IAPT CHROMOSOME DATA

IAPT chromosome data 32

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All materials for the chromosome column should be submitted electronically to: Karol Marhold, karol.marhold@savba.sk. The full version of this contribution is available in the online edition of TAXON appended to this article. The following citation format is recommended: Korobkov, A.A., Kotseruba, V.V. & Krivenko, D.A. 2019. IAPT chromosome data 30/4. In: Marhold, K. & Kučera, J. (eds.) & al., IAPT chromosome data 30. *Taxon* 68: 882, E1–E2.
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IAPT chromosome data 32/1

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All materials CHN; collected in Russia, Magadanskaya Oblast' (except otherwise stated); collectors: *AB* = A. Bobrov, *EA* = E. Andriyanova, *OM* = O. Mochalova; vouchers in MAG.

ALISMATACEAE

Sagittaria natans Pall., 2*n* = 22; *OM M17053*.

HALORAGACEAE

Myriophyllum ussuriense (Regel) Maxim., 2*n* = 14; *OM M18025*.

POLYGONACEAE

Rumex arcticus Trautv., 2*n* = 120; *OM M19010*.

POTAMOGETONACEAE

Potamogeton alpinus Balb., 2*n* = 26; *OM M19034*.

RANUNCULACEAE

Caltha palustris L., 2*n* = 32; *OM M17005*, *OM M19003*, *OM M19006*, *OM M19016*. 2*n* = 48; *OM M19005*.

Ranunculus gmelinii DC., 2*n* = 16; *OM M18038*, *OM M18035*, *OM M18125*, *OM M19002*, *OM M19007*, *EA & OM A19008*, *OM M19015*, *EA A19020*, *EA A19022*, *EA A19023*, *OM M19103*. 2*n* = 24; *OM M18003*, *OM M18020*, *OM M19001*, *EA & OM A19010*. 2*n* = 32; *OM & AB M18056*.

Ranunculus nipponicus Nakai, 2*n* = 32; *EA A16019*.

Ranunculus pallasii Schltdl., 2*n* = 32; Russia, Chukotskii Avtonomnyi Okrug, *OM & AB M18048*.

Ranunculus trichophyllus Chaix ex Vill., 2*n* = 32; *OM M19013*.

IAPT chromosome data 32/2

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Chromosomes counted by M.N. Lomonosova; DNA ploidy levels estimated by T.V. An'kova & M.S. Voronkova; collectors: *AP* = A. Petruk, *BO* = B. Osmonali, *IS* = I. Smelyanskiy, *PV* = P. Vesselova, *TA* = T. An'kova; vouchers in NS.

AMARANTHACEAE

Atriplex cana C.A.Mey., 2*n* ~ 2*x* ~ 18, 2C = 2.92–3.09 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 211(202)*.

Atriplex micrantha C.A.Mey., 2*n* ~ 4*x* ~ 36, 2C = 3.64–3.97 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, BO & PV 201(247)*, *TA, AP, BO & PV 204(249)*, *BO & PV 208c(248)*, *TA & AP 214 (210)*. 2*n* = 36, CHN. Kazakhstan, Almaty Region, *TA, AP, BO & PV 204(249)*.

Atriplex patula L., 2*n* ~ 4*x* ~ 36, 2C = 3.79–3.89 pg, FCM. Kazakhstan, Almaty Region, *TA & AP 214(211)*.

Atriplex tatarica L., 2*n* ~ 2*x* ~ 18, 2C = 1.22–1.35 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 208c(188)*.

Atriplex verrucifera M.Bieb., 2*n* ~ 2*x* ~ 18, 2C = 1.27–1.38 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 208b(201)*, *TA, AP & BO 211(200)*.

Bassia prostrata (L.) Beck, 2*n* = 4*x* = 36, Kazakhstan, Karaganda Region, 7 Oct 2019, *IS s.n*.

Camphorosma lessingii Litv., 2*n* ~ 2*x* ~ 12, 2C = 1.73–2.06 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 211(191)*, *TA, AP, PV & BO 208a(194)*. 2*n* = 12, CHN. Kazakhstan, Almaty Region, *TA, AP, PV & BO 208a(194)*.

Ceratocarpus utriculosus Bluket ex Krylov, 2*n* ~ 2*x* ~ 18, 2C = 1.33–1.47 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 207(197)*.

Chenopodium betaceum Andrz. (= *C. strictum* auct.), 2*n* ~ 4*x* ~ 36, 2C = 2.03–2.10 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 201(198)*. 2*n* = 4*x* = 36, CHN. Kazakhstan, Almaty Region, *TA, AP, PV & BO 201(198)*.

Girgensohnia oppositiflora (Pall.) Fenzl, 2*n* ~ 2*x* ~ 36, 2C = 6.77–7.94 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 213 (237)*. 2*n* = 4*x* = 36, CHN. Kazakhstan, Almaty Region, *TA, AP & BO 213(237)*.

Kalidium foliatum Moq., 2*n* ~ 2*x* ~ 18, 2C = 3.92–3.95 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 211(186)*.

Kalidium schrenkianum Bunge ex Ung.-Sternb., 2*n* ~ 2*x* ~ 18, 2C = 4.01–4.11 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 211(187)*.

