VCH C159.

## BRASSICACEAE

*Brassica campestris* L.,  $2n = 20$ ; Russia, Irkutskaya Oblast', VCH & N. Dulepova C645, C644.

*Erysimum cheiranthoides* L.,  $2n = 16$ ; Russia, Irkutskaya Oblast', VCH C647.

*Erysimum flavum* (Georgi) Bobrov,  $2n = 14$ ; Russia, Irkutskaya Oblast', VCH, A. Verkhovina & E. Kuznetsova C628.

*Rorippa barbareaifolia* (DC.) Kitag.,  $2n = 32$ ; Russia, Chitinskaya Oblast', AG & IE C615.

*Rorippa palustris* (L.) Besser,  $2n = 32$ ; Russia, Irkutskaya Oblast', AG & IE C441.

*Thellungiella salsuginea* (Pall.) O.E. Schulz,  $2n = 14$ ; Russia, Irkutskaya Oblast', A. Verkhovina & N. Dulepova C636.

All materials for the chromosome column should be submitted electronically to: Karol Marhold, [karol.marhold@savba.sk](mailto:karol.marhold@savba.sk) (Institute of Botany, Slovak Academy of Sciences, SK-845 23 Bratislava, Slovakia, and Department of Botany, Charles University, CZ 128-01 Prague, Czech Republic). The full version of this contribution is available in the online edition of TAXON as Supplementary Data to this article. The following citation format is recommended: Baltisberger, M. & Voelger, M. 2006. *Sternbergia sicula*. In: Marhold, K. (ed.), IAPT/IOPB chromosome data 1. *Taxon* 55: 444, E2.

*Thlaspi arvense* L.,  $2n = 14$ ; Russia, Irkutskaya Oblast', *N. Dulepova* C646.

#### CALLITRICHACEAE

*Callitriche palustris* L.,  $2n = 20$ ; Russia, Irkutskaya Oblast', *AG & IE* C450.

#### CARYOPHYLLACEAE

*Melandrium album* (Mill.) Garcke,  $2n = 24$ ; Russia, Buryatiya, *VCH* C630.

*Stellaria crassifolia* Ehrh.,  $2n = 36$ ; Russia, Chitinskaya Oblast', *AG & IE* C594.

#### CHENOPODIACEAE

*Chenopodium glaucum* L.,  $2n = 18$ ; Russia, Chitinskaya Oblast', *AG & IE* C579.

*Corispermum sibiricum* Iljin,  $2n = 18$ ; Russia, Irkutskaya Oblast', *VCH, A. Verkhovina & E. Kuznetsova* C629.

*Salicornia perennans* Willd.,  $2n = 18$ ; Russia, Chitinskaya Oblast', *AG & IE* C422.

#### CONVALLARIACEAE

*Maianthemum bifolium* (L.) F.W. Schmidt,  $2n = 36$ ; Russia, Chitinskaya Oblast', *AG & IE* C581; Russia, Irkutskaya Oblast', *AG & IE* C452.

#### DIPSACACEAE

*Scabiosa ochroleuca* L.,  $2n = 16$ ; Russia, Irkutskaya Oblast', *IE* C632.

#### FABACEAE

*Lathyrus pilosus* Cham.,  $2n = 14$ ; Russia, Chitinskaya Oblast', *AG & IE* C394.

#### GENTIANACEAE

*Anagallidium dichotomum* (L.) Griseb.,  $2n = 14$ ; Russia, Irkutskaya Oblast', *AG & IE* C491.

#### GERANIACEAE

*Geranium pratense* L.,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & IE* C486.

*Geranium sibiricum* L.,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & IE* C500.

#### HIPPURIDACEAE

*Hippuris vulgaris* L.,  $2n = 32$ ; Russia, Chitinskaya Oblast', *AG & IE* C599.

#### IRIDACEAE

*Iris ruthenica* Ker-Gawl.,  $2n = \text{ca. } 84$ ; Russia, Irkutskaya Oblast', *IE* C349.

#### LAMIACEAE

*Amethystea coerulea* L.,  $2n = 26$ ; Russia, Irkutskaya Oblast', *A. Prudnikova* C638.

*Prunella vulgaris* L.,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & IE* C484.

*Scutellaria galericulata* L.,  $2n = 32$ ; Russia, Irkutskaya Oblast', *AG & IE* C534; Russia, Chitinskaya Oblast', *AG & IE* C409.

#### MENYANTHACEAE

*Menyanthes trifoliata* L.,  $2n = 54$ ; Russia, Irkutskaya Oblast', *AG & IE* C496.

#### ONAGRACEAE

*Epilobium adenocaulon* Hausskn.,  $2n = 36$ ; Russia, Irkutskaya Oblast', *AG & IE* C554.

*Epilobium palustre* L.,  $2n = 36$ ; Russia, Chitinskaya Oblast', *AG & IE* C598, *AG & IE* C604.

#### POACEAE

*Agrostis divaricatissima* Mez,  $2n = 28$ ; Russia, Chitinskaya Oblast', *AG & IE* C576.

*Agrostis gigantea* Roth,  $2n = 42$ ; Russia, Irkutskaya Oblast', *AG & VCH* C163.

*Agrostis sibirica* Petrov,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & VCH* C235.

*Beckmannia syzigachne* (Steud.) Fernald,  $2n = 14$ ; Russia, Chitinskaya Oblast', *AG & IE* C617.

*Deschampsia cespitosa* (L.) P. Beauv.,  $2n = 26$ ; Russia, Irkutskaya Oblast', *AG & V. Mozer* C197.

*Festuca ovina* L.,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & IE* C252, *IE* C351.

*Festuca pratensis* Huds.,  $2n = 14$ ; Russia, Irkutskaya Oblast', *AG* C202.

*Lolium perenne* L.,  $2n = 14$ ; Russia, Irkutskaya Oblast', *IE* C558.

*Panicum ruderales* (Kitag.) Chang,  $2n = 18$ ; Russia, Irkutskaya Oblast', *VCH & IE* C627, C637.

#### PRIMULACEAE

*Androsace filiformis* Retz.,  $2n = 20$ ; Russia, Irkutskaya Oblast', *AG & IE* C439.

*Lysimachia davurica* Ledeb.,  $2n = 42$ ; Russia, Irkutskaya Oblast', *AG & IE* C480.

*Lysimachia vulgaris* L.,  $2n = 42$ ; Russia, Irkutskaya Oblast', *AG & IE* C530.

#### RANUNCULACEAE

*Batrachium trichophyllum* (Chaix) Bosch,  $2n = 16$ ; Russia, Chitinskaya Oblast', *AG* C614 [Chepinoga & al., *Taxon* 58: 1281, E3. 2009, as "*B. circinatum*"].

*Caltha membranacea* (Turcz.) Schipczinsky,  $2n = 32$ ; Russia, Irkutskaya Oblast', *AG & IE* C465.

*Ranunculus longicaulis* C.A. Mey.,  $2n = 32$ ; Russia Chitinskaya Oblast', *AG & IE* C426.

#### ROSACEAE

*Comarum palustre* L.,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & IE* C531, C497, C478.

*Filipendula ulmaria* (L.) Maxim.,  $2n = 28$ ; Russia, Irkutskaya Oblast', *AG & IE* C498.

*Geum aleppicum* Jacq.,  $2n = 42$ ; Russia, Irkutskaya Oblast', *AG & VCH* C216.

*Rubus arcticus* L.,  $2n = 14$ ; Russia, Chitinskaya Oblast', *AG & IE* C370.

#### SALICACEAE

*Salix rhamnifolia* Pall.,  $2n = 38$ ; Russia, Buryatiya, *AG & IE* C621.

*Salix rorida* Laksch.,  $2n = 38$ ; Russia, Irkutskaya Oblast', *AG & IE* C544.

#### SOLANACEAE

*Solanum kitagawae* Schönb.-Tem.,  $2n = 24$ ; Russia, Chitinskaya Oblast', *AG & IE* C395.

#### TRILLIACEAE

*Paris quadrifolia* L.,  $2n = 10$ ; Russia, Irkutskaya Oblast', *AG & VCH* C210.

#### URTICACEAE

*Urtica dioica* L.,  $2n = 52$ ; Russia, Irkutskaya Oblast', *AG & IE* C487.

**Kamil Coşkunçelebi<sup>1</sup> & Vladimir Vladimirov<sup>2</sup>**

1 *Karadeniz Technical University, Faculty of Sciences and Arts, Department of Biology, 61080 Trabzon, Turkey; kamil@ktu.edu.tr*

2 *Institute of Botany, Bulgarian Academy of Sciences, Acad. Georgi Bonchev St., bl. 23, 1113 Sofia, Bulgaria; vdvlad@bio.bas.bg*

All materials collected in Turkey; vouchers in SOM and KTUB (Herbarium of Department of Biology at Karadeniz Technical University, Trabzon).

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**ASTERACEAE**

*Hieracium bornmuelleri* Freyn,  $2n = 27$ , CHN; *Coşkunçelebi 671B* (KTUB) & *Vladimirov* (SOM 165359).

*Hieracium medianiforme* (Litv. & Zahn) Juxip,  $2n = 27$ , CHN; *Coşkunçelebi 667* (KTUB) & *Vladimirov* (SOM 165362).

*Hieracium paphlagonicum* Freyn & Sint.,  $2n = 27$ , CHN; *Coşkunçelebi 674* (KTUB) & *Vladimirov* (SOM 165368).

*Hieracium sparsum* Friv.,  $2n = 3x = 27$ , FCM; *Coşkunçelebi 718* (KTUB) & *Vladimirov* (SOM 165370).

*Pilosella auriculoides* (Láng) Arv.-Touv.,  $2n = 54$ , CHN; *Coşkunçelebi 677B* (KTUB) & *Vladimirov* (SOM 165374).

*Pilosella procera* (Fr.) F.W. Schultz & Sch. Bip.,  $2n = 36$ , CHN; *Coşkunçelebi 675* (KTUB) & *Vladimirov* (SOM 165375).

*Pilosella hoppeana* subsp. *testimonialis* (Peter) P.D. Sell & C. West,  $2n = 18$ , CHN; *Coşkunçelebi 668, 679B* (KTUB) & *Vladimirov* (SOM 165377, 165378).

*Pilosella piloselloides* (Vill.) Soják subsp. *piloselloides*,  $2n = 45$ , CHN; *Coşkunçelebi 679E* (KTUB) & *Vladimirov* (SOM 165380).

**Mauro Grabiele,<sup>1,2\*</sup> Ana I. Honfi<sup>1</sup> & Julio R. Daviña<sup>1</sup>**

1 *Laboratorio de Citogenética Vegetal, Universidad Nacional de Misiones, Rivadavia 2370, 3300 Posadas, Argentina*

2 *Instituto Multidisciplinario de Biología Vegetal (IMBIV-CONICET), Universidad Nacional de Córdoba, C.C. 495, 5000 Córdoba, Argentina*

\*Author for correspondence: *maurograbiele@hotmail.com*

All materials CHN; collectors: *MG* = M. Grabiele, *D* = J.R. Daviña, *H* = A.I. Honfi, *MarG* = Mar. Grabiele, *L* = I.S. Insaurralde.

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**COMMELINACEAE**

*Commelina benghalensis* L. var. *benghalensis*,  $n = 11$ ,  $2n = 22$ ; Argentina, Misiones, *MG, D, H & MarG 94* (MNES, SI).

*Commelina diffusa* var. *gigas* (Small) Faden,  $2n = 90$ ; Argentina, Misiones, *MG 36* (CTES, MNES, SI).

*Commelina erecta* L.,  $2n = 60$ ; Argentina, Misiones, *MG 6* (CTES, MNES, SI).

*Commelina obliqua* Vahl,  $2n = 60$ ; Argentina, Misiones, *MG 25* (CTES, MNES, SI).

*Commelina platyphylla* Klotzsch ex Seub.,  $2n = 30$ ; Argentina, Misiones *MG 23* (CTES, MNES, SI).

*Dichorisandra hexandra* (Aubl.) Standl.,  $n = 38$ ,  $2n = 76$ ; Argentina, Misiones, *MG 37* (CTES, MNES).

*Tradescantia anagallidea* Seub.,  $n = 30$ ,  $2n = 60$ ; Argentina, Misiones, *L 680* (MNES, SI).

*Tradescantia fluminensis* Vell.,  $n = 20$ ,  $2n = 40$ ; Argentina, Misiones, *MG 31* (CTES, MNES, SI).

*Tradescantia pallida* (Rose) D.R. Hunt,  $n = 12$ ,  $2n = 24$ ; Argentina, Misiones *MarG 7* (MNES, SI).

*Tradescantia zebrina* Heynh. ex Bosse,  $n = 12$ ,  $2n = 24$ ; Argentina, Misiones, *MG 14* (CTES, MNES, SI).

*Tripogandra diuretica* (Mart.) Handlos,  $n = 32$ ,  $2n = 64$ ; Argentina, Misiones, *MG 38* (MNES, SI).

*Tripogandra glandulosa* (Seub.) Rohweder,  $n = 8$ ,  $2n = 16$ ; Argentina, Chaco, *MG 29* (CTES, MNES).

**María Gutiérrez\* & Francisco María Vázquez**

*Grupo HABITAT, Sección de Producción Forestal, Centro de Investigación La Orden-Valdesequera, Vicepresidencia Segunda y Consejería de Economía Comercio e Innovación, Junta de Extremadura, Apartado 22, 06080 Badajoz. España*

\*Author for correspondence: *margutes@hotmail.com*

All materials CHN; chromosome numbers counted and ploidy level estimated by M. Gutiérrez (MG) and F.M. Vázquez (FMV); collectors: *MG* and *FMV*; vouchers in HSS and the figures in the HSS-Anatomical collections (HSS-AC) sub numbers HSS-AC 022 to HSS-AC 033.

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**LILIACEAE**

*Gagea fragifera* (Vill.) Ehr. Bayer & G. López,  $2n = 72$ ; Spain, *MG C211 & FMV* (HSS-AC 032).

*Gagea pratensis* (Pers.) Dumort.,  $2n = 48$ ; Spain, *MG C117 & FMV* (HSS-AC 033).

*Gagea reverchonii* Degen,  $2n = 24$ ; Spain, *MG C210 & FMV* (HSS-AC 023), *MG C172 & FMV* (HSS-AC 022).  $n = 12$ ; Spain, *MG C210 & FMV* (HSS-AC 025).

*Gagea bohemica* subsp. *saxatilis* (Mert. & W.D.J. Koch) Asch. & Graebn.,  $2n = 36$ ; Spain, *MG C190 & FMV* (HSS-AC 035), *MG C165 & FMV* (HSS-AC 027), *MG C171 & FMV* (HSS-AC 028).  $n = 18$ , Spain, *MG C190 & FMV* (HSS-AC 034), *MG C171 & FMV* (HSS-AC 030).

**Dalvir Kaur & Vijay K. Singhal\***

*Department of Botany, Punjabi University, Patiala, Punjab, India.*

\*Author for correspondence: *vk Singh153@gmail.com*

All materials CHN, collected in India; collector: *DK* = Dalvir Kaur; vouchers in PUN

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**ACANTHACEAE**

*Dicliptera bupleuroides* Nees,  $n = 13$ ; *DK 23928*.

**AMARANTHACEAE**

*Cyathula tomentosa* Moq.,  $n = 17$ ; *DK 23929*.

**BALSAMINACEAE**

- Impatiens brachycentra* Kar. & Kir., *n* = 7; DK 23302, DK 23301.  
*Impatiens laxiflora* Edgew., *n* = 7; DK 23305.  
*Impatiens scabrida* DC., *n* = 7; DK 23304, DK 19823, DK 23303.  
*Impatiens thomsonii* Hook. f., *n* = 7; DK 23306.

**CANNABACEAE**

- Cannabis sativa* L., *n* = 10; DK 19824.

**CAPRIFOLIACEAE**

- Lonicera quinquelocularis* Hardw., *n* = 9; DK 23318, DK 19883, DK 19884.

**CARYOPHYLLACEAE**

- Dianthus angulatus* Royle, *2n* = 30; DK 19833.  
*Silene edgeworthii* Bocquet, *n* = 12; DK 19892, DK 19891.  
*Stellaria crispata* Wall. ex D. Don, *n* = 17; DK 23319, DK 19894, DK 19893, DK 19895.

**CHENOPODIACEAE**

- Chenopodium murale* L., *n* = 9; DK 19886.

**ELAEAGNACEAE**

- Hippophae rhamnoides* L., *n* = 9; DK 19807, DK 23317.

**FABACEAE**

- Astragalus chlorostachys* Lindl., *n* = 8; DK 19835.  
*Astragalus graveolens* Buch.-Ham., *n* = 8; DK 19836, DK 23316.  
*Campylotropis eriocarpa* Schindler, *n* = 11; DK 19843.  
*Indigofera heterantha* Wall., *n* = 24; DK 19842, DK 19841.  
*Melilotus alba* Medik., *n* = 8; DK 23324, DK 23323.  
*Trifolium pratense* L., *n* = 7; DK 19847.  
*Trifolium repens* L., *n* = 16; DK 19846.  
*Vicia rigidula* Royle, *n* = 12; DK 19849.  
*Vicia sativa* L., *n* = 6; DK 19848.  
*Vicia tenera* Graham, *n* = 7; DK 19850.

**GERANIACEAE**

- Geranium pratense* L., *n* = 28; DK 19854.  
*Geranium wallichianum* D. Don, *n* = 14; DK 23313, DK 19855, DK 23310.

**LAMIACEAE**

- Mentha longifolia* Huds., *n* = 12; DK 19856, DK 19857.  
*Nepeta erecta* Benth., *n* = 9; DK 19858, DK 19859.  
*Leonurus cardiaca* L., *n* = 9; DK 19865.  
*Salvia nubicola* Wall., *n* = 8; DK 19861, DK 19862, DK 19860.

**ONAGRACEAE**

- Oenothera glazioviana* Micheli, *n* = 14; DK 19829.

**PAPAVERACEAE**

- Papaver dubium* L., *n* = 14; DK 19882.

**PHILADELPHACEAE**

- Deutzia staminea* R. Br., *n* = 13; DK 19888, DK 19887.

**PLANTAGINACEAE**

- Plantago depressa* Willd., *n* = 6; DK 19863, DK 23312.  
*Plantago major* L., *n* = 6; DK 19864.

**POLYGONACEAE**

- Fagopyrum esculentum* Moench, *n* = 8; DK 19880.  
*Rumex hastatus* D. Don, *n* = 9; DK 23311, DK 19881.

**RANUNCULACEAE**

- Anemone rivularis* Buch.-Ham. ex DC., *n* = 8; DK 23314, DK 19870.

- Anemone tetrasepala* Royle, *n* = 14; DK 19871.  
*Clematis grata* Wall., *n* = 8; DK 23321, DK 19873, DK 19872, DK 23315.  
*Clematis graveolens* Lindl., *n* = 8; DK 19874.  
*Clematis orientalis* var. *acutifolia* Hook. f. & Thoms, *n* = 16; DK 19890.  
*Ranunculus diffusus* DC., *n* = 16; DK 19875.  
*Ranunculus laetus* Wall., *n* = 14; DK 19876.  
*Thalictrum foetidum* L., *n* = 21; DK 19878, DK 19877.

**ROSACEAE**

- Potentilla atrosanguinea* Lodd., *n* = 28; DK 19852.  
*Rubus biflorus* Buch.-Ham. ex Sm., *n* = 7; DK 23309, DK 19853.

**SCROPHULARIACEAE**

- Euphrasia himalayica* Wettst., *n* = 22; DK 19868.  
*Leptorhabdos benthamiana* Walp., *n* = 7; DK 19869.  
*Pedicularis bicornuta* Klotzsch, *n* = 8; DK 19867, DK 19866.

**SOLANACEAE**

- Datura stramonium* L., *n* = 12; DK 19896, DK 19898, DK 19900, DK 19899.  
*Nicandra physaloides* L., *n* = 10; DK 23322.  
*Physalis minima* L., *n* = 24; DK 23320.  
*Physochlaina praealta* Miers, *n* = 21; DK 19897.

**Micaela N. Seo**

Universidad de Buenos Aires. IFEVA, Fac. de Agronomía. Av. San Martín 4453. (C1417DSE) Cdad. de Buenos Aires. Argentina; micaseo@agro.uba.ar

All materials CHN; collected in Argentina; vouchers in BAFC.

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**VIOLACEAE**

- Anchietea parvifolia* Hallier f., *n* = 8; *Seo* 64  
*Hybanthus atropurpureus* (A. St.-Hil.) Taub., *n* = 8; *Seo* 55  
*Hybanthus bicolor* (A. St.-Hil.) Baill., *n* = 16; *Seo* 36, 62  
*Hybanthus bigibbosus* (A. St.-Hil.) Hassl., *n* = 8; *Seo* 23, 27, 41, 47  
*Hybanthus calceolaria* (L.) Oken, *n* = 16; *Seo* 16, 17, 33, 52  
*Hybanthus communis* (A. St.-Hil.) Taub., *n* = 16; *Seo* 39, 43, 49, 50  
*Hybanthus hasslerianus* (Chodat) Hassl., *n* = 16; *Seo* 37, 48  
*Hybanthus leucopogon* Sparre, *n* = 16; *Seo* 34, 58  
*Hybanthus longistylus* Schulze-Menz, *n* = 24; *Seo* 61  
*Hybanthus nanus* (A. St.-Hil.) Paula-Souza, *n* = 16; *Seo* 29, 30, 54  
*Hybanthus paraguariensis* (Chodat) Schulze-Menz, *n* = 8; *Seo* 35, 60

**Johan J. Spies\* & Susan M.C. Reinecke**

Department of Genetics (64), University of the Free State, P.O. Box 339, Bloemfontein 9300, South Africa

\*Author for correspondence: spiesjj@ufs.ac.za

All materials CHN.

**POACEAE**

- Axonopus affinis* Chase, *n* = 10; Swaziland, *Spies* 2645 (PRE).  
*Bothriochloa bladhii* (Retz.) S.T. Blake, *n* = 20; South Africa, *Spies* 1967, 3720 (PRE).  
*Bothriochloa insculpta* (A. Rich.) A. Camus, *n* = 10; South Africa, *Spies* 6946 (BLFU).

*Cymbopogon nardus* (L.) Rendle,  $n = 10$ ; South Africa, *Spies 1947* (PRE).  
*Dichanthium aristatum* (Poir.) C.E. Hubb.,  $n = 10$ ; South Africa, *Spies 4784* (BLFU).  
*Digitaria eriantha* Steud.,  $n = 18$ ; South Africa, *Spies 6639* (BLFU).  
*Digitaria tricholaenoides* Stapf,  $n = 18$ ; South Africa, *Spies 6636, 6673* (BLFU).  
*Echinochloa crus-galli* (L.) P. Beauv.,  $n = 18$ ; South Africa, *Spies 6643* (BLFU).  
*Eriochloa meyeriana* (Nees) Pilg.,  $n = 9$ ; South Africa, *Spies 2438* (PRE).  
*Karoochloa purpurea* (L. f.) Conert & Türpe,  $n = 6$ ; South Africa, *Spies 4359* (BLFU).  
*Melinis repens* (Willd.) Zizka,  $n = 9$ ; South Africa, *Spies 2398* (PRE).  
 $n = 18$ ; South Africa, *Spies 2873* (PRE).  
*Miscanthus capensis* (Nees) Andersson,  $n = 15$ ; South Africa, *Spies 4853* (BLFU).  
*Phragmites mauritianus* Kunth,  $n = 24$ ; Swaziland, *Spies 2535* (PRE).  
*Trachypogon spicatus* (L. f.) Kuntze,  $n = 10$ ; South Africa, *Spies 3591A* (PRE).  
*Urochloa mosambicensis* (Hack.) Dandy,  $n = 7$ ; South Africa, *Spies 3286* (PRE).

### Régine Verlaque,<sup>1\*</sup> Bruno Vila<sup>1</sup> & Jean-Pierre Reduron<sup>2</sup>

1 *Laboratoire de Biosystématique et d'Ecologie Méditerranéenne, IMEP-UMR 6116, Université de Provence, centre Saint-Charles (Case 4), Place Victor Hugo, 13331 Marseille Cedex 3, France*

2 *Service des Espaces verts, Conservatoire Botanique, Ville de Mulhouse, 45 Avenue du Repos, 68100 Mulhouse, France*

\*Author for correspondence: [regine.verlaque@univ-provence.fr](mailto:regine.verlaque@univ-provence.fr)

All materials CHN, gathered by J.-P. Reduron, M. Hildenbrand & M. Litzler, and cultivated in the Conservatoire botanique de Mulhouse (CBM); counted by R. Verlaque and B. Vila; vouchers in STR.

### PRIMULACEAE

*Androsace halleri* L.,  $2n = 38$ ; France, *CBM 03-159B*.

### APIACEAE

*Bupleurum alpigenum* Jord. & Fourr.,  $2n = 16$ ; France, *CBM 95-18A*.  
*Bupleurum falcatum* subsp. *corsicum* (Coss. & Kralik) Rouy & E.G. Camus,  $2n = 16$ ; Corsica, *CBM 97-174*.  
*Chaerophyllum azoricum* Trel.,  $2n = 22 + 2$  to 4B; Azores: Faial Island, *CBM 98-110*.  
*Cyclosporum laciniatum* (DC.) Constance,  $2n = 28$ ; Chile: Juan Fernandez Islands, *CBM 01-058*.  
*Daucus carota* subsp. *azoricus* Franco,  $2n = 18$ ; Azores: Pico Island, *CBM F08-002*.  
*Daucus carota* subsp. *gadecaei* (Rouy & E.G. Camus) Heywood,  $2n = 18$ ; France, *CBM F06-223*.  
*Daucus carota* subsp. *hispanicus* var. *linearis* Reduron,  $2n = 18$ ; France, *CBM 08-078*.  
*Daucus carota* subsp. *gummifer* (Syme) Hook. f.,  $2n = 18$ ; France, *CBM 09-015#; CBM 09-021#*.  
*Elaeoselinum asclepium* subsp. *meoides* (Desf.) Maire,  $2n = 22$ ; Corsica, *CBM 02-082*.  
*Pimpinella bicknellii* Briq.,  $2n = 20$ ; Balearic Islands: Majorca, *CBM 9404*.  
*Seseli farrenyi* J. Molero & J. Pujadas,  $2n = 18$ ; Spain, *CBM 92-123*.  
*Seseli galloprovinciale* Reduron,  $2n = 22$ ; France, *CBM 94-183*.  
*Seseli globiferum* Vis.,  $2n = 22$ ; Montenegro, *CBM 98-102*.  
*Seseli longifolium* subsp. *intermedium* Reduron,  $2n = 18$ ; France: Gard, *CBM 9423*.  
*Seseli rhodopeum* Velen.,  $2n = 42$ ; Bulgaria: Asenovgrad, *CBM 2075*.  
*Seseli rigidum* Waldst. & Kit.,  $2n = 20$ ; Bulgaria: Varna, *CBM 99-009*.  
*Seseli webbii* Coss.,  $2n = 22$ ; Canary Islands: Tenerife, *CBM 20-117D*.  
*Tornabenea annua* Bég.,  $2n = 18$ ; Cape Verde Islands, *CBM 06-124*.  
*Tornabenea tenuissima* (A. Chev.) A. Hansen & Sunding,  $2n = 18$ ; Cape Verde Islands, *CBM 08-006*.

## IOPB COLUMN

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## IAPT/IOPB chromosome data 9

Edited by Karol Marhold

Matthias Baltisberger\* &amp; Alexander Kocyan

Plant Ecological Genetics, Institute of Integrative Biology,  
ETH Zurich, Universitätsstr. 16, 8092 Zurich, Switzerland

\*Author for correspondence: [balti@ethz.ch](mailto:balti@ethz.ch)

## HYPOXIDACEAE

*Hypoxidia rhizophylla* (Baker) F. Friedmann

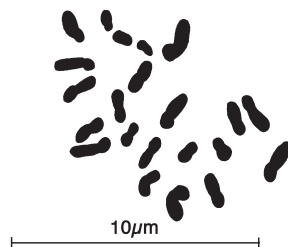
$2n = 22$ , CHN. Seychelles, Mahé, Sans Souci, 20 April 1968, *Josef Bogner 1319* (M).

Three species of the monocot family of Hypoxidaceae (Asparagales) are indicated from the Seychelles which are remote islands of mostly granitic origin in the Indian Ocean. All three species are endemics of these islands and belong to two different hypoxid genera (Wise, 1998): *Curculigo seychellensis* Bojer ex Baker occurs on Mahé, Praslin, Silhouette, and Frégate. The Seychellean endemic genus *Hypoxidia* contains two species. *Hypoxidia maheensis* F. Friedmann grows only on Mahé, while *H. rhizophylla* (Baker) F. Friedmann has a wider distribution area occurring on Mahé, Praslin, Silhouette, La Digue, and Curieuse.

In the course of a project on the phylogenetics of Hypoxidaceae (Kocyan & al., in prep.) we noticed that the chromosome numbers of both species of *Hypoxidia* are unknown. Therefore, the chromosome number of one plant of *Hypoxidia rhizophylla* cultivated in the greenhouse of the Institute of Integrative Biology at ETH in Zurich has been investigated (method see Baltisberger & Widmer, 2009). It showed  $2n = 22$  chromosomes. The chromosomes are rather small the longest being shorter than  $2 \mu\text{m}$  and the smallest chromosome clearly less than  $1 \mu\text{m}$  (Fig. 1).

Within the family many chromosome numbers at various ploidy levels are indicated at the basic chromosome numbers of  $x = 6, 7, 8, 9$ , and  $19$  (compilation see Nordal, 1998).  $2n = 20$  ( $x = 10$ ) is given by Barigozzi (1979) for the Seychellean *Curculigo seychellensis*. Wiltshire & Jackson (2003) found  $2n = 22$  in Tasmanian *Hypoxis glabella* R. Br. Thus, the number  $2n = 22$  found in *Hypoxidia rhizophylla* fits with the range of the family but differs from *Curculigo*, the other genus on the Seychelles.

**Fig. 1.** Metaphase of *Hypoxidia rhizophylla* with  $2n = 22$  chromosomes.



## Literature cited

- Baltisberger, M. & Widmer, A.** 2009. Karyological data of some angiosperms from Romania. *Willdenowia* 39: 353–363.
- Barigozzi, C.** 1979. First data on the chromosome number of *Curculigo seychellensis* Boj. (Amaryllidaceae). *Atti Accad. Naz. Lincei, Rendiconti Cl. Sci. Fis. Mat. Nat.* 66: 453–455.
- Nordal, I.** 1998. Hypoxidaceae. Pp. 286–295 in: Kubitzki, K. (ed.), *The families and genera of vascular plants*, vol. 3. Berlin: Springer.
- Wiltshire, R.J.E. & Jackson, W.D.** 2003. Index of chromosome numbers of Tasmanian spermatophytes. *Pap. & Proc. Roy. Soc. Tasmania* 137: 39–53.
- Wise, R.** 1998. *A fragile Eden: Portraits of the endemic flowering plants of the granitic Seychelles*. Princeton: Princeton Univ. Press.

**Victor V. Chepinoga,\* Aleksandr A. Gnutikov,  
Ilya V. Enushchenko**

Department of Botany & Genetics, Irkutsk State University,  
1 Karl Marks Str., 664003, Irkutsk, Russia

\*Author for correspondence: [Victor.Chepinoga@gmail.com](mailto:Victor.Chepinoga@gmail.com)

\* First chromosome count for the species.

▼ First chromosome count from an East Siberian accession.

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## ALLIACEAE

*Allium microdictyon* Prokh.

$2n = 16$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Zulumai village, birch-pine forest,  $53^{\circ}41'N$ ,  $101^{\circ}18'E$ , 13 Jul 2005, *Gnutikov & Chepinoga C209* (IRKU).

## APIACEAE

*Carum carvi* L.