Krascheninnikovia ceratoides (L.) Gueldenst., 2*n* ~ 2*x* ~ 18, 2C = 2.26–2.71 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 213(245)*. 2*n* = 2*x* = 18, CHN. Kazakhstan, Almaty Region, *TA, AP & BO 213(245)*. 2*n* ~ 2*x* ~ 36, 2C = 5.48–6.09 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, BO & PV 207(243)*; Kazakhstan, Kyzylorda Region, *BO & PV 930(170)*. 2*n* = 4*x* = 36, CHN. Kazakhstan, Almaty Region, *TA, AP, BO & PV 207(243)*; Kazakhstan, Karaganda Region, 6 Oct 2019, *IS s.n*.

Salicornia aff. *perennans* Willd., 2*n* ~ 4*x* ~ 36, 2C = 2.04–2.26 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, BO & PV 208b(250)*. 2*n* = 4*x* = 36, CHN. Kazakhstan, Almaty Region, *TA, AP, BO & PV 208b(250)*, *TA, AP & BO 211*.

Salsola tragus L., 2*n* ~ 4*x* ~ 36, 2C = 4.48–4.57 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 207(196)*. 2*n* = 36, CHN. Kazakhstan, Almaty Region, *TA, AP, PV & BO 207(196)*.

Suaeda heterophylla (Kar. & Kir.) Bunge ex Boiss., 2*n* ~ 2*x* ~18, 2C = 0.79–0.82 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 208b(253)*. 2*n* = 18, CHN. Kazakhstan, Almaty Region, *TA, AP, PV & BO 208b(253)*.

Suaeda linifolia Pall., 2*n* ~ 2*x* ~ 18, 2C = 1.37–1.49 pg, FCM. Kazakhstan, Almaty Region, *TA, AP, PV & BO 208b(181)*.

Suaeda microphylla Pall. 2*n* ~ 2*x* ~ 18, 2C = 4.43–4.69 pg, FCM. Kazakhstan, Almaty Region, *TA, AP & BO 212(185)*.

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The research was carried out within the framework of project VI.52.1.2, "Analysis of the intraspecific structure of resource plants

in Asian Russia, selection and conservation of the gene pool" (No. AAAA-A17-117012610054-6).

Collectors: *DSh* = D.N. Shaulo, *EB* = E.V. Banaev, *MT* = M.A. Tomoshevich; vouchers in NSK.

NITRARIACEAE

Nitraria pamirica L.I.Vassiljeva, 2*n* = 24, CHN. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, *EB & MT 3000915*. 2*n* = 48, CHN. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, *EB & MT 3000917*. 2*n* ~ 2*x* ~ 24, 2C = 1.50 pg, FCM. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, *EB & MT 3000915*. 2*n* ~ 4*x* ~ 48, 2C = 3.15 pg, FCM. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, *EB & MT 3000917*.

Nitraria schoberi L., 2*n* = 48, CHN. Republic of Kazakhstan, Almaty region, *EB & MT 3000996*. 2*n* ~ 4*x* ~ 48, 2C = 2.97–3.38 pg, FCM. Crimea, *EB & MT 3000961*; P. R. China, Xinjiang Uygur Autonomous Region, *DSh 3000914*; Republic of Kazakhstan, Almaty Region, *EB & MT 3000951*, *EB & MT 3000959*, *EB & MT 3000958*, *EB & MT 3000999*, *EB & MT 3000997*, *EB & MT 3000995*, *EB & MT 3000998*, *EB & MT 3000984*; Republic of Kazakhstan, Mangistauskaya Oblast', *EB & MT 3000913*, *EB & MT 3000978*, *EB & MT 3000979*; Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, *EB & MT 3000993*, *EB & MT 3000994*; Russian Federation, Altaiskii Krai, *EB & MT 3000975*, *EB & MT 3000971*; Russian Federation, Astrakhanskaya Oblast', *EB & MT 3000929, EB & MT 3000933*, *EB & MT 3000934*, *EB & MT 3000930*, *EB & MT 3000935*, *EB & MT 3000936*, *EB & MT 3000937*; Russia, Novosibirskaya Oblast', *EB & MT 3000973*. 2*n* ~ 8*x* ~ 96, 2C = 5.75 pg, FCM. Russia, Astrakhanskaya Oblast', *EB & MT 3000938*.

Nitraria tangutorum Bobrov, 2*n* = 24, 26, CHN. P. R. China, Ningxia Hui Autonomous Region, *EB & MT 3000916*. 2*n* ~ 2*x* ~ 24, 2C = 1.57 pg, FCM. P. R. China, Ningxia Hui Autonomous Region, *EB & MT 3000916*.

IAPT chromosome data 32/4

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All materials CHN.

LAMIACEAE

Nepeta bucharica Lipsky, 2*n* = 16; Kyrgyzstan, Talas Oblast', *A.Yu. Astashenkov & V.A. Cheryomushkina s.n*. (NSK NSK0068401).

Nepeta densiflora Kar. & Kir., 2*n* = 18; Kazakhstan, East Kazakhstan Oblast', *A.Yu. Astashenkov & V.A. Cheryomushkina s.n*. (NSK NSK0068403).