$2n = 20$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Ignai village, riverside of Zima river, meadow,  $53^{\circ}48'N$ ,  $101^{\circ}36'E$ , 11 Jul 2005, *Gnutikov & V. Mozer C195* (IRKU).

*Cicuta virosa* L.

$2n = 22$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, Nikolaevskoe village, the moist shore of Nikolaevskoe lake,  $51^{\circ}03'N$ ,  $111^{\circ}44'E$ , 08 Aug 2007, *Gnutikov & Enushchenko C595* (IRKU); Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, Goreka village, left riverside of Goreka river, moist shore,  $51^{\circ}04'N$ ,  $111^{\circ}59'E$ , 07 Aug 2007, *Gnutikov & Enushchenko C590* (IRKU).

All materials for the chromosome column should be submitted electronically to: Karol Marhold, [karol.marhold@savba.sk](mailto:karol.marhold@savba.sk) (Institute of Botany, Slovak Academy of Sciences, SK-845 23 Bratislava, Slovakia, and Department of Botany, Charles University, CZ 128-01 Prague, Czech Republic). The full version of this contribution is available in the online edition of TAXON. The following citation format is recommended: Baltisberger, M. & Voelger, M. 2006. *Sternbergia sicula*. In: Marhold, K. (ed.), IAPT/IOPB chromosome data 1. *Taxon* 55: 444, E2.

*Heracleum dissectum* Ledeb.

2n = 22, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, Dzhogino village, left riverside of Biryusa river, pine forest, 56°38'N, 98°10'E, 09 Jul 2007, *Gnutikov & Enushchenko C526* (IRKU).

*Pleurospermum uralense* Hoffm.

2n = 18, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, Dzhogino village, left riverside of Biryusa river, pine forest, 56°38'N, 98°10'E, 09 Jul 2007, *Gnutikov & A. Hoff C525* (IRKU).

*Sium suave* Walter

2n = 12, CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 5 km SW of Cheremkhovo village, the shore of Ingoda river, 51°28'N, 112°43'E, 11 Aug 2007, *Gnutikov & Enushchenko C611* (IRKU).

**ARACEAE***Calla palustris* L.

2n = 72, CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 2 km W of Uygat village, floodplain of left riverside Kirei river, Krivusha lake, 54°05'N, 100°34'E, 30 Jun 2007, *Gnutikov & Enushchenko C454* (IRKU).

**ASTERACEAE***Antennaria dioica* (L.) Gaertn.

2n = 28, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, 3 km W of Osipovskii village, birch-pine forest, 53°32'N, 101°29'E, 09 Jul 2005, *Gnutikov & V. Mozer C170* (IRKU).

*Artemisia anethifolia* Weber ex Stechm.

▼2n = 16, CHN. Russia, East Siberia, Buryatiya Republic, Mukhorshibirskii Raion, 3 km S of Sagan-Nur village, salt lake Olon-Sheber, solonets meadow along the shoreline, 51°18'N, 108°25'E, 05 Aug 2007, *Gnutikov & Chepinoga C561* (IRKU).

*Artemisia dracuncululus* L.

2n = 18, CHN. Russia, East Siberia, Buryatiya Republic, Mukhorshibirskii Raion, 3 km S of Sagan-Nur village, salt lake Olon-Sheber, meadow on the shore, 51°18'N, 108°25'E, 05 Aug 2007, *Gnutikov & Chepinoga C566* (IRKU).

*Artemisia integrifolia* L.

2n = 36, CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 2 km S of Shelokhan village, left riverside of Ingoda river, in coastal shrubs, 51°00'N, 111°56'E, 07 Aug 2007, *Gnutikov & Enushchenko C583* (IRKU).

*Artemisia ledebouriana* Besser

2n = 36, CHN. Russia, East Siberia, Irkutskaya Oblast', Olkhon-skii Raion, Baikal lake, west coast of Olkhon island, Peschanaya bay, on the sand dunes, 53°17'N, 107°35'E, 30 Aug 2004, *Chepinoga, A. Verkhovzina & E. Kuznetsova C640* (IRKU).

*Carduus crispus* L.

2n = 16, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 1 km S of Buzykanovo village, roadside, 56°33'N, 98°22'E, 11 Jul 2007, *Gnutikov & Enushchenko C545* (IRKU).

*Carduus nutans* L.

▼2n = 16, CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 3 km SE of Gadalei village, birch-pine forest, roadside, 54°22'N, 100°44'E, 13 Jul 2007, *Gnutikov & Enushchenko C557* (IRKU).

*Cirsium helenioides* (L.) Hill

2n = 34, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 1 km S of Buzykanovo village, birch-pine forest, roadside,

56°33'N, 98°22'E, 11 Jul 2007, *Gnutikov & Enushchenko C542* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Zalarinskii Raion, Khor-Tagna village, Sheragul stow, floodplain Tagna river, 53°25'N, 101°38'E, 15 Jul 2005, *Gnutikov & T. Chulizkaya C232* (IRKU).

*Erigeron acris* L.

2n = 18, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Shchelbei river next to fall flowing into Zima river, 53°42'N, 101°22'E, 14 Jul 2005, *Gnutikov & Chepinoga C220* (IRKU).

*Gnaphalium uliginosum* L.

▼2n = 14, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 5 km NE Saryi Akul'shet village, left riverside of Biryusa river, near the old bridge, roadside, 56°02'N, 98°02'E, 07 Jul 2007, *Gnutikov & A. Hoff C508* (IRKU).

*Mulgedium sibiricum* (L.) Cass. ex Less. (*Lactuca sibirica* (L.) Benth. ex Maxim.)

2n = 18, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 5 km NE of Saryi Akul'shet village, left riverside of Biryusa river, near the old bridge, meadow, 56°02'N, 98°02'E, 07 Jul 2007, *Gnutikov & Enushchenko C502* (IRKU).

*Parasenecio hastatus* (L.) H. Koyama (*Cacalia hastata* L.)

2n = 60, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 5 km NE of Saryi Akul'shet village, left riverside of Biryusa river, near the old bridge, meadow, 56°02'N, 98°02'E, 07 Jul 2007, *Gnutikov & A. Hoff C504* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Zulumai village, birch-pine forest, 53°41'N, 101°18'E, 13 Jul 2005, *Gnutikov & Chepinoga C208* (IRKU).

*Ptarmica impatiens* (L.) DC.

2n = 18, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 5 km NE of Saryi Akul'shet village, left riverside of Biryusa river, near the old bridge, meadow, 56°02'N, 98°02'E, 07 Jul 2007, *Gnutikov & A. Hoff C505* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, near Shchelbei village, shore of Zima river, 53°42'N, 101°22'E, 12 Jul 2005, *Gnutikov & A. Mozer C204* (IRKU).

*Tanacetum vulgare* L.

2n = 18, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 5 km NE of Saryi Akul'shet village, left riverside of Biryusa river, near the old bridge, meadow, 56°02'N, 98°02'E, 07 Jul 2007, *Gnutikov & A. Hoff C506* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, near Shchelbei village, birch forest on the shore of Zima river, 53°42'N, 101°22'E, 12 Jul 2005, *Gnutikov & V. Mozer C198* (IRKU).

*Trommsdorffia maculata* (L.) Bernh.

2n = 10, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, near Shchelbei village, birch forest on the shore of Zima river, 53°42'N, 101°22'E, 12 Jul 2005, *Gnutikov & V. Mozer C199* (IRKU).

*Tussilago farfara* L.

▼2n = 60, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 2 km NE of Kontorka village, left riverside of Biryusa river, herbaceous meadow, 56°02'N, 97°53'E, 05 Jul 2007, *Gnutikov & Enushchenko C490* (IRKU).

**BORAGINACEAE***Myosotis scorpioides* L.

2n = 22, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, 3 km SSW of Novoletniki village, left riverside of Oka River, stony shore, 53°36'N, 101°50'E, 08 Jul 2005, *Gnutikov & Chepinoga C159* (IRKU).

**BRASSICACEAE***Brassica campestris* L.

▼ $2n = 20$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Irkutsk city, floodplain of Irkut river, near bus stop "Uzlovaya", roadside, 52°19' N, 104°14' E, 08 Aug 2006, *Chepinoga & N. Dulepova C645, C644* (IRKU).

*Erysimum cheiranthoides* L.

▼ $2n = 16$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, surroundings of Ikei village, sand quarry, 54°13' N, 100°04' E, 24 Jul 2006, *Chepinoga C647* (IRKU).

*Erysimum flavum* (Georgi) Bobrov

▼ $2n = 14$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Olkhonskii Raion, Baikal lake, east coast of Olkhon island, Uzury bay, in steppe, 53°19' N, 107°44' E, 30 Aug 2004, *Chepinoga, A. Verkhovina & E. Kuznetsova C628* (IRKU).

*Rorippa barbareaifolia* (DC.) Kitag.

$2n = 32$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 5 km SW of Cheremkhovo village, the shore of Ingoda river, 51°28' N, 112°43' E, 11 Aug 2007, *Gnutikov & Enushchenko C615* (IRKU).

*Rorippa palustris* (L.) Besser

$2n = 32$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 2 km W of Uygat village, left riverside floodplain Kirei river, on the shore, 54°05' N, 100°34' E, 30 Jun 2007, *Gnutikov & Enushchenko C441* (IRKU).

*Thellungiella salsuginea* (Pall.) O.E. Schulz

$2n = 14$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Ust'-Ordynskii Buryatskii Autonomous Region, Ekhirit-Bulagatskii Raion, near Kapsal village, meadow floodplain Kuda river, meadow, 52°41' N, 104°39' E, 16 Jun 2005, *A. Verkhovina & N. Dulepova C636* (IRKU).

*Thlaspi arvense* L.

▼ $2n = 14$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, Perfilovo village, right riverside of Manut river, roadside, 54°24' N, 100°26' E, 20 Jul 2006, *N. Dulepova C646* (IRKU).

**CALLITRICHACEAE***Callitriche palustris* L.

$2n = 20$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 2 km W of Uygat village, left riverside floodplain Kirei river, roadside ditch, 54°05' N, 100°34' E, 30 Jun 2007, *Gnutikov & Enushchenko C450* (IRKU).

**CARYOPHYLLACEAE***Melandrium album* (Mill.) Garcke

▼ $2n = 24$ , CHN. Russia, East Siberia, Buryatiya Republic, Bichurskii Raion, southern outskirts of Zaganskii ridge, near Gutai village, roadside, 50°41' N, 107°42' E, 09 Jul 2006, *Chepinoga C630* (IRKU).

*Stellaria crassifolia* Ehrh.

▼ $2n = 36$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, Nikolaevskoe village, the moist shore of Nikolaevskoe lake, 51°03' N, 111°44' E, 08 Aug 2007, *Gnutikov & Enushchenko C594* (IRKU).

**CHENOPODIACEAE***Chenopodium glaucum* L.

$2n = 18$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 2 km S of Shelokhan village, left riverside of Ingoda river, stony shore, 51°00' N, 111°56' E, 07 Aug 2007, *Gnutikov & Enushchenko C579* (IRKU).

*Corispermum sibiricum* Iljin

$2n = 18$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Olkhonskii Raion, Baikal lake, west coast of Olkhon island, Ulan-Khushin bay, sandy shore, 53°16' N, 107°33' E, 30 Aug 2004, *Chepinoga, A. Verkhovina & E. Kuznetsova C629* (IRKU).

*Salicornia perennans* Willd.

▼ $2n = 18$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Aginskii Buryatskii autonomous Region, Mogoytuyskii Raion, 8 km NNW of Nurinsk village, shore of salt lake Barun-Nur, 51°08' N, 115°39' E, 19 Jun 2007, *Gnutikov & Enushchenko C422* (IRKU).

**CONVALLARIACEAE***Maianthemum bifolium* (L.) F.W. Schmidt

$2n = 36$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 2 km S of Shelokhan village, left riverside of Ingoda river, in coastal shrubs, 51°00' N, 111°56' E, 07 Aug 2007, *Gnutikov & Enushchenko C581* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 2 km W of Uygat village, left riverside floodplain Kirei river, birch-pine forest, 54°05' N, 100°34' E, 30 Jun 2007, *Gnutikov & Enushchenko C452* (IRKU).

**DIPSACACEAE***Scabiosa ochroleuca* L.

▼ $2n = 16$ , CHN. Russia, East Siberia, Irkutskaya Oblast', southwestern part of Angarsk city, near tramway, roadside, 52°29' N, 103°48' E, 10 Aug 2007, *Enushchenko C632* (IRKU).

**FABACEAE***Lathyrus pilosus* Cham.

$2n = 14$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Olovyanninskii Raion, 14 km NNE of Olovyannaya, right riverside of Onon river, opposite of Zugol village, shore of the lake, 51°02' N, 115°38' E, 17 Jun 2007, *Gnutikov & Enushchenko C394* (IRKU).

**GENTIANACEAE***Anagallidium dichotomum* (L.) Griseb.

\* $2n = 14$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 2 km NE of Kontorka village, left riverside of Biryusa river, meadow, 56°02' N, 97°53' E, 05 Jul 2007, *Gnutikov & Enushchenko C491* (IRKU).

**GERANIACEAE***Geranium pratense* L.

$2n = 28$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 2 km NE of Kontorka village, left riverside of Biryusa river, meadow, 56°02' N, 97°53' E, 05 Jul 2007, *Gnutikov & Enushchenko C486* (IRKU).

*Geranium sibiricum* L.

▼ $2n = 28$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 5 km NE of Staryi Akul'shet village, left riverside of Biryusa river, near the old bridge, roadside, 56°02' N, 98°02' E, 07 Jul 2007, *Gnutikov & Enushchenko C500* (IRKU).

**HIPPURIDACEAE***Hippuris vulgaris* L.

$2n = 32$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, Nikolaevskoe village, the moist shore of outflow of Nikolaevskoe lake, 51°03' N, 111°44' E, 08 Aug 2007, *Gnutikov & Enushchenko C599* (IRKU).

**IRIDACEAE***Iris ruthenica* Ker-Gawl.

$2n = \text{ca. } 84$ , CHN. Russia, East Siberia, Irkutskaya Oblast', southwestern part of Angarsk city, right riverside of Kitoi river,



steppe-meadow, 52°29'N, 103°48' E, 04 Jun 2007, *Enushchenko C349* (IRKU).

#### LAMIACEAE

*Amethystea coerulea* L.

2n = 26, CHN. Russia, East Siberia, Irkutskaya Oblast', Usolskii Raion, surroundings of Taliyan village, Lyska mountain, foot of the southern slope, 52°14'N, 103°20' E, 22 Aug 2002, *A. Prudnikova C638* (IRKU).

*Prunella vulgaris* L.

▼2n = 28, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 2 km NE of Kontorka village, left riverside of Biryusa river, roadside, 56°02'N, 97°53' E, 05 Jul 2007, *Gnutikov & Enushchenko C484* (IRKU).

*Scutellaria galericulata* L.

▼2n = 32, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, Shelaevo village, shore of Solonetskoe lake, 56°56'N, 97°40' E, 10 Jul 2007, *Gnutikov & Enushchenko C534* (IRKU); Russia, East Siberia, Chitinskaya Oblast', Olovyanninskii Raion, 14 km NNE of Olovyannaya, right riverside of Onon river, opposite of Zugol village, shore of the lake, 51°02'N, 115°38' E, 19 Jun 2007, *Gnutikov & Enushchenko C409* (IRKU).

#### MENYANTHACEAE

*Menyanthes trifoliata* L.

2n = 54, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 4 km SW of Konovalovo village, left riverside of Biryusa river, in the lake, 56°04'N, 98°07' E, 06 Jul 2007, *Gnutikov & Enushchenko C496* (IRKU).

#### ONAGRACEAE

*Epilobium adenocaulon* Hausskn.

▼2n = 36, CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 3 km SE of Gadalei village, birch-pine forest, roadside, 54°22'N, 100°44' E, 13 Jul 2007, *Gnutikov & Enushchenko C554* (IRKU).

*Epilobium palustre* L.

2n = 36, CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, Nikolaevskoe village, the moist shore of outflow of Nikolaevskoe lake, 51°03'N, 111°44' E, 08 Aug 2007, *Gnutikov & Enushchenko C598* (IRKU); Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 4 km N of Ablatuisckii Bor village, bitter-salt lake Selitryanoe, solonets meadow along the shoreline, 51°13'N, 112°14' E, 10 Aug 2007, *Gnutikov & Enushchenko C604* (IRKU).

#### POACEAE

*Agrostis divaricatissima* Mez

2n = 28, CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, Tanga village, Tanginskii pond, on the shore, 50°58'N, 111°33' E, 06 Aug 2007, *Gnutikov & Enushchenko C576* (IRKU).

*Agrostis gigantea* Roth

2n = 42, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, 3 km SSW of Novoletniki village, shore of the lake, 53°36'N, 101°50' E, 08 Jul 2005, *Gnutikov & Chepinoga C163* (IRKU).

*Agrostis sibirica* Petrov

\*2n = 28, CHN. Russia, East Siberia, Irkutskaya Oblast', Zalarinskii Raion, Khor-Tagna village, wet shore of the lake, 53°25'N, 101°34' E, 16 Jul 2005, *Gnutikov & Chepinoga C235* (IRKU).

*Beckmannia syzigachne* (Steud.) Fernald

2n = 14, CHN. Russia, East Siberia, Chitinskaya Oblast', 2 km N of

Cheremkhovo village, shore of Kamyshovoe lake, 51°28'N, 112°43' E, 12 Aug 2007, *Gnutikov & Enushchenko C617* (IRKU).

*Deschampsia cespitosa* (L.) P. Beauv.

2n = 26, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Ignai village, riverside of Zima river, meadow, 53°48'N, 101°36' E, 11 Jul 2005, *Gnutikov & V. Mozer C197* (IRKU).

*Festuca ovina* L.

2n = 28, CHN. Russia, East Siberia, Irkutskaya Oblast', Angarsk city, surroundings of Elovskoe reservoir, in the forest by the camping "Leninets", 52°29'N, 103°48' E, 09 Jun 2006, *Gnutikov & Enushchenko C252* (IRKU); Russia, East Siberia, Irkutskaya Oblast', southwestern part of Angarsk city, right riverside of Kitoi river, 52°29'N, 103°48' E, 03 Jun 2007, *Enushchenko C351* (IRKU).

*Festuca pratensis* Huds.

2n = 14, CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, near Shchelbei village, shore of Zima river, 53°42'N, 101°22' E, 12 Jul 2005, *Gnutikov C202* (IRKU).

*Lolium perenne* L.

▼2n = 14, CHN. Russia, East Siberia, Irkutskaya Oblast', southwestern part of Angarsk city, 177 residential quarter, roadside, 52°29'N, 103°48' E, 26 Jul 2007, *Enushchenko C558* (IRKU).

*Panicum ruderales* (Kitag.) Chang

2n = 18, CHN. Russia, East Siberia, Irkutskaya Oblast', Cheremkhovskii Raion, near Verkhonii Bulai village, 1759th km of Highway M-53, roadside, 53°01'N, 103°04' E, 29 Aug 2006, *Chepinoga & Enushchenko C627, C637* (IRKU).

#### PRIMULACEAE

*Androsace filiformis* Retz.

▼2n = 20, CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 2 km W of Uygat village, left riverside floodplain Kirei river, on the field road, 54°05'N, 100°34' E, 30 Jun 2007, *Gnutikov & Enushchenko C439* (IRKU).

*Lysimachia davurica* Ledeb.

2n = 42, CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 10 km S of Gadalei village, right riverside floodplain of Iya river, shore of Chernoe lake, 54°18'N, 100°43' E, 02 Jul 2007, *Gnutikov & Enushchenko C480* (IRKU).

*Lysimachia vulgaris* L.

2n = 42, CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, Shelaevo village, shore of Solonetskoe lake, 56°56'N, 97°40' E, 10 Jul 2007, *Gnutikov & Enushchenko C530* (IRKU).

#### RANUNCULACEAE

*Batrachium trichophyllum* (Chaix) Bosch

2n = 16, CHN. Russia, East Siberia, Chitinskaya Oblast', 5 km SW of Cheremkhovo village, left riverside of Ingoda river, 51°26'N, 112°40' E, 11 Aug 2007, *Gnutikov C614* (IRKU) [*Chepinoga & al.*, Taxon 58: 1281, E3. 2009, as "*B. circinatum*"].

*Caltha membranacea* (Turcz.) Schipczinsky

2n = 32, CHN. Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 2 km S of Krasnoozerskii village, right riverside of Iya river, opposite of Evdokimovskii village, shore of the river, 54°13'N, 100°42' E, 01 Jul 2007, *Gnutikov & Enushchenko C465* (IRKU).

*Ranunculus longicaulis* C.A. Mey.

2n = 32, CHN. Russia, East Siberia, Chitinskaya Oblast', Chitinskii Raion, 5 km N of Lesnoi Godordok, near Staraya Kuka village,

floodplain of Ingoda river, meadow, 51°56'N, 113°04'E, 20 Jun 2007, *Gnutikov & Enushchenko C426* (IRKU).

#### ROSACEAE

*Comarum palustre* L.

$2n = 28$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, Shelaevo village, shore of Solonetskoe lake, 56°56'N, 97°40'E, 10 Jul 2007, *Gnutikov & Enushchenko C531* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 4 km SW of Konovalovo village, left riverside of Biryusa river, in the lake, 56°04'N, 98°07'E, 06 Jul 2007, *Gnutikov & Enushchenko C497* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Tulunskii Raion, 10 km S of Gadalei village, right riverside floodplain of Iya river, shore of Chernoe lake, 54°18'N, 100°43'E, 02 Jul 2007, *Gnutikov & Enushchenko C478* (IRKU).

*Filipendula ulmaria* (L.) Maxim.

$2n = 28$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 4 km SW of Konovalovo village, left riverside of Biryusa river, shore of the lake, 56°04'N, 98°07'E, 06 Jul 2007, *Gnutikov & Enushchenko C498* (IRKU).

*Geum aleppicum* Jacq.

$2n = 42$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Zulumai village, roadside near the fence, 53°41'N, 101°18'E, 13 Jul 2005, *Gnutikov & Chepinoga C216* (IRKU).

*Rubus arcticus* L.

$2n = 14$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Uletovskii Raion, 28 km W of Tanga village, SE coast of Areiskoe lake, *Larix dahurica* forest, 50°58'N, 111°33'E, 15 Jun 2007, *Gnutikov & Enushchenko C370* (IRKU).

#### SALICACEAE

*Salix rhamnifolia* Pall.

$*2n = 38$ , CHN. Russia, East Siberia, Buryatiya Republic, Kabanskii Raion, lower reaches of Tolbazikha river, roadside, 51°55'N, 106°13'E, 14 Aug 2007, *Gnutikov & Enushchenko C621* (IRKU).

*Salix rorida* Laksch.

$*2n = 38$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 1 km S of Buzykanovo village, roadside, 56°33'N, 98°22'E, 11 Jul 2007, *Gnutikov & Enushchenko C544* (IRKU).

#### SOLANACEAE

*Solanum kitagawae* Schön.-Tem.

$\blacktriangledown 2n = 24$ , CHN. Russia, East Siberia, Chitinskaya Oblast', Olovyanninskii Raion, 14 km NNE of Olovyannaya, right riverside of Onon river, opposite of Zugol village, shore of the lake, 51°02'N, 115°38'E, 17 Jun 2007, *Gnutikov & Enushchenko C395* (IRKU).

#### TRILLIACEAE

*Paris quadrifolia* L.

$\blacktriangledown 2n = 10$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Ziminskii Raion, Zulumai village, birch-pine forest, 53°41'N, 101°18'E, 13 Jul 2005, *Gnutikov & Chepinoga C210* (IRKU).

#### URTICACEAE

*Urtica dioica* L.

$2n = 52$ , CHN. Russia, East Siberia, Irkutskaya Oblast', Taishetskii Raion, 2 km NE of Kontorka village, left riverside of Biryusa river, herbaceous meadow, 56°02'N, 97°53'E, 05 Jul 2007, *Gnutikov & Enushchenko C487* (IRKU).

#### Kamil Coşkunçelebi<sup>1</sup> & Vladimir Vladimirov<sup>2</sup>

1 *Karadeniz Technical University, Faculty of Sciences and Arts, Department of Biology, 61080 Trabzon, Turkey; kamil@ktu.edu.tr*

2 *Institute of Botany, Bulgarian Academy of Sciences, Acad. Georgi Bonchev St., bl. 23, 1113 Sofia, Bulgaria; vdvlad@bio.bas.bg*

\* First chromosome count for the species.

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#### ASTERACEAE

*Hieracium bornmuelleri* Freyn

$2n = 27$ , CHN. Turkey, A5 Kastamonu, Tosya, Gavur Dağı above Tosya, rocky place, ca. 1650 m, 41°03'29"N, 33°59'47"E, 12 Jul 2007, *Coşkunçelebi 671B* (KTUB) & *Vladimirov* (SOM 165359).

*Hieracium medianiforme* (Litv. & Zahn) Juxip

$*2n = 27$ , CHN. Turkey, A4 Kastamonu, Küre Dağları, pass from Küre to Kastamonu, margin of *Abies nordmanniana* forest, ca. 1200 m, 41°43'59"N, 33°39'31"E, 11 Jul 2007, *Coşkunçelebi 667* (KTUB) & *Vladimirov* (SOM 165362).

*Hieracium paphlagonicum* Freyn & Sint.

$*2n = 27$ , CHN. Turkey, A5 Kastamonu, Tosya, southern slopes of Gavur Dağı, rocky places above Tosya, siliceous bedrock, 1700–1750 m, 41°03'33"N, 33°59'17"E, 12 Jul 2007, *Coşkunçelebi 674* (KTUB) & *Vladimirov* (SOM 165368).

*Hieracium sparsum* Friv.

$2n = 3x = 27$ , FCM. Turkey, A2 Bursa, Uludağ, forest margin by the asphalted road from Bursa to the ski resort, siliceous bedrock, ca. 1720 m, 40°06'33"N, 29°06'35"E, 15 Jul 2008, *Coşkunçelebi 718* (KTUB) & *Vladimirov* (SOM 165370).

FCM: PI. Samples of *H. sparsum* were prepared from young, but well developed leaves from cultivated plants. Internal standard: *Pisum sativum* L., 2C DNA = 8.84 pg (Baranyi & Greilhuber, 1996). Three measurements done per sample. *Hieracium sparsum*, 2C DNA = 11.88 pg. CVs of samples and internal standard were 2.8%–3.15% (mean 2.94%) and 2.73%–3.13% (mean 2.9%), respectively.

*Pilosella auriculoides* (Láng) Arv.-Touv.

$2n = 54$ , CHN. Turkey, A4 Kastamonu, Ilgaz Dağı, by road from pass Ilgaz–Kastamonu to radio tower, rocky place, 1900–1950 m, 41°04'00"N, 33°43'43"E, 12 Jul 2007, *Coşkunçelebi 677B* (KTUB) & *Vladimirov* (SOM 165374).

*Pilosella procera* (Fr.) F.W. Schultz & Sch. Bip.

$2n = 36$ , CHN. Turkey, A5 Kastamonu, Tosya, Gavur Dağı, by road from Tosya to upland, 1450–1500 m, 41°03'12"N, 34°00'22"E, 12 Jul 2007, *Coşkunçelebi 675* (KTUB) & *Vladimirov* (SOM 165375).

*Pilosella hoppeana* subsp. *testimonialis* (Peter) P.D. Sell & C. West

$2n = 18$ , CHN. Turkey, Turkey, A4 Kastamonu, Küre Dağları, south of pass from Küre to Kastamonu, open grassland on limestone, ca. 1200 m, 41°42'21"N, 33°39'52"E, 11 Jul 2007, *Coşkunçelebi 668* (KTUB) & *Vladimirov* (SOM 165377).

$2n = 18$ , CHN. Turkey, A7 Giresun, Giresun Dağları, S of pass above Tamdere, above Aşarcık village ca. 22 km N of Şebinkarahisar town, ca. 1700 m, 40°25'13"N, 38°23'28"E, 14 Jul 2007, *Coşkunçelebi 679B* (KTUB) & *Vladimirov* (SOM 165378).

*Pilosella piloselloides* (Vill.) Soják subsp. *piloselloides*  
 $2n = 45$ , CHN. Turkey, A7 Giresun, Giresun Dağları, S of pass above Tamdere, above Aşarcık village ca. 22 km N of Şebinkarahisar town, ca. 1700 m, 40°25'13"N, 38°23'28"E, 14 Jul 2007, *Coşkunçelebi 679E* (KTUB) & *Vladimirov* (SOM 165380).

#### Literature cited

**Baranyi, M. & Greilhuber, J.** 1996. Flow cytometric and Feulgen densitometric analysis of genome size variation in *Pisum*. *Theor. Appl. Genet.* 92: 297–307.

**Mauro Grabiele,<sup>1,2\*</sup> Ana I. Honfi<sup>1</sup> & Julio R. Daviña<sup>1</sup>**

<sup>1</sup> *Laboratorio de Citogenética Vegetal, Universidad Nacional de Misiones, Rivadavia 2370, 3300 Posadas, Argentina*

<sup>2</sup> *Instituto Multidisciplinario de Biología Vegetal (IMBIV-CONICET), Universidad Nacional de Córdoba, C.C. 495, 5000 Córdoba, Argentina*

\*Author for correspondence: *maurograbiele@hotmail.com*

Methods are described in Grabiele & al. (2005). Vouchers in CTES (Herbario Instituto Botánica del Nordeste), MNES (Herbario Universidad Nacional de Misiones) and SI (Herbario Instituto de Botánica Darwinion)

\* First chromosome count for the species.

\*\* First gametic chromosome count for the species/cytotype.

▼ New cytotype for the species.

■ First chromosome count from Argentinian accessions.

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#### COMMELINACEAE

*Commelina benghalensis* L. var. *benghalensis*

$n = 11$ ,  $2n = 2x = 22$ , CHN. Argentina, Misiones Province, Guaraní Department, El Soberbio, 1.5 km W of Uruguay river and Brazilian frontier, in forest border, 27°17' S, 54°12' W, 06 Jan 2006, *Grabiele, Daviña, Honfi & Grabele 94* (MNES, SI) (Fig. 1E).

This species is native from tropical Africa and Asia but found elsewhere; its diploid cytotype invades Argentina and other American countries (Cristóbal & al., 2008; Grabele & al., 2009 and references therein).

*Commelina diffusa* var. *gigas* (Small) Faden

$2n = 6x = 90$ , CHN (Fig. 1D). Argentina, Misiones Province, Capital Department, Posadas, at the coast of Paraná river, in open field, 27°21' S, 56°00' W, 08 Feb 2003, *Grabiele 36* (CTES, MNES, SI).

A diploid cytotype ( $2n = 30$ ) is common for this cosmopolitan species; its variety *gigas* is exclusively hexaploid and only reported for SE U.S.A. (Faden, 1993) and Argentina and Paraguay (Grabiele & al., 2005; Slanis & Bulacio, 2007).

*Commelina erecta* L.

$2n = 4x = 60$ , CHN. Argentina, Misiones Province, Capital Department, Posadas, 200 m W of Zaimán stream and 2.5 km W of Paraná river, in open field, 27°24' S, 55°53' W, 17 Jul 2001, *Grabiele 6* (CTES, MNES, SI).

This tetraploid cytotype is the most common for this cosmopolitan species (Grabiele & al., 2005).

*Commelina obliqua* Vahl

$2n = 4x = 60$ , CHN. Argentina, Misiones Province, Capital Department, Posadas, at the coast of Paraná river, in forest shade, 27°21' S, 56°00' W, 14 Jan 2003, *Grabiele 25* (CTES, MNES, SI).

Only this tetraploid cytotype is recorded for this American species (Romeu Pitrez & al., 2001; Grabele & al., 2005).

*Commelina platyphylla* Klotzsch ex Seub.

$2n = 2x = 30$ , CHN. Argentina, Misiones Province, Apóstoles Department, San José, in open low wetland, 27°46' S, 55°45' W, 20 Dec 2002, *Grabiele 23* (CTES, MNES, SI).