Nepeta mariae Regel, 2*n* = 16; Tajikistan, Sogdian Oblast', *A.Yu. Astashenkov & V.A. Cheryomushkina s.n*. (NSK NSK0068402).

VIOLACEAE

Viola ingolensis T.Elisafenko, 2*n* = 24; Russia, Republic of Khakasiya, *T.V. Elisafenko s.n*. (NSK NSK0068409).

Viola irinae Zolot., 2*n* = 24; Russia, Altaiskii Krai, *T.V. Elisafenko s.n*. (NSK NSK0068410); Russia, Republic of Altai, *T.V. Elisafenko s.n*. (NSK NSK0068406).

Viola jeniseensis Zuev, 2*n* = 24; Russia, Republic of Khakasiya, *T.V. Elisafenko s.n*. (NSK NSK0068412); Russia, Krasnoyarskii Krai, *T.V. Elisafenko s.n*. (NSK NSK0068405).

Viola milanae Vl.V.Nikitin, 2*n* = 24; Russia, Republic of Buryatiya, *T.V. Elisafenko & S.G. Kazanovsky s.n*. (NSK NSK0068408); Russia, Irkutskaya Oblast', *T.V. Elisafenko & S.G. Kazanovsky s.n*. (NSK NSK0068407).

Viola pacifica Juz., 2*n* = 24; Russia, Primorskii Krai, *T.V. Elisafenko s.n*. (NSK NSK0068404).

IAPT chromosome data 32/5

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All materials CHN; collectors: *AG* = A.A. Gnutikov, *AR* = A.V. Rodionov, *EP* = E.O. Punina, *NN* = N.N. Nosov, *OG* = O.G. Grishutkin, *SB* = S.V. Bondarenko; vouchers in LE.

POACEAE

Agropyron cristatum (L.) Gaertn., 2*n* = 28; Russia, Altaiskii Krai, *EP, AG, NN & AR Alt18-21*.

Agrostis gigantea Roth, 2*n* = 42; Russia, Republic of Altai, *EP, AG, NN & AR Alt18-486*.

Alopecurus aequalis Sobol., 2*n* = 14; Russia, Arkhangelskaya Oblast', *AG, NN & AR Pur19-29*.

Alopecurus arundinaceus Poir., 2*n* = 28; Russia, Arkhangelskaya Oblast', *AG, NN & AR Pur19-45*.

Alopecurus geniculatus L., 2*n* = 28; Russia, Leningradskaya Oblast', *EP LO-3*.

Alopecurus pratensis L., 2*n* = 28; Russia, Leningradskaya Oblast', *EP LO-2*.

Alopecurus vlassowii Trin., 2*n* = ca. 120; Russia, Republic of Altai, *EP, AG & AR Alt19-161*.

Beckmannia syzigachne (Steud.) Fernald, 2*n* = 14; Russia, Republic of Altai, *EP, AG & AR Alt19-178*, *EP, AG & AR Alt19-192*.

Cinna latifolia (Trevir. ex Göpp.) Griseb., 2*n* = 28; Russia, Republic of Altai, *EP, AG, NN & AR Alt18-459*.

Deschampsia cespitosa (L.) P.Beauv., 2*n* = 26; Russia, Altaiskii Krai, *EP, AG, NN & AR Alt18-84*.

Elymus mutabilis (Drobow) Tzvelev, 2*n* = 28; Russia, Republic of Altai, *EP, AG, NN & AR Alt18-314*.

Elymus peschkovae Tzvelev, 2*n* = 28; Russia, Altaiskii Krai, *EP, AG, NN & AR Alt18-87*.

Elytrigia gmelinii (Trin.) Nevski, 2*n* = 14; Russia, Republic of Altai, *EP, NN & AR Alt12-181*.

Melica altissima L., 2*n* = 18; Russia, Altaiskii Krai, *EP, AG, NN & AR Alt18-27*; Russia, Republic of Altai, *EP, AG, NN & AR Alt18-402*.

Melica transsilvanica Schur, 2*n* = 18; Russia, Republic of Altai, *EP, AG & AR Alt19-359*.

Molinia caerulea (L.) Moench, 2*n* = 36; Russia, Republic of Mordovia, *OG Mr-1*.
Phleum alpinum L., 2*n* = 28; Russia, Republic of Adygea, *EP, AR & SB K-30*.
Phleum bertolonii DC., 2*n* = 14; Russia, Leningradskaya Oblast', *EP LO-1*.
Phleum montanum K.Koch, 2*n* = 14; Russia, Republic of Adygea, *EP, AR & SB K-1*.
Phleum phleoides (L.) H.Karst., 2*n* = 14; Russia, Altaiskii Krai, *EP, AG, NN & AR Alt18-11*; Russia, Republic of Altai, *EP, AG & AR Alt19-376*.
Phleum pratense L., 2*n* = 42; Russia, Arkhangelskaya Oblast', *AG, NN & AR Pur19-13*.
Ptilagrostis mongholica (Turcz. ex Trin.) Griseb., 2*n* = 22; Russia, Republic of Altai, *EP, AG & AR Alt19-224*.
Puccinellia kalininae Bubnova, 2*n* = 14; Russia, Republic of Altai, *EP & AR Alt516*.
Schizachne callosa (Turcz. ex Griseb.) Ohwi, 2*n* = 20; Russia, Republic of Altai, *EP, AG, NN & AR Alt18-303*, *EP, AG, NN & AR Alt18-460*.