Solely this diploid cytotype from Argentina and Paraguay is reported for this South American species (Grabiele & al., 2005).

*Dichorisandra hexandra* (Aubl.) Standl.

▼  $n = 38$ ,  $2n = 4x = 76$ , CHN. Argentina, Misiones Province, San Ignacio Department, San Ignacio, Osunúnú, at the coast of Paraná river, in forest shade, 27°16' S, 55°34' W, 15 Mar 2003, *Grabiele 37* (CTES, MNES) (Fig. 1C, I).

Despite a diploid cytotype ( $2n = 38$ ) is reported for this species and is common in this American genus, polyploidy is also found (Jones & Jopling 1972; Romeu Pitrez & al., 2001).

*Tradescantia anagallidea* Seub.

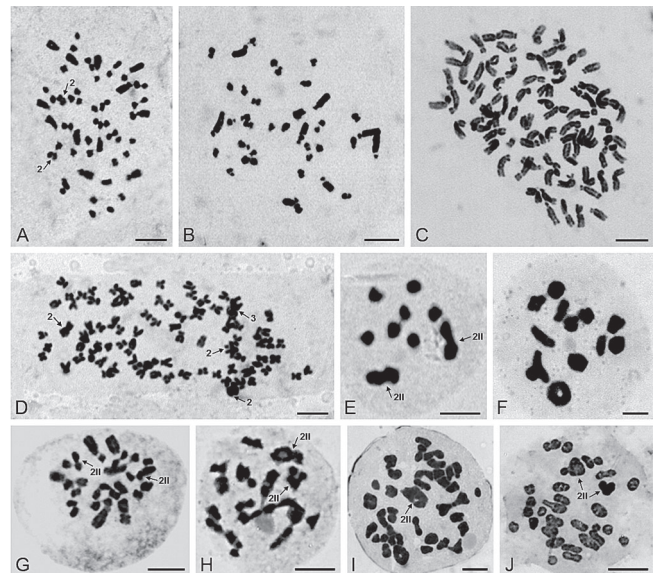
\*  $n = 30$ ,  $2n = 60$ , CHN. Argentina, Misiones Province, Apóstoles Department, San José, in forest shade, 27°46' S, 55°45' W, 15 Sep 2002, *Lirussi 680* (MNES, SI) (Fig. 1A, G).

This count completes those of the *Tradescantia* sect. *Austrotradescantia* Hunt (Jones & Jopling, 1972; Martínez, 1984).

*Tradescantia fluminensis* Vell.

\*\*  $n = 20$ ,  $2n = 40$ , CHN. Argentina, Misiones Province, Capital Department, Posadas, 50 m W of Zaimán stream and 2.3 km W of Paraná river, in forest shade, 27°24' S, 55°53' W, 29 Jan 2003, *Grabiele 31* (CTES, MNES, SI) (Fig. 1B, H).

This is a common cytotype in the polyploid-aneuploid series of this complex ( $2n = 40$  to ca. 144; Jones & Jopling, 1972; Martínez, 1984).



**Fig. 1. A–D**, mitotic metaphase: **A**, *Tradescantia anagallidea*,  $2n = 60$ ; **B**, *T. fluminensis*,  $2n = 40$ ; **C**, *Dichorisandra hexandra*,  $2n = 76$ ; **D**, *Commelina diffusa* var. *gigas*,  $2n = 90$ . **E–J**, diakinesis/metaphase I: **E**, *C. benghalensis* var. *benghalensis*,  $n = 11$ ; **F**, *Tradescantia zebrina*,  $n = 12$ ; **G**, *T. anagallidea*,  $n = 30$ ; **H**, *T. fluminensis*,  $n = 20$ ; **I**, *Dichorisandra hexandra*,  $n = 38$ ; **J**, *Tripogandra diuretica*,  $n = 32$ . Arrows point out two or three overlapped chromosomes or bivalents (II). Scale bar = 5 µm.

*Tradescantia pallida* (Rose) D.R. Hunt

■  $n = 12$ ,  $2n = 4x = 24$ , CHN. Argentina, Misiones Province, Capital Department, Posadas, in forest shade, 50 m W of Zaimán stream and 2.3 km W of Paraná river, 27°24'S, 55°53'W, 17 Apr 2005, *Grabiele* 7 (MNES, SI).

This species is native from Mexico but naturalised globally; its presence in Misiones is added to Bacigalupo's (1996) contribution.

*Tradescantia zebrina* Heynh. ex Bosse

■  $n = 12$ ,  $2n = 4x = 24$ , CHN. Argentina, Misiones Province, Capital Department, Posadas, in forest shade, 50 m W of Zaimán stream and 2.3 km W of Paraná river, 27°24'S, 55°53'W, 17 Jul 2001, *Grabiele* 14 (CTES, MNES, SI) (Fig. 1F).

This taxon is native from Mexico and Central America but introduced elsewhere (Faden, 2008); its presence in Misiones is added to Bacigalupo's (1996) contribution.

*Tripogandra diuretica* (Mart.) Handlos

\*\*  $n = 32$ ,  $2n = 8x = 64$ , CHN. Argentina, Misiones Province, San Ignacio Department, San Ignacio, at the road between Osununú and Teyú Cuaré, 500 m E of Yabebiry stream, in forest border, 27°17'S, 55°34'W, 15 Mar 2003, *Grabiele* 38 (MNES, SI) (Fig. 1J).

Only two counts refer to this southern South American taxon sensu stricto ( $2n = 62 + 1B$ , 64; Jones & Jopling, 1972; Handlos, 1975).

*Tripogandra glandulosa* (Seub.) Rohweder

$n = 8$ ,  $2n = 2x = 16$ , CHN. Argentina, Chaco Province, San Fernando Department, in road between Resistencia and Colonia Benitez, 600 m E of Tragadero river, in open low wetland, 27°20'S, 58°58'W, 09 Aug 2002, *Grabiele* 29 (CTES, MNES).

Only this diploid cytotype is recorded for this southern South American species (Jones & Jopling 1972; Romeu Pitrez & al., 2001; others).

#### Literature cited

- Bacigalupo, N.M.** 1996. Commelinaceae. Pp. 123–128 in: Zuloaga F.O. & Morrone O. (eds.), Catálogo de las plantas vasculares de la República Argentina I. Pteridophyta, Gymnospermae y Angiospermae (Monocotyledoneae). *Monogr. Syst. Bot. Missouri Bot. Gard.* 60: 1–323.
- Cristóbal, M.E., Lozzia, M.E. & Páez, V. de los A.** 2008. Nuevos aportes al conocimiento de *Commelina benghalensis* L. (Comelinaceae). *Lilloa* 45: 34–38.
- Faden, R.B.** 1993. The misconstrued and rare species of *Commelina* (Comelinaceae) in the eastern United States. *Ann. Missouri Bot. Gard.* 80: 208–218.
- Faden, R.B.** 2008. The author and typification of *Tradescantia zebrina* (Comelinaceae). *Kew Bull.* 63: 679–680.
- Grabiele, M., Daviña, J.R. & Honfi, A.I.** 2005. Chromosomes of four species of *Commelina* (Comelinaceae). *Bot. J. Linn. Soc.* 148: 207–218.
- Grabiele, M., Honfi, A.I., Grabiele, M., Debat, H.J. & Daviña, J.R.** 2009. Caracterización morfológica y cromosómica de *Commelina benghalensis* L. (Comelinaceae) de Argentina. *Gayana Bot.* 66: 18–27.
- Handlos, W.L.** 1975. The taxonomy of *Tripogandra* (Comelinaceae). *Rhodora* 77: 213–319.
- Jones, K., Jopling, C.** 1972. Chromosomes and the classification of the Comelinaceae. *Bot. J. Linn. Soc.* 65: 129–162.
- Martínez, A.** 1984. Número de cromosomas y distribución geográfica del complejo *Tradescantia fluminensis* Vell. (Comelinaceae) y especies afines. *Parodiana* 3: 129–150.

**Romeu Pitrez, S., Pessoa Félix, L., Barreto, R. & Guerra, M.** 2001.

Números cromosómicos de especies de Comelinaceae R. Br. ocorrentes no nordeste do Brasil. *Bol. Bot. Univ. São Paulo* 19: 7–14.

**Slanis, A.C. & Bulacio, E. del V.** 2007. Presencia de *Commelina diffusa* var. *gigas* (Comelinaceae) en Sudamérica. *Bol. Soc. Argent. Bot.* 43: 147–151.

**María Gutiérrez\* & Francisco María Vázquez**

*Grupo HABITAT, Sección de Producción Forestal, Centro de Investigación La Orden-Valdesequera, Vicepresidencia Segunda y Consejería de Economía Comercio e Innovación, Junta de Extremadura, Apartado 22, 06080 Badajoz, España*

\*Author for correspondence: [margutes@hotmail.com](mailto:margutes@hotmail.com)

Chromosome numbers counted by M. Gutiérrez and F.M. Vázquez. Figures in the HSS-Anatomical collections (HSS-AC) subnumbers HSS-AC 022 to HSS-AC 033.

\* The chromosome numbers of the marked species have been counted for the first time.

\*\* The chromosome numbers of the marked species have been counted for the first time in Iberian populations.

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#### LILIACEAE

*Gagea fragifera* (Vill.) Ehr. Bayer & G. López

\*\* $2n = 72$ , CHN. Spain, Granada, Sierra Nevada, 37°04'12"N, 3°23'19"W, 01 Jun 2009, *M. Gutiérrez C211 & F.M. Vázquez* (HSS; HSS-AC 032).

*Gagea pratensis* (Pers.) Dumort.

\*\* $2n = 48$ , CHN. Spain, Teruel, Bronchales, 40°30'16"N, 1°35'12"W, 24 Feb 2009, *M. Gutiérrez C117 & F.M. Vázquez* (HSS; HSS-AC 033).

*Gagea reverchonii* Degen

\* $2n = 24$ , CHN. Spain, Granada, Sierra Nevada, 37°04'12"N; 3°23'19"W, 01 Jun 2009, *M. Gutiérrez C210 & F.M. Vázquez* (HSS-AC 023); Spain, Soria: Puerto de Oncala, 41°57'11"N; 2°19'43"W, 27 Mar 2009, *M. Gutiérrez C172 & F.M. Vázquez* (HSS-AC 022).

\* $n = 12$ , CHN. Spain, Granada, Sierra Nevada, 37°04'12"N; 3°23'19"W, 01 Jun 2009, *M. Gutiérrez C210 & F.M. Vázquez* (HSS-AC 025).

*Gagea bohemica* subsp. *saxatilis* (Mert. & W.D.J. Koch) Asch. & Graebn.

\* $2n = 36$ , CHN. Spain, Almería, Calar Alto, 09 Apr 2009, *M. Gutiérrez C190 & F.M. Vázquez* (HSS-AC 035); Spain, Madrid, Navas de San Antonio, 40°45'17"N, 4°21'51"W, 29 Mar 2009, *M. Gutiérrez C165 & F.M. Vázquez* (HSS-AC 027); Spain, Soria, Puerto de Oncala, 41°57'11"N, 2°19'43"W, 27 Mar 2009, *M. Gutiérrez C171 & F.M. Vázquez* (HSS-AC 028).

\* $n = 18$ , CHN, Spain, Almería, Calar Alto, 9 Apr 2009, *M. Gutiérrez C190 & F.M. Vázquez* (HSS-AC 034); Spain, Soria, Puerto de Oncala, 41°57'11"N, 2°19'43"W, 27 Mar 2009, *M. Gutiérrez C171 & F.M. Vázquez* (HSS-AC 030).

**Dalvir Kaur & Vijay K. Singhal\***

Department of Botany, Punjabi University, Patiala, Punjab, India

\*Author for correspondence: vksinghal53@gmail.com

\* First chromosome count for the species.

\*\* New chromosome number (cytotype) for the species.

▼ First chromosome count from an Indian accession.

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**ACANTHACEAE**

*Dicliptera bupleuroides* Nees

$n = 13$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, shady moist places along roadsides, 21 Sep 2008, *Dalvir Kaur DK 23928* (PUN 51057) [Fig. 1A].

**AMARANTHACEAE**

*Cyathula tomentosa* Moq.

$n = 17$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, along roadsides, 21 Sep 2008, *Dalvir Kaur DK 23929* (PUN 51058) [Fig. 1B].

**BALSAMINACEAE**

*Impatiens brachycentra* Kar. & Kir.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, moist places, 29 Jul 2008, *Dalvir Kaur DK 23302* (PUN 50888); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, water falls, 29 Sep 2007, *Dalvir Kaur DK 23301* (PUN 50887) [Fig. 1C].

*Impatiens laxiflora* Edgew.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, moist places, 26 Jul 2008, *Dalvir Kaur DK 23305* (PUN 50891) [Fig. 1D].

*Impatiens scabrida* DC.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, along water springs, 2 Sep 2008, *Dalvir Kaur DK 23304* (PUN 50890); India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, in waste places, 1 Sep 2007, *Dalvir Kaur DK 19823* (PUN 49429); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, moist places along roadsides, 29 Sep 2007, *Dalvir Kaur DK 23303* (PUN 50889) [Fig. 1E].

*Impatiens thomsonii* Hook. f.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, moist places under rocks, 29 Jun 2008, *Dalvir Kaur DK 23306* (PUN 50892) [Fig. 1F].

**CANNABACEAE**

*Cannabis sativa* L.

$n = 10$ , CHN. India, Himachal Pradesh, Kinnaur, Morang, 31°35'N, 78°26'E, 2590 m, roadsides, 28 Sep 2007, *Dalvir Kaur DK 19824* (PUN 49433) [Fig. 1G].

**CAPRIFOLIACEAE**

*Lonicera quinquelocularis* Hardw.

$n = 9$ , CHN. India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2670 m, 30 Jul 2008, *Dalvir Kaur DK 23318* (PUN 50902); India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, 5 May 2008, *Dalvir Kaur DK 19883* (PUN 50953); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, 4 May 2008, *Dalvir Kaur DK 19884* (PUN 50954) [Fig. 1H].

**CARYOPHYLLACEAE**

\*\*▼ *Dianthus angulatus* Royle

$n = 15$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, between dry rock crevices, 28 Jun 2008, *Dalvir Kaur DK 19833* (PUN 50485) [Fig. 1I].

The chromosome count of  $2n = 30$  is the first report of a diploid cytotype for the species for which only hexaploid cytotype,  $2n = 90$  was known from outside of India (Gentscheff, 1937). The meiotic chromosome number ( $n = 15$ ) has been counted at meta-anaphase I in pollen mother cells (Fig. 1I).

*Silene edgeworthii* Bocquet

$n = 12$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, moist places under rocks, 28 Jun 2008, *Dalvir Kaur DK 19892* (PUN 50962); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, along margins of agricultural fields, 26 Jun 2008, *Dalvir Kaur DK 19891* (PUN 50961) [Fig. 1J].

\*\* *Stellaria crispata* Wall. ex D. Don

$n = 17$ , CHN. India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2670 m, boundaries of agricultural fields, 30 Jul 2008, *Dalvir Kaur DK 23319* (PUN 50903); India, Himachal Pradesh, Kinnaur, Nako lake, 31°52'N, 78°37'E, 3660 m, along lake boundary, 28 Jul 2008, *Dalvir Kaur DK 19894* (PUN 50964); India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, roadsides, 3 May 2008, *Dalvir Kaur DK 19893* (PUN 50963); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, moist waste places, 26 Jun 2008, *Dalvir Kaur DK 19895* (PUN 50965) [Fig. 1K].

The present diploid chromosome count of  $n = 17$  for this species adds a new cytotype to the already existing tetraploid cytotype of  $2n = 52$  reported by Chatterjee (1975) from other parts of India. During meiosis, haploid chromosome number ( $n = 17$ ) has been counted at metaphase I in pollen mother cells (Fig. 1K).

**CHENOPODIACEAE**

*Chenopodium murale* L.

$n = 9$ , CHN. India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, roadsides, 1 Sep 2007, *Dalvir Kaur DK 19886* (PUN 50956) [Fig. 1L].

**ELAEAGNACEAE**

*Hippophae rhamnoides* L.

$n = 9$ , CHN. India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, waste places, 2 Sep 2007, *Dalvir Kaur DK 19807* (PUN 49377); India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, in pine forests, 29 Jul 2008, *Dalvir Kaur DK 23317* (PUN 50901) [Fig. 1M].

**FABACEAE**

*Astragalus chlorostachys* Lindl.

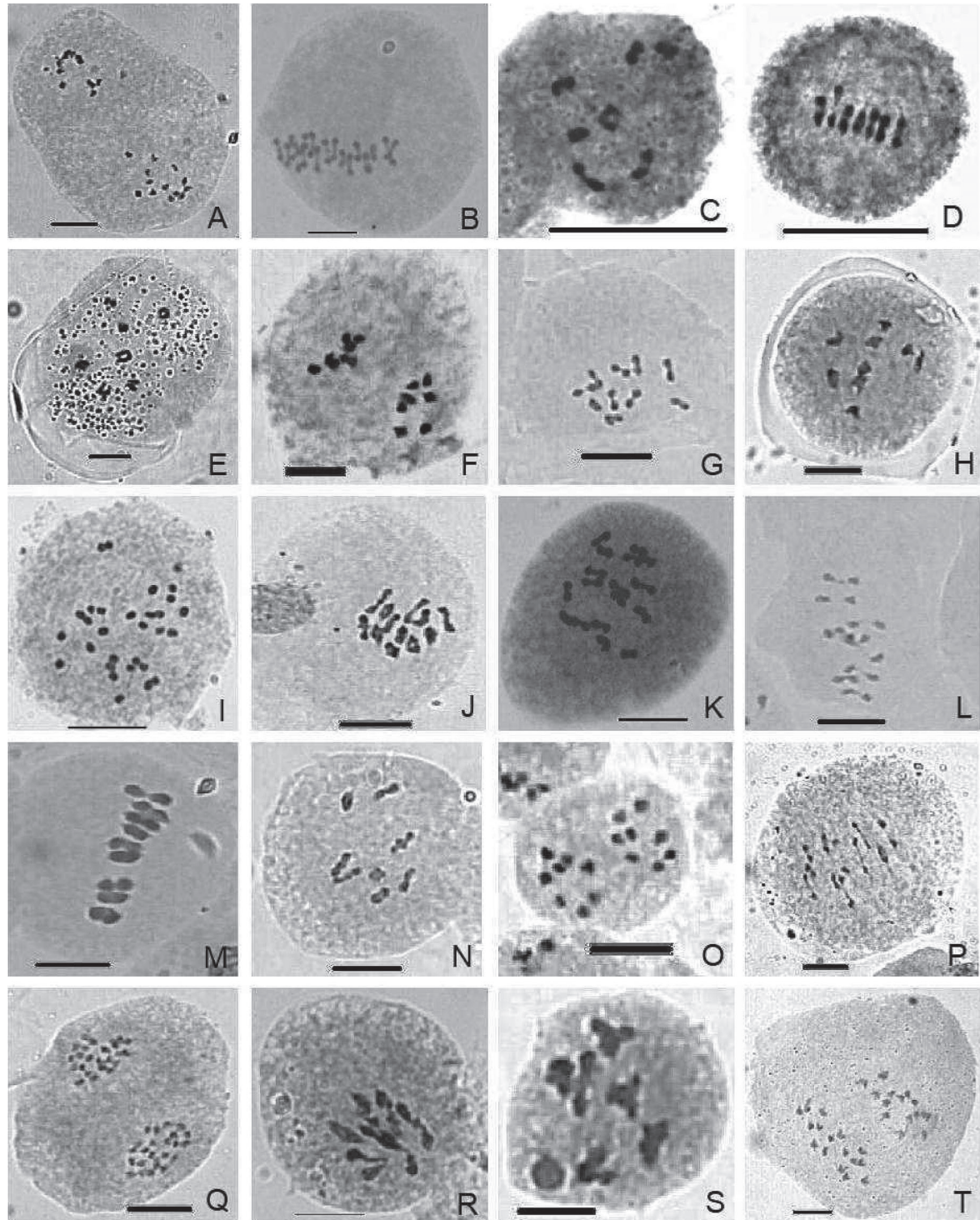
$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, agricultural fields, 26 Sep 2008, *Dalvir Kaur DK 19835* (PUN 50909) [Fig. 1N].

*Astragalus graveolens* Buch.-Ham.

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Karchham, 31°29'N, 78°10'E, 1900 m, dry rocks, 4 May 2008, *Dalvir Kaur DK 19836* (PUN 50910); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, roadsides, 5 May 2008, *Dalvir Kaur DK 23316* (PUN 50900) [Fig. 1O].

\**Campylotropis eriocarpa* Schindler

$n = 11$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, roadsides, 21 Sep 2008, *Dalvir Kaur DK 19843* (PUN 50913) [Fig. 1P].



**Fig. 1.** **A**, *Dicliptera bupleuroides*, meiotic anaphase I,  $n = 13$  (PUN 51057). **B**, *Cyathula tomentosa*, meiotic metaphase I,  $n = 17$  (PUN 51058). **C**, *Impatiens brachycentra*, meiotic metaphase I,  $n = 7$  (PUN 50887). **D**, *Impatiens laxiflora*, meiotic metaphase I,  $n = 7$  (PUN 50891). **E**, *Impatiens scabrida*, meiotic diakinesis,  $n = 7$  (PUN 50889). **F**, *Impatiens thomsonii*, meiotic anaphase I,  $n = 7$  (PUN 50892). **G**, *Cannabis sativa*, meiotic metaphase I,  $n = 10$  (PUN 49433). **H**, *Lonicera quinquelocularis*, meiotic metaphase I,  $n = 9$  (PUN 50954). **I**, *Dianthus angulatus*, meiotic meta-anaphase I,  $2n = 30$  (PUN 50485). **J**, *Silene edgeworthii*, meiotic metaphase I,  $n = 12$  (PUN 50961). **K**, *Stellaria crispata*, meiotic metaphase I,  $n = 17$  (PUN 50965). **L**, *Chenopodium murale*, meiotic metaphase I,  $n = 9$  (PUN 50956). **M**, *Hippophae rhamnoides*, meiotic metaphase I,  $n = 9$  (PUN 50901). **N**, *Astragalus chlorostachys*, meiotic metaphase I,  $n = 8$  (PUN 50909). **O**, *Astragalus graveolens*, meiotic anaphase I,  $n = 8$  (PUN 50900). **P**, *Campylotropis eriocarpa*, meiotic metaphase I,  $n = 11$  (PUN 50913). **Q**, *Indigofera heterantha*, meiotic anaphase I,  $n = 24$  (PUN 50911). **R**, *Melilotus alba*, meiotic metaphase I,  $n = 8$  (PUN 50907). **S**, *Trifolium pratense*, meiotic metaphase I,  $n = 7$  (PUN 50917). **T**, *Trifolium repens*, meiotic anaphase I,  $n = 16$  (PUN 50916).

The haploid chromosome number ( $n = 11$ ) has been counted in meiotic metaphase I in pollen mother cells (Fig. 1P).

*Indigofera heterantha* Wall.

$n = 24$ , CHN. India, Himachal Pradesh, Kinnaur, Rakchham, 31°22'N, 78°22'E, 3115 m, on the foot of rocks along roadsides, 28 Jun 2008, *Dalvir Kaur DK 19842* (PUN 50912); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N 78°15'E, 2680 m, apple orchards, 4 May 2008, *Dalvir Kaur DK 19841* (PUN 50911) [Fig. 1Q].

*Melilotus alba* Medik.

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Pooh, 31°45'N, 78°35'E, 2840 m, abandoned fields, 27 Jul 2008, *Dalvir Kaur DK 23324* (PUN 50908); India, Himachal Pradesh, Reckong Peo, Kinnaur, 31°33'N, 78°16'E, 2670 m, waste places along cultivated fields, 30 Jun 2008, *Dalvir Kaur DK 23323* (PUN 50907) [Fig. 1R].

*Trifolium pratense* L.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, boundaries of cultivated fields, 26 Jun 2008, *Dalvir Kaur DK 19847* (PUN 50917) [Fig. 1S].

*Trifolium repens* L.

$n = 16$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, moist places, 3 Sep 2007, *Dalvir Kaur DK 19846* (PUN 50916) [Fig. 1T].

\**Vicia rigidula* Royle

$n = 12$ , CHN. India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, growing with *Clematis grata* and *Rubus* sp. along roadsides, 29 Jul 2008, *Dalvir Kaur DK 19849* (PUN 50919) [Fig. 2A]

Chromosome number was counted in meiotic anaphase I in pollen mother cells (Fig. 2A).

*Vicia sativa* L.

$n = 6$ , CHN. India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, boundaries of cultivated fields, 3 May 2008, *Dalvir Kaur DK 19848* (PUN 50918) [Fig. 2B].

\**Vicia tenera* Graham

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, waste places along roadsides, 26 Sep 2008, *Dalvir Kaur DK 19850* (PUN 50920) [Fig. 2C].

The chromosome number ( $n = 7$ ) has been counted during meiotic metaphase I in pollen mother cells (Fig. 2C).

**GERANIACEAE**

▼*Geranium pratense* L.

$n = 28$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, under stones, 28 Jun 2008, *Dalvir Kaur DK 19854* (PUN 50924) [Fig. 2D].

The chromosome number for this species has been counted for the first time on Indian material. The haploid chromosome number ( $n = 28$ ) has been counted at diakinesis in pollen mother cells (Fig. 2D).

\*\* *Geranium wallichianum* D. Don

$n = 14$ , CHN. India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, margins of cultivated fields, 29 Jul 2008, *Dalvir Kaur DK 23313* (PUN 50897); India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2670 m, among stones and cultivated field boundaries, 2 Sep 2007, *Dalvir Kaur DK 19855* (PUN 50925); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, roadsides, 3 Sep 2007, *Dalvir Kaur DK 23310* (PUN 50894) [Fig. 2E].

The present chromosome count of  $2n = 28$  is different from the earlier report of  $2n = 26$  by Roy & al. (1988). The haploid chromosome

number ( $n = 14$ ) has been counted in meiotic anaphase I in pollen mother cells (Fig. 2E).

**LAMIACEAE**

*Mentha longifolia* Huds.

$n = 12$ , CHN. India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, apple orchards, 1 Sep 2007, *Dalvir Kaur DK 19856* (PUN 50926); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, moist waste places near roadsides, 29 Sep 2008, *Dalvir Kaur DK 19857* (PUN 50927) [Fig. 2F].

*Nepeta erecta* Benth.

$n = 9$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, green moist pastures, 29 Jun 2008, *Dalvir Kaur DK 19858* (PUN 50928); India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, moist rocky slopes, 28 Jun 2008, *Dalvir Kaur DK 19859* (PUN 50929) [Fig. 2G].

*Leonurus cardiaca* L.

$n = 9$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, in cultivated fields, 29 Jun 2008, *Dalvir Kaur DK 19865* (PUN 50935) [Fig. 2H].

*Salvia nubicola* Wall.

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, roadsides, 28 Jun 2008, *Dalvir Kaur DK 19861* (PUN 50931); India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, moist shady places, 29 Jul 2008, *Dalvir Kaur DK 19862* (PUN 50932); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, growing with *Nepeta* sp. and *Mentha* sp. along roadsides, 29 Jun 2008, *Dalvir Kaur DK 19860* (PUN 50930) [Fig. 2I].

**ONAGRACEAE**

▼*Oenothera glazioviana* Micheli

$n = 14$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla valley, 31°25'N, 78°15'E, 2680 m, moist places around cultivated fields, 29 Sep 2007, *Dalvir Kaur DK 19829* (PUN 49443) [Fig. 2J].

Our chromosome number ( $n = 14$ ) agrees with the only known report for this species given by Dietrich & al. (1997). The haploid number ( $n = 14$ ) has been counted in meiotic metaphase I in pollen mother cells (Fig. 2J).

**PAPAVERACEAE**

*Papaver dubium* L.

$n = 14$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, along margins of agricultural fields, 4 Jun 2008, *Dalvir Kaur DK 19882* (PUN 50952) [Fig. 2K].

**PHILADELPHACEAE**

*Deutzia staminea* R. Br.

$n = 13$ , CHN. India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2670 m, around agricultural fields, 5 May 2008, *Dalvir Kaur DK 19888* (PUN 50958); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, margins of apple orchards, 26 Jun 2008, *Dalvir Kaur DK 19887* (PUN 50957) [Fig. 2L].

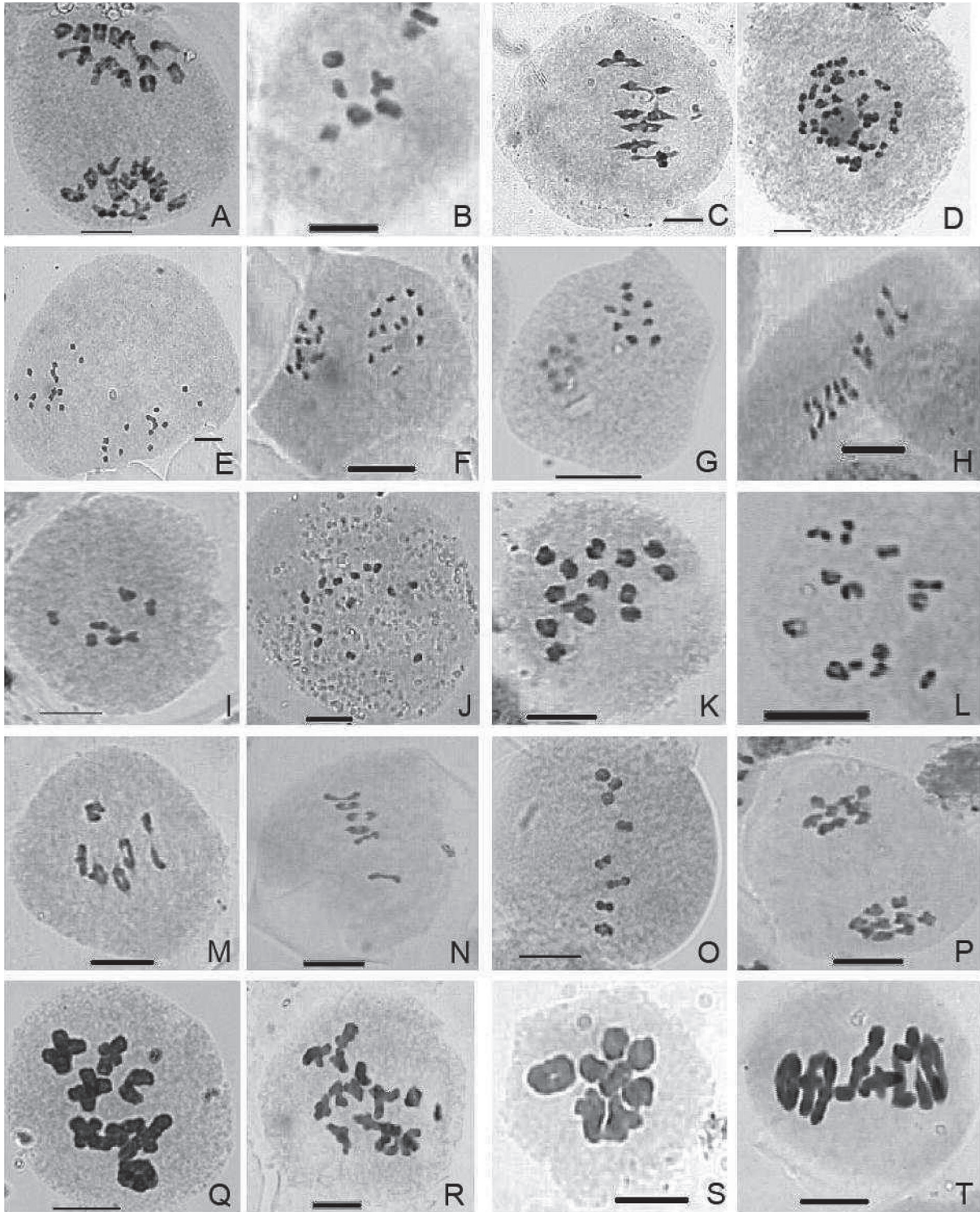
**PLANTAGINACEAE**

*Plantago depressa* Willd.