IAPT chromosome data 32/6

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All materials CHN; collectors: *AG* = A.A. Gnutikov, *AR* = A.V. Rodionov, *EP* = E.O. Punina, *NN* = N.N. Nosov; vouchers in LE.

POACEAE

Alopecurus aequalis Sobol., 2*n* = 14; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-54*; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-525*.
Alopecurus pratensis L., 2*n* = 28; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-08*; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-106*, *EP, NN, AG & AR Alt18-391*, *EP, NN, AG & AR Alt18-475*.
Beckmannia syzigachne (Steud.) Fernald, 2*n* = 14; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-57*, *EP, NN, AG & AR Alt18-65*, *EP, NN, AG & AR Alt18-109*; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-392*, *EP, NN, AG & AR Alt18-394*.
Melica altissima L., 2*n* = 18; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-19*, *EP, NN, AG & AR Alt18-80*.
Melica transsilvanica Schur, 2*n* = 18; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-68*.
Milium effusum L., 2*n* = 28; Russia, Republic of Altai, Russia *EP, NN, AG & AR Alt18-489*.
Phleum alpinum L., 2*n* = 28; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-428*, *EP, NN, AG & AR Alt18-495*.
Phleum phleoides (L.) H.Karst., 2*n* = 14; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-02*, *EP, NN, AG & AR Alt18-56*; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-291*, *EP, NN, AG & AR Alt18-398*, *EP, NN, AG & AR Alt18-403*.
Phleum pratense L., 2*n* = 42; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-55*, *EP, NN, AG & AR Alt18-63*, *EP, NN, AG & AR Alt18-81*, *EP, NN, AG & AR Alt18-100*; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-290*, *EP, NN, AG & AR Alt18-478*.
Poa trivialis L., 2*n* = 14; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-95*.
Ptilagrostis junatovii Grubov, 2*n* = 22; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-266*.
Ptilagrostis mongholica (Turcz. ex Trin.) Griseb., 2*n* = 22; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-267*.
Schedonorus pratensis (Huds.) P. Beauv., 2*n* = 14; Russia, Altaiskii Krai, *EP, NN, AG & AR Alt18-91*.
Schizachne callosa (Turcz. ex Griseb.) Ohwi, 2*n* = 20; Russia, Republic of Altai, *EP, NN, AG & AR Alt18-317*.

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All materials CHN; collectors: *AG* = A.A. Gnutikov, *RU* = R.A. Ufimov; vouchers in LE.

POACEAE

Anisantha tectorum (L.) Nevski, 2*n* = 14; Russia, Tambovskaya Oblast', *AG & RU Tam11-2*; Russia, Republic of Dagestan, *AG & RU Dag11-13*.
Brachypodium sylvaticum (L.) P.Beauv., 2*n* = 18; Abkhazia, Sukhumskii Raion, *AG & RU Ab11-4*; Russia, Republic of Dagestan, *AG & RU Dag11-15*.
Bromus commutatus Schrad., 2*n* = 28; Russia, Republic of Dagestan, *AG & RU Dag11-14*.
C*alamagrostis caucasica* Trin., 2*n* = 28; Russia, Republic of Dagestan, *AG & RU Dag11-16*.
Colpodium versicolor (Steven) Schmalh., 2*n* = 4; Russia, Republic of Dagestan, *AG & RU Dag11-7*, *AG & R.U Dag11-9*, *AG & RU Dag11-10*.
Deschampsia media (Gouan) Roem. & Schult., 2*n* = 26; Russia, Krasnodarskii Krai, *AG Kr12-1*.
Holcus lanatus L., 2*n* = 14; Abkhazia, Gudauta District, *AG & RU Ab11-3*.
Phleum paniculatum Huds., 2*n* = 28; Russia, Republic of Dagestan, *AG & RU Dag11-2*.
Phleum pratense L., 2*n* = 42; Russia, Republic of Dagestan, *AG & RU Dag11-11*.
Poa alpina L., 2*n* = 35; Russia, Republic of Dagestan, *AG & RU Dag11-5*.
Poa badensis Haenke ex Willd., 2*n* = 14; Russia, Republic of Dagestan, *AG & RU Dag11-3*.
Poa biebersteinii H.N.Pojark., 2*n* = 56; Russia, Republic of Dagestan, *AG & RU Dag11-4*.
Poa compressa L., 2*n* = 42; Abkhazia, Gagra District, *AG & RU Ab11-1*; Russia, Republic of Dagestan, *AG & RU Dag11-8*.
Poa glauca Vahl, 2*n* = 56; Russia, Republic of Dagestan, *AG & RU Dag11-6*.

Poa pratensis L., 2*n* = 52; Abkhazia, Gagra District, *AG & RU Ab11-2*.
Poa sterilis M.Bieb., 2*n* = 35; Russia, Republic of Dagestan, *AG & RU Dag11-12*.
Setaria viridis (L.) P.Beauv., 2*n* = 18; Russia, Republic of Dagestan, *AG & RU Dag11-1*.