$n = 6$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, roadsides, 28 Jun 2008, *Dalvir Kaur DK 19863* (PUN 50933); India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, roadsides, 1 Sep 2007, *Dalvir Kaur DK 23312* (PUN 50896) [Fig. 2M].

*Plantago major* L.

$n = 6$ , CHN. India, Himachal Pradesh, Kinnaur, Telangi, 31°33'N,



**Fig. 2.** **A**, *Vicia rigidula*, meiotic metaphase I,  $n = 12$  (PUN 50919). **B**, *Vicia sativa*, meiotic metaphase I,  $n = 6$  (PUN 50918). **C**, *Vicia tenera*, meiotic metaphase I,  $n = 7$  (PUN 50920). **D**, *Geranium pratense*, meiotic diakinesis,  $n = 28$  (PUN 50924). **E**, *Geranium wallichianum*, meiotic anaphase I,  $n = 14$  (PUN 50894). **F**, *Mentha longifolia*, meiotic anaphase I,  $n = 12$  (PUN 50927). **G**, *Nepeta erecta*, meiotic anaphase I,  $n = 9$  (PUN 50929). **H**, *Leonurus cardiaca*, meiotic metaphase I,  $n = 9$  (PUN 50935). **I**, *Salvia nubicola*, meiotic metaphase I,  $n = 8$  (PUN 50930). **J**, *Oenothera glazioviana*, meiotic metaphase I,  $n = 14$  (PUN 49443). **K**, *Papaver dubium*, meiotic metaphase I,  $n = 14$  (PUN 50952). **L**, *Deutzia staminea*, meiotic metaphase I,  $n = 13$  (PUN 50957). **M**, *Plantago depressa*, meiotic metaphase I,  $n = 6$  (PUN 50896). **N**, *Plantago major*, meiotic metaphase I,  $n = 6$  (PUN 50934). **O**, *Fagopyrum esculentum*, meiotic metaphase I,  $n = 8$  (PUN 50950). **P**, *Rumex hastatus*, meiotic anaphase I,  $n = 9$  (PUN 50951). **Q**, *Anemone rivularis*, meiotic metaphase I,  $n = 8$  (PUN 50940). **R**, *Anemone tetrasepala*, meiotic metaphase I,  $n = 14$  (PUN 50941). **S**, *Clematis grata*, meiotic metaphase I,  $n = 8$  (PUN 50899). **T**, *Clematis graveolens*, meiotic metaphase I,  $n = 8$  (PUN 50944).



78°16'E, 2650 m, along water channels, 30 Jul 2008, *Dalvir Kaur DK 19864* (PUN 50934) [Fig. 2N].

#### POLYGONACEAE

*Fagopyrum esculentum* Moench

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, boundary wall of cultivated fields, 27 Jun 2008, *Dalvir Kaur DK 19880* (PUN 50950) [Fig. 2O].

*Rumex hastatus* D. Don

$n = 9$ , CHN. India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2680 m, on rocks, 30 Jul 2008, *Dalvir Kaur DK 23311* (PUN 50895); India, Himachal Pradesh, Kinnaur, Morang, 31°35'N, 78°26'E, 2590 m, crevices of dry rocks, 30 Sep 2007, *Dalvir Kaur DK 19881* (PUN 50951) [Fig. 2P].

#### RANUNCULACEAE

*Anemone rivularis* Buch.-Ham. ex DC.

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Kalpa Valley,

31°31'N, 78°15'E, 2760 m, dry broad leaved and coniferous forests, 29 Jul 2008, *Dalvir Kaur, DK 23314* (PUN 50898); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, waste places, 26 Jun 2008, *Dalvir Kaur, DK 19870* (PUN 50940) [Fig. 2Q].

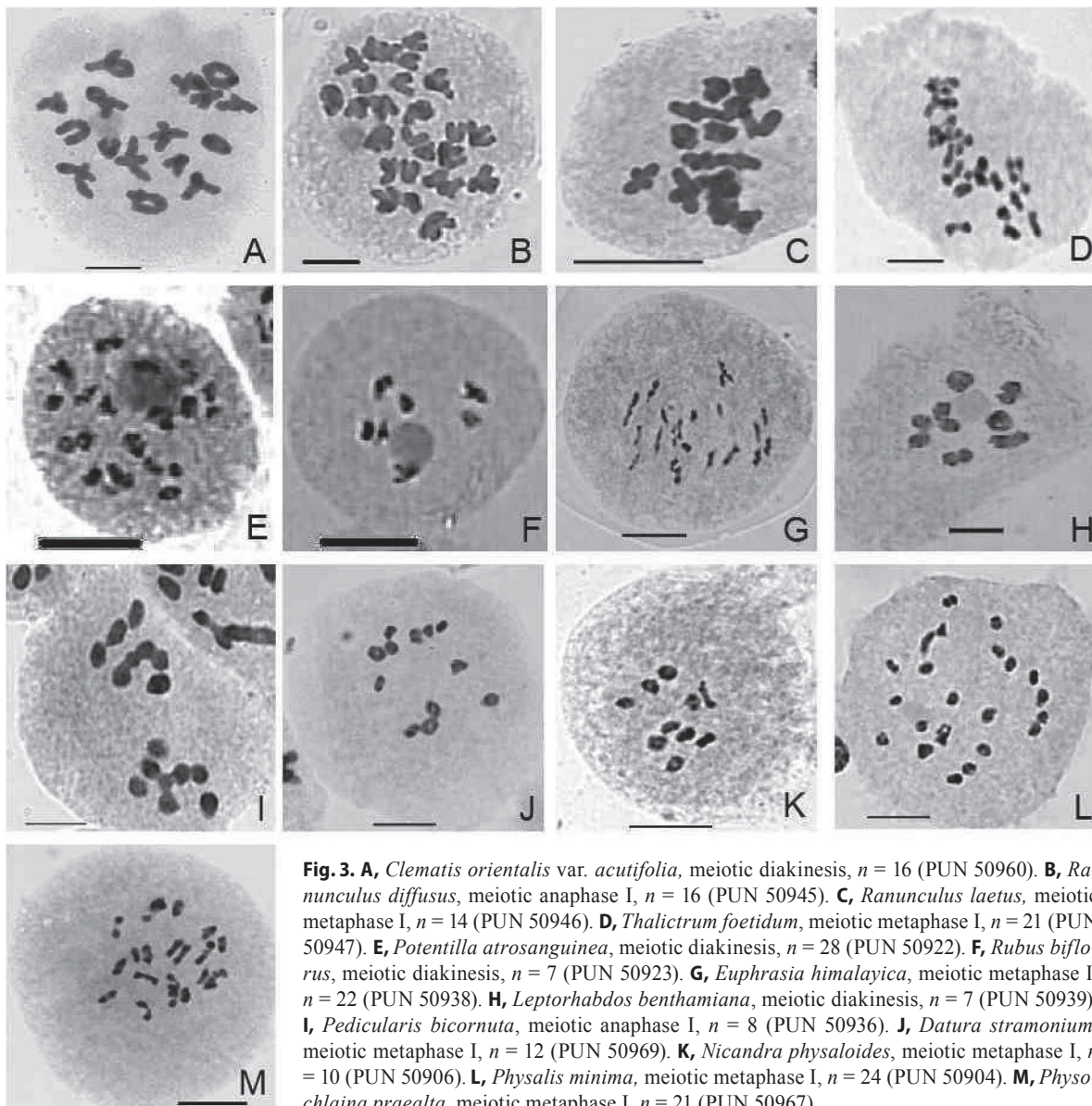
\*\* *Anemone tetrasepala* Royle

$n = 14$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, water channels along cultivated fields, 29 Jul 2008, *Dalvir Kaur, DK 19871* (PUN 50941) [Fig. 2R].

The present chromosome count of  $n = 14$  for this species is the first record of a tetraploid cytotype (based on  $x = 7$ ) from India. Otherwise the species is known to have diploid chromosome number,  $2n = 14$  as reported by Jee & al. (1985, 1989) from India and by Baumberger (1971) from outside India. The haploid chromosome number ( $n = 14$ ) has been counted in meiotic metaphase I in pollen mother cells (Fig. 2R).

*Clematis grata* Wall.

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, roadsides, 20 Sep 2008, *Dalvir Kaur DK*



**Fig. 3.** **A**, *Clematis orientalis* var. *acutifolia*, meiotic diakinesis,  $n = 16$  (PUN 50960). **B**, *Ranunculus diffusus*, meiotic anaphase I,  $n = 16$  (PUN 50945). **C**, *Ranunculus laetus*, meiotic metaphase I,  $n = 14$  (PUN 50946). **D**, *Thalictrum foetidum*, meiotic metaphase I,  $n = 21$  (PUN 50947). **E**, *Potentilla atrosanguinea*, meiotic diakinesis,  $n = 28$  (PUN 50922). **F**, *Rubus biflorus*, meiotic diakinesis,  $n = 7$  (PUN 50923). **G**, *Euphrasia himalayica*, meiotic metaphase I,  $n = 22$  (PUN 50938). **H**, *Leptorhodos benthamiana*, meiotic diakinesis,  $n = 7$  (PUN 50939). **I**, *Pedicularis bicornuta*, meiotic anaphase I,  $n = 8$  (PUN 50936). **J**, *Datura stramonium*, meiotic metaphase I,  $n = 12$  (PUN 50969). **K**, *Nicandra physaloides*, meiotic metaphase I,  $n = 10$  (PUN 50906). **L**, *Physalis minima*, meiotic metaphase I,  $n = 24$  (PUN 50904). **M**, *Physochlaina praealta*, meiotic metaphase I,  $n = 21$  (PUN 50967).

23321 (PUN 50905); India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, climbing to drooping shrubs along roadsides, 29 Jul 2008, *Dalvir Kaur DK 19873* (PUN 50943); India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2670 m, roadsides, 30 Jul 2008, *Dalvir Kaur DK 19872* (PUN 50942); India, Himachal Pradesh, Kinnaur, Telangi, 31°33'N, 78°16'E, 2650 m, along water springs, *Dalvir Kaur DK 23315* (PUN 50899) [Fig. 2S].

*Clematis graveolens* Lindl.

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Reckong Peo, 31°33'N, 78°16'E, 2670 m, along cultivated fields, 1 Sep 2007 *Dalvir Kaur DK 19874* (PUN 50944) [Fig. 2T].

\*\* *Clematis orientalis* var. *acutifolia* Hook. f. & Thoms

$n = 16$ , CHN. India, Himachal Pradesh, Kinnaur, Nako, 31°52'N, 78°37'E, 3660 m, roadsides, 28 Jul 2008, *Dalvir Kaur DK 19890* (PUN 50960) [Fig. 3A].

The present tetraploid chromosome count of  $n = 16$  (based on  $x = 8$ ) is the first record from India which agrees with the earlier report of  $2n = 32$  by Beskaravaynaya & al. (1979) from outside India. The meiotic chromosome number ( $n = 16$ ) has been counted at diakinesis in pollen mother cells (Fig. 3A).

*Ranunculus diffusus* DC.

$n = 16$ , CHN. India, Himachal Pradesh, Kinnaur, Kothi, 31°32'N, 78°16'E, 2670 m, waste places, 30 Jul 2008, *Dalvir Kaur DK 19875* (PUN 50945) [Fig. 3B].

*Ranunculus laetus* Wall.

$n = 14$ , CHN. India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, roadsides, 29 Jun 2008, *Dalvir Kaur DK 19876* (PUN 50946) [Fig. 3C].

▼ *Thalictrum foetidum* L.

$n = 21$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, under rocks along roadsides, 28 Jun 2008, *Dalvir Kaur DK 19878* (PUN 50948); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, under canopy of pine forests, 26 Jun 2008, *Dalvir Kaur DK 19877* (PUN 50947) [Fig. 3D].

This is the first chromosome count for the species in India. The meiotic chromosome number ( $n = 21$ ) has been counted in metaphase I in pollen mother cells (Fig. 3D).

**ROSACEAE**

▼ *Potentilla atrosanguinea* Lodd.

$n = 28$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, open moist places, 29 Jun 2008, *Dalvir Kaur DK 19852* (PUN 50922) [Fig. 3E].

The chromosome count for the species has been made for the first time from India. The chromosome number ( $n = 28$ ) has been counted during meiotic metaphase I in pollen mother cells (Fig. 3E).

*Rubus biflorus* Buch.-Ham. ex Sm.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, roadsides, 29 Jul 2008, *Dalvir Kaur DK 23309* (PUN 50893); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, boundaries of cultivated fields, 29 Sep 2008, *Dalvir Kaur DK 19853* (PUN 50923) [Fig. 3F].

**SCROPHULARIACEAE**

\* *Euphrasia himalayica* Wettst.

$n = 22$ , CHN. India, Himachal Pradesh, Kinnaur, Chittkul, 31°21'N, 78°26'E, 3450 m, shady moist places along roads, 28 Jun 2008, *Dalvir Kaur DK 19868* (PUN 50938) [Fig. 3G].

The haploid chromosome number,  $n = 22$  has been counted in meiotic metaphase I in pollen mother cells (Fig. 3G).

*Leptorhabdos benthamiana* Walp.

$n = 7$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, roadsides, 21 Sep 2008, *Dalvir Kaur DK 19869* (PUN 50939) [Fig. 3H].

*Pedicularis bicornuta* Klotzsch

$n = 8$ , CHN. India, Himachal Pradesh, Kinnaur, Rakchham, 31°22'N, 78°22'E, 3115 m, moist conditions under rocks, 28 Jun 2008, *Dalvir Kaur DK 19867* (PUN 50937); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, moist shady places, 29 Jun 2008, *Dalvir Kaur DK 19866* (PUN 50936) [Fig. 3I].

**SOLANACEAE**

*Datura stramonium* L.

$n = 12$ , CHN. India, Himachal Pradesh, Kinnaur, Karchham, 31°29'N, 78°10'E, 1900 m, river bank, 29 Jun 2008, *Dalvir Kaur DK 19896* (PUN 50966); India, Himachal Pradesh, Kinnaur, Kalpa Valley, 31°31'N, 78°15'E, 2760 m, moist waste places, 2 Sep 2008, *Dalvir Kaur DK 19898* (PUN 50968); India, Himachal Pradesh, Kinnaur, Pooh, 31°45'N, 78°35'E, 2840 m, roadsides, 27 Jul 2008, *Dalvir Kaur DK 19900* (PUN 50970); India, Himachal Pradesh, Kinnaur, Sangla Valley, 31°25'N, 78°15'E, 2680 m, waste places, 26 Jun 2008, *Dalvir Kaur DK 19899* (PUN 50969) [Fig. 3J].

*Nicandra physaloides* L.

$n = 10$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, roadsides, 20 Sep 2008, *Dalvir Kaur DK 23322* (PUN 50906) [Fig. 3K].

*Physalis minima* L.

$n = 24$ , CHN. India, Himachal Pradesh, Kinnaur, Bhabanagar, 31°33'N, 77°56'E, 1900 m, roadsides, 20 Sep 2008, *Dalvir Kaur DK 23320* (PUN 50904) [Fig. 3L].

\*\* *Physochlaina praealta* Miers

$n = 21$ , CHN. India, Himachal Pradesh, Kinnaur, Nako lake, 31°52'N, 78°37'E, 3660 m, margins of cultivated fields, 28 Jul 2008, *Dalvir Kaur DK 19897* (PUN 50967) [Fig. 3M].

The reported chromosome number for this species agrees with the earlier report of  $2n = 42$  from outside of India (Gu & al., 1933; Gu & Sun, 1996) but differs from the aneuploid cytotype with  $2n = 82$  reported earlier from other parts of India (Mehra & Sobti, 1954). The haploid chromosome number ( $n = 21$ ) has been counted in meiotic metaphase I in pollen mother cell (Fig. 3M).