IAPT chromosome data 32/8

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All materials CHN; collectors: *MP* = M.V. Protopopova, *NS* = N.V. Stepanov, *VCH* = V.V. Chepinoga, *VP* = V.V. Pavlichenko; vouchers in IRKU.

ASTERACEAE

Doronicum altaicum Pall., 2*n* = 60; Russia, Krasnoyarskii Krai, *VP, MP & VCH C1688*.

FABACEAE

Lathyrus frolovii Rupr., 2*n* = 14; Russia, Republic of Khakassia, *VCH, VP & MP C1703*.

GENTIANACEAE

Gentiana grandiflora Laxm., 2*n* = 26; Russia, Republic of Khakassia, *VP, MP & VCH C1701*.

OROBANCHACEAE

Pedicularis incarnata L., 2*n* = 16; Russia, Krasnoyarskii Krai, *VP, MP & VCH C1693*.
Pedicularis oederi Vahl ex Hornem., 2*n* = 16; Russia, Republic of Khakassia, *VCH & VP C1698*.

PRIMULACEAE

Primula nivalis Pall., 2*n* = 22; Russia, Republic of Khakassia, *VCH, VP & MP C1697*.
Primula pallasii Lehm., 2*n* = 22; Russia, Krasnoyarskii Krai, *VP, VCH & MP C1680*.

RANUNCULACEAE

Anemone altaica Fisch. ex C.A.Mey., 2*n* = 32; Russia, Krasnoyarskii Krai, *VP, VCH & MP C1681*.
Anemone baicalensis Turcz., 2*n* = 28; Russia, Krasnoyarskii Krai, *VP, VCH & MP C1678*, *VP, VCH, NS & MP C1686*; Russia, Irkutskaya Oblast', *VP & MP C1711*, *VP C1723*.
Anemone sibirica L., 2*n* = 14; Russia, Republic of Khakassia, *VCH, VP & MP C1695*.
Callianthemum sajanense (Regel) Witasek, 2*n* = 16; Russia, Republic of Khakassia, *VP, MP & VCH C1700*.
Caltha palustris L., 2*n* = 32; Russia, Krasnoyarskii Krai, *VP, MP & VCH C1689*; Russia, Republic of Khakassia, *VP, MP & VCH C1699*.
Trollius vitalii Stepanov, 2*n* = 16; Russia, Krasnoyarskii Krai, *VP, MP & VCH C1694*.

ROSACEAE

Waldsteinia ternata (Stephan) Fritsch, 2*n* = 28; Russia, Irkutskaya Oblast', *VP C1725*, *MP C1732*.

SAXIFRAGACEAE

Bergenia crassifolia (L.) Fritsch, 2*n* = 34; Russia, Krasnoyarskii Krai, *VP, MP & VCH C1690*.

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APIACEAE

Laserpitium archangelica Wulfen, 2*n* = 22; *D. Ivanova DI 92.03*.

BETULACEAE

Betula pendula Roth, 2*n* = 28; *D. Ivanova & V. Vladimirov VV 04-287*.

ERICACEAE

Rhododendron ponticum L. subsp. *ponticum*, 2*n* = 26; *D. Ivanova 204491*.

GERANIACEAE

Erodium absinthoides subsp. *balcanicum* (Micevski) Greuter & Burdet, 2*n* = 36; 28 May 2011, *D. Ivanova s.n*.

MALVACEAE (SUBFAM. TILIOIDEAE)

Tilia tomentosa Moench (= *T. argentea* DC.), 2*n* = 82; *D. Ivanova 204488*.

ROSACEAE

Mespilus germanica L. (= *Crataegus germanica* (L.) Kuntze), 2*n* = 34; *D. Ivanova 204512*.
Prunus laurocerasus L., 2*n* = 144; *D. Ivanova 204505*.
Rosa pulverulenta M.Bieb., 2*n* = 35; *D. Ivanova & V. Vladimirov VV 04 281*.

IAPT chromosome data 32/10

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All materials CHN.

ASTERACEAE (COMPOSITAE)

Achillea asiatica Serg., 2*n* = 36; Russia, Altaiskii Krai, *D.A. Krivenko 2019-12* (LE), *D.A. Krivenko 2019-13* (LE); Russia, Irkutskaya Oblast', *D.A. Krivenko 51112* (IRK, LE).

Achillea micrantha Willd., 2*n* = 18; Russia, Altaiskii Krai, *D.A. Krivenko 2019-15* (LE).

Artemisia abrotanum L., 2*n* = 18; Russia, Altaiskii Krai, *D.A. Krivenko 2019-17* (LE), *D.A. Krivenko 2019-18* (LE).

Artemisia absinthium L., 2*n* = 18; Georgia, *Ye.B. Portenier 2019-38* (LE), *Ye.B. Portenier 2019-37* (LE).

Artemisia annua L., 2*n* = 18; Georgia, *Ye.B. Portenier 2019-35* (LE), *Ye.B. Portenier 2019-36* (LE).

Artemisia arenaria DC., 2*n* = 36; Kazakhstan, Aktyubinskaya Oblast', *Zh.N. Kuanbai 2019-59* (LE).