**Literature cited**

- Baumberger, V.H.** 1971. Chromosomenzahlbestimmungen und Karyotypanalysen bei den Gattungen *Aemone*, *Hepatica* and *Pulsatilla*. *Ber. Schweiz. Bot. Ges.* 80:17–95.
- Beskaravaynaya, M.A., Dyakova, M.I. & Sakharova, T.P.** 1979. Tsitologicheskoe izuchenie roda *Clematis* L. *Byull. Glavn. Bot. Sada* 113: 81–84.
- Chattarjee, P.** 1975. In IOPB Chromosome number reports XLVIII. *Taxon* 24: 367–372.
- Dietrich, W., Wagner, W.L. & Raven, P.H.** 1997. Systematics of *Oenothera* section *Oenothera* subsection *Oenothera* (Onagraceae). *Syst. Bot. Monogr.* 50: 1–234.
- Gentscheff, G.** 1937. Experimental and cytological investigation of the relationship among the species of genus *Dianthus* L. Ph.D. thesis, Univ. Sofia.
- Gu, Z. & Sun, H.** 1996. A cytological study of some plants from Qinghai-Xizang Plateau. Pp. 84–85 in: *International Symposium on Floristic Characteristics and Diversity of East Asian Plants July 25–27, 1996, Kunming, China: Abstracts*. Kunming: Botanical Society of China.
- Gu, Z., Wang, L., Sun, H. & Wu, S.** 1993. A cytological study of

some plants from Qinghai-Xizang Plateau. *Acta Bot. Yunnan.* 15: 377–384.

**Jee, V., Dhar, U. & Kachroo, P.** 1985. Chromosomal conspectus of some alpine-subalpine taxa of Kashmir Himalaya. *Chromosome Infor. Serv.* 39: 33–35.

**Jee, V., Dhar, U. & Kachroo, P.** 1989. Cytogeography of some endemic taxa of Kashmir Himalaya. *Proc. Indian Acad. Sci., B* 55: 177–184.

**Mehra, P.N. & Solti, S.N.** 1954. Cytology of Indian medicinal plants. I. The Solanaceous drugs. *Bull. Bot. Soc. Bengal* 8: 221–227.

**Roy, S.C., Ghosh, S. & Chatterjee, A.** 1988. A cytological survey of eastern Himalayan plants. II. *Cell Chromosome Res.* 11: 93–97.

#### Micaela N. Seo

Universidad de Buenos Aires. IFEVA, Fac. de Agronomía. Av. San Martín 4453. (C1417DSE) Cdad. de Buenos Aires. Argentina; micaseo@agro.uba.ar

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#### VIOLACEAE

*Anchietea parvifolia* Hallier f.

*n* = 16, CHN. Argentina, Buenos Aires, Buenos Aires City, Botanical Garden Lucien Hauman, Facultad de Agronomía, Universidad de Buenos Aires, 10 Mar 2008, *Seo* 64 (BAFC).

*Hybanthus atropurpureus* (A. St.-Hil.) Taub.

*n* = 8, CHN. Argentina, Tucumán, Dpto. Tucumán, San Miguel de Tucumán, Botanical Garden of the Fundación Miguel Lillo, 28 Dec 2007, *Seo* 55 (BAFC).

*Hybanthus bicolor* (A. St.-Hil.) Baill.

*n* = 16, CHN. Argentina, Corrientes, Dpto. Santo Tomé, 6 km on the road from Virasoro to Garruchos, 4 Mar 2006, *Seo* 36, 62 (BAFC).

*Hybanthus bigibbosus* (A. St.-Hil.) Hassl.

*n* = 8, CHN. Argentina, Misiones, Dpto. Iguazú, National Park of Cataratas del Iguazú, 15 Jan 2007, *Seo* 23, 27, 41, 47 (BAFC).

*Hybanthus calceolaria* (L.) Oken

*n* = 16, CHN. Argentina, Dpto. Ituzaingó, Ituzaingó, area Mil Viviendas, Soro Beach in the campsite, 23 Feb 2006, *Seo* 16, 17, 33, 52 (BAFC).

*Hybanthus communis* (A. St.-Hil.) Taub.

*n* = 16, CHN. Argentina, Dpto. Iguazú, National Park of Cataratas del Iguazú, in the Macuco Way, 15 Jan 2007, *Seo* 39, 43, 49, 50 (BAFC).

*Hybanthus hasslerianus* (Chodat) Hassl.

*n* = 16, CHN. Argentina, Misiones, Dpto. San Ignacio, San Ignacio, in front of the militar guard, near the house of Horacio Quiroga, 14 Dec 2006, *Seo* 37, 48 (BAFC).

*Hybanthus leucopogon* Sparre

*n* = 16, CHN. Argentina, Corrientes, Dpto. Mercedes, Mercedes, 16 km W of the old road to Curuzú-Cuatiá, 12 Dec 2006, *Seo* 34, 58 (BAFC).

*Hybanthus longistylus* Schulze-Menz

*n* = 24, CHN. Argentina, Misiones, Dpto. San Ignacio, San Ignacio, on the road to the house of Horacio Quiroga, 29 Feb 2008, *Seo* 61 (BAFC).

*Hybanthus nanus* (A. St.-Hil.) Paula-Souza

*n* = 16, CHN. Argentina, Entre Ríos, Dpto. Colón, National Park

El Palmar, near the camping in the walkway to Los Loros stream, 21 Nov 2007, *Seo* 29, 30, 54 (BAFC).

*Hybanthus paraguariensis* (Chodat) Schulze-Menz

*n* = 8, CHN. Argentina, Corrientes, Dpto. Ituzaingó, 16 km E of Ituzaingó on the road 12, 13 Dec 2006, *Seo* 35, 60 (BAFC).

#### Johan J. Spies\* & Susan M.C. Reinecke

Department of Genetics (64), University of the Free State, P.O. Box 339, Bloemfontein 9300, South Africa.

\*Author for correspondence: spiesjj@ufs.ac.za

Degree grid reference system used according to Edwards, D. & Leistner, O.A., 1971, A degree reference system for citing biological records in southern Africa. *Mitt. Bot. Staatssamml. München* 10: 501–509.

#### POACEAE

*Axonopus affinis* Chase

*n* = 10, CHN. Swaziland, 2631 (Mbabane): Moimba beacon (-AD), Oct 1987, *J.J. Spies* 2645 (PRE).

*Bothriochloa bladhii* (Retz.) S.T. Blake

*n* = 20, CHN. South Africa, Mpumalanga, 2430 (Pilgrim's Rest): 17 km from Sabie to Graskop (-DD), Jan 1985, *J.J. Spies* 1967 (PRE); South Africa, Gauteng, 2627 (Potchefstroom): 25 km from Hartbeeshoek turnoff on the road between Muldersdrif and Hekpoort (-BB), 8 Dec 1987, *J.J. Spies* 3720 (PRE).

*Bothriochloa insculpta* (A. Rich.) A. Camus

*n* = 10, CHN. South Africa, Eastern Cape Province, 3027 (Lady Grey): 10 km from Aliwal North to Lady Grey (-CA), 17 Nov 1999, *J.J. Spies* 6946 (BLFU).

*Cymbopogon nardus* (L.) Rendle

*n* = 10, CHN. South Africa, Eastern Cape Province, 3227 (Stutterheim): 5 km from Macleantown to Kei Road, (-DC), Dec 1984, *J.J. Spies* 1947 (PRE).

*Dichanthium aristatum* (Poir.) C.E. Hubb.

*n* = 10, CHN. South Africa, Free State, 2926 (Bloemfontein): 26 km from Dewetsdorp to Hobhouse (-DB), 11 Feb 1991, *J.J. Spies* 4784 (BLFU).

*Digitaria eriantha* Steud.

*n* = 18, CHN. South Africa, Free State, 2827 (Senekal): 41 km from Rosendal to Ficksburg via Nebo (-DB), 7 Dec 1998, *J.J. Spies* 6639 (BLFU).

*Digitaria tricholaenoides* Stapf

*n* = 18, CHN. South Africa, Free State, 2827 (Senekal): Nebo (-DB), 7 Dec 1998, *J.J. Spies* 6636 (BLFU); South Africa, Free State, 2828 (Bethlehem): 38 km from Clarens to Phutaditjhaba via Golden Gate (-DA), 8 Dec 1998, *J.J. Spies* 6673 (BLFU).

*Echinochloa crus-galli* (L.) P. Beauv.

*n* = 18, CHN. South Africa, Free State, 2827 (Senekal): 41 km from Rosendal to Ficksburg via Nebo (-DB), 7 Dec 1998, *J.J. Spies* 6643 (BLFU).

*Eriochloa meyeriana* (Nees) Pilg.

*n* = 9, CHN. South Africa, KwaZulu Natal, 2832 (Mtubatuba): 3 km from Hluhluwe to Valsbaai (-AB), Oct 1985, *J.J. Spies* 2438 (PRE).

*Karoochloa purpurea* (L. f.) Conert & Tuerpe  
 $n = 6$ , CHN. South Africa, Western Cape Province, 3119 (Calvinia): Van Rhyns Pass (-AC), 11 Oct 1989, *J.J. Spies 4359* (BLFU).

*Melinis repens* (Willd.) Zizka  
 $n = 9$ , CHN. South Africa, Kwazulu Natal, 2832 (Mtubatuba): 6 km from Cape Vidal to St Lucia (-AB), Oct 1985, *J.J. Spies 2398* (PRE).

$n = 18$ , CHN. South Africa, Northern Cape Province, 2823 (Griekwastad): 123 km from Groblershoop to Kimberley (-CC), *J.J. Spies 2873* (PRE).

*Miscanthus capensis* (Nees) Andersson  
 $n = 15$ , CHN. South Africa, Western Cape Province, 3420 (Bredasdorp): 30 km from Bredasdorp to Swellendam (-CA), 9 Jul 1991, *J.J. Spies 4853* (BLFU).

*Phragmites mauritianus* Kunth  
 $n = 24$ , CHN. Swaziland, 2631 (Mbabane): 10 km northeast of Mbabane (-AC), Oct 1987, *J.J. Spies 2535* (PRE).

*Trachypogon spicatus* (L. f.) Kuntze  
 $n = 10$ , CHN. South Africa, Western Cape Province, 3420 (Bredasdorp): 6 km from Struisbaai to Bredasdorp (-CA), 21 Aug 1988, *J.J. Spies 3591A* (PRE).

*Urochloa mosambicensis* (Hack.) Dandy  
 $n = 7$ , CHN. South Africa, Gauteng, 2428 (Nylstroom): Petrusstroom (-CD), *J.J. Spies 3286* (PRE).

### Régine Verlaque,<sup>1\*</sup> Bruno Vila<sup>1</sup> & Jean-Pierre Reduron<sup>2</sup>

1 *Laboratoire de Biosystématique et d'Ecologie Méditerranéenne, IMEP-UMR 6116. Université de Provence, centre Saint-Charles (Case 4), Place Victor Hugo, 13331 Marseille Cedex 3, France*  
 2 *Service des Espaces verts, Conservatoire Botanique, Ville de Mulhouse, 45 Avenue du Repos, 68100 Mulhouse, France*

\*Author for correspondence: [regine.verlaque@univ-provence.fr](mailto:regine.verlaque@univ-provence.fr)

All materials gathered by J.-P. Reduron, M. Hildenbrand & M. Litzler, and cultivated in the Conservatoire botanique de Mulhouse (CBM), counted by R. Verlaque and B. Vila.

\* First chromosome count for the taxon.

(\*) New chromosome number for the taxon.

\*\* First chromosome count for the genus.

#### PRIMULACEAE

*Androsace halleri* L.  
 $2n = 38$ , CHN. France, Haut-Rhin, Grand-Ballon, rocky places, 1400 m, 27 Sep 2007, *CBM 03-159B* (STR).

#### APIACEAE

\* *Bupleurum alpigenum* Jord. & Fourr.  
 $2n = 16$ , CHN. France, Hautes-Alpes, Col de Vars, near the Napoleon lodge, 2100 m, 28 Aug 1992, *CBM 95-18A* (STR).

\* *Bupleurum falcatum* subsp. *corsicum* (Coss. & Kralik) Rouy & E.G. Camus  
 $2n = 16$ , CHN. Corsica, Restonica valley (locus classicus), near Corte, cliffs, 17 Jul 1997, *CBM 97-174* (STR).

\* *Chaerophyllum azoricum* Trel.  
 $2n = 22+2$  to 4B, CHN. Azores, Faial Island, montane matorrals and forest fringes, 27 Sep 2007, *CBM 98-110* (STR).

\* *Cyclospermum laciniatum* (DC.) Constance  
 $2n = 28$ , CHN. Chile, Juan Fernandez Islands, Cementerio, rocky slopes, 09 Feb 2004, *CBM 01-058* (STR).

\* *Daucus carota* subsp. *azoricus* Franco  
 $2n = 18$ , CHN. Azores, Pico Island, open habitats near the sea, 30 Aug 2004, *CBM F08-002* (STR).

\* *Daucus carota* subsp. *gadecaei* (Rouy & E.G. Camus) Heywood  
 $2n = 18$ , CHN. France, Morbihan, Belle-Ile-en-Mer, dwarf lawns near the sea (locus classicus), 26 Aug 2009, *CBM F06-223* (STR).

\* *Daucus carota* subsp. *hispanicus* var. *linearis* Reduron  
 $2n = 18$ , CHN. France, Bouches-du Rhône, Niolon, calcareous screes near the sea (locus classicus), 17 Aug 2008, *CBM 08-078* (STR).

(\*) *Daucus carota* subsp. *gummifer* (Syme) Hook. f.  
 $2n = 18$ , CHN. France, Morbihan, Ile de Groix, seashore, 09 Sep 2008, *CBM 09-015#*; France, Pas-de-Calais, Cap Gris-Nez, maritime cliffs, 19 Sep 2008, *CBM 09-021#* (STR).

\* *Elaeoselinum asclepium* subsp. *meoides* (Desf.) Maire  
 $2n = 22$ , CHN. SE Corsica, Rondinara Bay not far from Suartone, dry places near the sea, 17 Jul 1997, *CBM 02-082* (STR).

*Pimpinella bicknellii* Briq.  
 $2n = 20$ , CHN. Balearic Islands, Majorca, Serra de Tramuntana, 600 m, from the Botanical Garden of Soller, 14 Apr 2004, *CBM 9404* (STR).

*Seseli farrenyi* J. Molero & J. Pujadas  
 $2n = 18$ , CHN. Spain, Catalonia, Cabo Creus, coastal rocks, 04 Jul 1996, *CBM 92-123* (STR).

\* *Seseli galloprovinciale* Reduron  
 $2n = 22$ , CHN. France, Vaucluse, Montagne du Lubéron, calcareous hills (locus classicus), 23 Jul 1999, *CBM 94-183* (STR).

*Seseli globiferum* Vis.  
 $2n = 22$ , CHN. Montenegro, near the national park of Skadar, cliffs, 27 Sep 2007, *CBM 98-102* (STR).

\* *Seseli longifolium* subsp. *intermedium* Reduron  
 $2n = 18$ , CHN. France, Gard, Mont-Bouquet (locus classicus), 04 Jul 1996, *CBM 9423* (STR).

*Seseli rhodopeum* Velen.  
 $2n = 42$ , CHN. Bulgaria, between Asenovgrad and Pamporovo, 27 Sep 2007, *CBM 2075* (STR).

*Seseli rigidum* Waldst. & Kit.  
 $2n = 20$ , CHN. Bulgaria, Varna, Kaliakra Cap, 27 Sep 2007, *CBM 99-009* (STR).

*Seseli webbii* Coss.  
 $2n = 22$ , CHN. Canary Islands, Tenerife, El Medano Montaña Roja, 22 Jun 1994, *CBM 20-117D* (STR).

\*\* *Tornabenea annua* Bég.  
 $2n = 18$ , CHN. Cape Verde Archipelago, São Tiago Island, Malaguetta mountains, 650 m, humid zones, 17 Oct 2007, *CBM 06-124* (STR).

\*\* *Tornabenea tenuissima* (A. Chev.) A. Hansen & Sunding  
 $2n = 18$ , CHN. Cape Verde Archipelago, Fogo Island, Chã das Caldeiras, 600 m, montane humid zones, 10 Sep 2008, *CBM 08-006* (STR).