Artemisia austriaca Jacq., 2*n* = ca. 16; Russia, Altaiskii Krai, *D.A. Krivenko 2019-48* (LE). 2*n* = 32; Russia, Altaiskii Krai, *D.A. Krivenko 2019-52* (LE). 2*n* = ca. 48; Kazakhstan, Vostochno-Kazakhstanskaya Oblast', *D.A. Krivenko 2019-53* (LE).

Artemisia commutata Besser, 2*n* = 18; Mongolia, Ulaanbaatar city, *A.A. Korobkov 2019-60* (LE).

Artemisia cuspidata Krasch., 2*n* = 54; Russia, Irkutskaya Oblast', *D.A. Krivenko 2019-43* (LE).

Artemisia depauperata Krasch., 2*n* = 18; Mongolia, Zavkhan Aimak, *V.I. Dorofeev, A.A. Korobkov & al. 2019-61* (LE).

Artemisia dracunculus L., 2*n* = 18; Russia, Irkutskaya Oblast', *O.A. Zavgorodnyaya 2019-32* (LE). 2*n* = 54; Russia, Altaiskii Krai, *D.A. Krivenko 2019-24* (LE), *D.A. Krivenko 2019-26* (LE), *D.A. Krivenko 2019-30* (LE), *D.A. Krivenko 2019-27* (LE).

Artemisia frigida Willd., 2*n* = 18; Russia, Irkutskaya Oblast', *O.A. Zavgorodnyaya 2019-31* (LE).

Artemisia furcata M.Bieb., 2*n* = 18; Russia, Republic of Buryatiya, *N.V. Gamova 2019-01* (LE).

Artemisia glauca Pall. ex Willd., 2*n* = 18; Russia, Altaiskii Krai, *D.A. Krivenko 2019-22* (LE), *D.A. Krivenko 2019-22* (LE).

Artemisia marschalliana Spreng., 2*n* = 18; Russia, Stavropol'skii Krai, *Ye.B. Portenier 2019-42* (LE). 2*n* = 36; Kazakhstan, Aktyubinskaya Oblast', *Zh.N. Kuanbai 2019-58* (LE); Russia, Stavropol'skii Krai, *Ye.B. Portenier 2019-41* (LE); Russia, Altaiskii Krai, *D.A. Krivenko 2019-19* (LE), *D.A. Krivenko 2019-28* (LE), *D.A. Krivenko 2019-21* (LE).

Artemisia mongolica (Fisch. ex Besser) Fisch. ex Nakai, 2*n* = 16; Russia, Irkutskaya Oblast', *O.Yu. Zavgorodnyaya 2019-46* (LE).

Artemisia nitrosa Weber ex Stechm., 2*n* = 18; Russia, Altaiskii Krai, *D.A. Krivenko 2019-54* (LE).

Artemisia rupestris L., 2*n* = 18; Russia, Altaiskii Krai, *D.A. Krivenko 2019-49* (LE).

Artemisia santonicum L., 2*n* = 18; Russia, Altaiskii Krai, *D.A. Krivenko 2019-55* (LE).

Artemisia schrenkiana Ledeb., 2*n* = 36; Russia, Altaiskii Krai, *D.A. Krivenko 2019-57* (LE), *D.A. Krivenko 2019-56* (LE).

Artemisia scoparia Waldst. & Kit., 2*n* = 16; Russia, Altaiskii Krai, *D.A. Krivenko 2019-20* (LE), *D.A. Krivenko 2019-29* (LE).

Artemisia sieversiana Ehrh. ex Willd., 2*n* = 18; Russia, Irkutskaya Oblast', *D.A. Krivenko 2019-44* (LE); Russia, Altaiskii Krai, *D.A. Krivenko 2019-47* (LE), *D.A. Krivenko 2019-50* (LE), *D.A. Krivenko 2019-51* (LE).

Artemisia viridis Willd. ex A.DC., 2*n* = 18; Russia, Republic of Altai, *G.A. Tyusov 2019-62* (LE).

Artemisia xylorhiza Krasch. ex Filatova, 2*n* = 36; Russia, Irkutskaya Oblast', *D.A. Krivenko 2019-45* (LE), *O.Yu. Zavgorodnyaya 2019-25* (LE).

Leucanthemum vulgare Lam., 2*n* = 36; Russia, Irkutskaya Oblast', *D.A. Krivenko 2019-11* (IRK, LE).

Tanacetum bipinnatum (L.) Sch.Bip., 2*n* = 72; Russia, Tyumenskaya Oblast', Yamalo-Nenetskii Avtonomnyi Okrug, *V.V. Byalt 2019-33* (LE).

Tanacetum vulgare L., 2*n* = 18; Russia, Irkutskaya Oblast', *O.Yu. Zavgorodnyaya 2019-09* (LE), *O.Yu. Zavgorodnyaya 2019-08* (LE).

Tripleurospermum inodorum (L.) Sch.Bip., 2*n* = 36; Russia, Leningradskaya Oblast', *L.I. Krupkina 2019-02* (LE), *L.I. Krupkina 2019-03* (LE); Russia, Altaiskii Krai, *D.A. Krivenko 2019-04* (IRK, LE), *D.A. Krivenko 2019-05* (IRK, LE); Russia, Kemerovskaya Oblast', *D.A. Krivenko 2019-07* (IRK, LE), Russia, Krasnoyarskii Krai, *D.A. Krivenko 2019-06* (IRK, LE).

FABACEAE (LEGUMINOSAE)

Glycyrrhiza echinata L., 2*n* = 16; Russia, Republic of Dagestan, *D.A. Krivenko 58568* (IRK).

Glycyrrhiza glabra L., 2*n* = 16; Russia, Republic of Dagestan, *D.A. Krivenko 58566* (IRK).

Robinia pseudoacacia L., 2*n* = 22; Armenia, *D.A. Krivenko & al. 58573* (IRK, PVB), *D.A. Krivenko & al. 58570* (IRK, PVB).

Spartium junceum L., 2*n* = 48; Georgia, *D.A. Krivenko & al. 58563* (IRK, PVB).

Styphnolobium japonicum (L.) Schott, 2*n* = 28; Armenia, *D.A. Krivenko & al. 58576* (IRK); Georgia, *D.A. Krivenko & al. 58578* (IRK).

RANUNCULACEAE

Anemone sylvestris L. (≡ *Anemonoides sylvestris* (L.) Galasso, Banfi & Soldano), 2*n* = 16; Russia, Novosibirskaya Oblast', *A.S. Erst & T. Erst s.n.* (NS).

Eranthis sibirica DC., 2*n* = 28; Russia, Irkutskaya Oblast', *O.A. Chernysheva 59060* (IRK, NS), *O.A. Chernysheva 59062* (IRK, NS).

Trollius asiaticus L., 2*n* = 16; Russia, Novosibirskaya Oblast', *A.S. Erst & T. Erst s.n.* (NS).

IAPT chromosome data 32/11

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UMBELLIFERAE (APIACEAE)

Angelica sylvestris L., 2*n* = 22; Greece, *EK & UU 10-17*.

Athamanta macedonica Spreng., 2*n* = 22; Greece, *EK & UU 16-17*.

Bupleurum commutatum Boiss. & Balansa, 2*n* = 16; Greece, *EK & UU 14-17*.

Bupleurum falcatum L., 2*n* = 16; Greece, *EK & UU 5-17*.

Daucus carota L., 2*n* = 18; Greece, *EK & UU 13a -17*.

Katapsuxis silaifolia (Jacq.) Reduron, Charpin & Pimenov, 2*n* = 22; Greece, 3 Oct 2016, *EK & UU s.n*.

Opopanax chironium (L.) W.D.J.Koch, 2*n* = 22; Greece, *EK & UU 11-17*.

Opopanax hispidus (Friv.) Griseb., 2*n* = 22; Greece, 26 Sep 2017, *EK & UU s.n*.

Peucedanum austriacum (Jacq.) W.D.J.Koch, 2*n* = 22; North Macedonia, *EK & UU 22-17*.

Sanicula europaea L., 2*n* = 16, Greece, 9 Oct 2016, *EK & UU s.n*.

Seseli montanum L., 2*n* = 22; North Macedonia, *EK & UU 18-17*.

Tordylium maximum L., 2*n* = 20; Greece, *EK & UU 9-17*.

Torilis ucranica Spreng., 2*n* = 16; Greece, 26 Sep 2017, *EK & UU s.n*

IAPT CHROMOSOME DATA

IAPT chromosome data 32 – Extended version

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IAPT chromosome data 32/1

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All cytological investigations have been carried out on root tips. The root tips were collected in natural habitats, pretreated in 0.2% colchicine, fixed in methanol-acetic acid (3 : 1) and stained in 1% acetic hematoxylin (Smirnov, 1968).

* First chromosome count from the given region.

ALISMATACEAE

Sagittaria natans Pall.

2*n* = 22, CHN. Russia, Magadanskaya Oblast', Olskii Raion, Kava River's left bank, Lebyazhee Lake, near stream mouth, on the bottom, 59°39′N, 147°13′E, 2 Jul 2017, *O. Mochalova M17053* (MAG).

HALORAGACEAE

Myriophyllum ussuriense (Regel) Maxim.

*2*n* = 14, CHN. Russia, Magadanskaya Oblast', Olskii Raion, Czhukcha River valley, Zaton Lake, in shallow water, 59°32′N, 147°19′E, 25 Jul 2018, *O. Mochalova M18025* (MAG).

POLYGONACEAE

Rumex arcticus Trautv.

2*n* = 120 CHN. Russia, Magadanskaya Oblast', Olskii Raion, Oira River valley, in a non-freezing oxbow, on the bank, 59°44′N, 149°51′E, 2 May 2019, *O. Mochalova M19010* (MAG).

POTAMOGETONACEAE

Potamogeton alpinus Balb.

*2*n* = 26 CHN. Russia, Magadanskaya Oblast', Khasynskii Raion, Elykchan Lake, in the water near the bank, 60°44′N, 151°52′E, 5 Jul 2019, *O. Mochalova M19034* (MAG).

RANUNCULACEAE

Caltha palustris L.

2*n* = 32, CHN. Russia, Magadanskaya Oblast', Olskii Raion, lower reaches of Yama River, Neuter Stream, non-freezing stretch, on the bottom, 59°55′N, 153°15′E, 6 Apr 2017, *O. Mochalova M17005* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, Oira River valley, non-freezing oxbow, 59°44′N, 149°51′E, 2 May 2019, *O. Mochalova M19003* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, Ola River valley, Nalednii Stream, non-freezing sand spit, 59°42′N, 151°21′E, 4 May 2019, *E. Andriyanova & O. Mochalova M19006* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, in the vicinity of Stekolnii settlement, left bank of the Khasyn River, in moss along the shore of the small stream, 60°00′N, 150°40′E, 28 May 2019, *O. Mochalova M19016* (MAG).

2*n* = ca. 48, CHN. Russia, Magadanskaya Oblast', Olskii Raion, Tanon River (tributary of Ola River), 59°42′N, 151°13′E, 4 May 2019, *E. Andriyanova & O. Mochalova M19005* (MAG) [Fig. 1A].

The different chromosome races are known for *Caltha palustris*, with 2*n* = 32 being the most common one (Fedorov, 1969; Krogulevich & Rostovtseva, 1984; Kumar & Singhal, 2008).

Ranunculus gmelinii DC.

2*n* = 16 CHN. Russia, Magadanskaya Oblast', Olskii Raion, Tanon River in 2 km from the mouth, on the river bank, 59°37′N, 151°15′E, 1 Jun 2018, *O. Mochalova M18038* (MAG); Russia, Magadanskaya Oblast', Khasynskii Raion, in the vicinity of Talaya settlement, in the stream, 61°07′N, 152°22′E, 28 Jun 2018, *O. Mochalova M18035* (MAG) [Fig. 1B]; Russia, Magadanskaya Oblast', Olskii Raion, Oira River valley, bank of oxbow, on moss, 29 Sep 2018, 59°44′N, 149°51′E, *O. Mochalova M18125* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, Oira River valley, in the stream, 59°44′N, 149°51′E, 2 May 2019, *O. Mochalova M19002* (MAG);

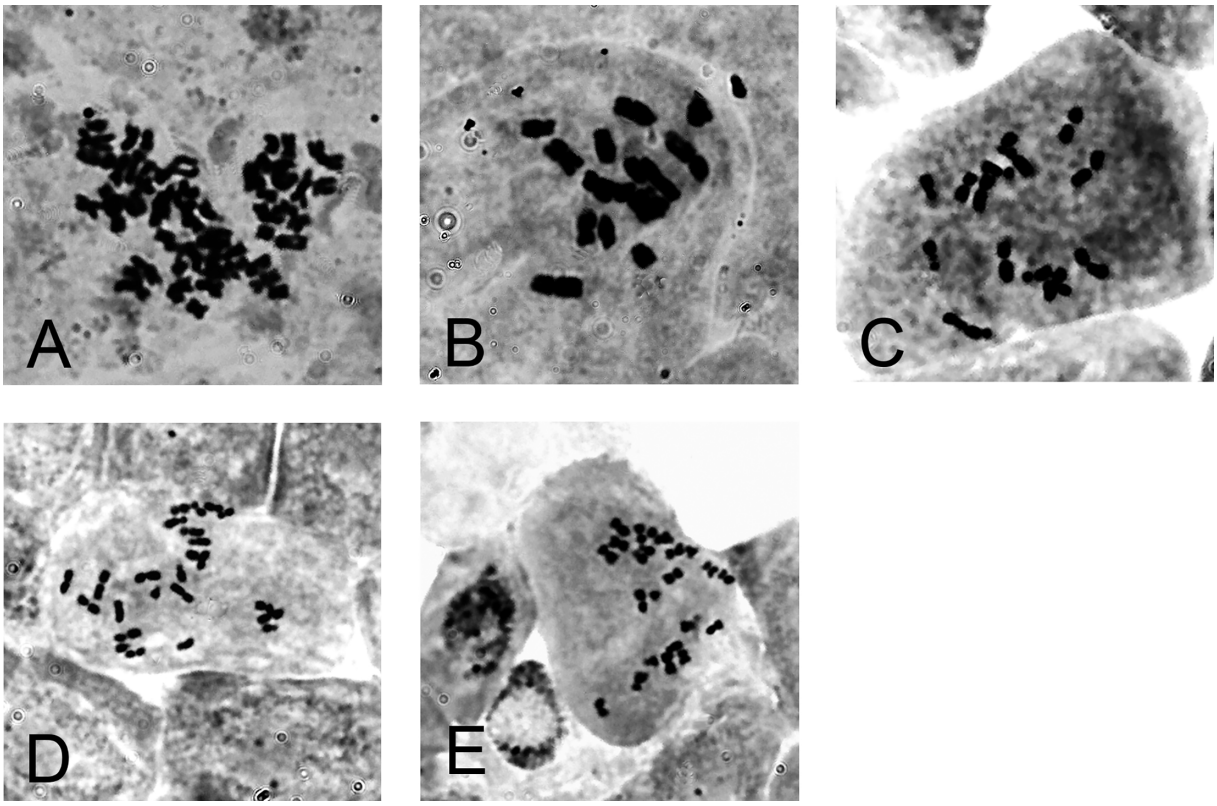

Fig. 1. Mitotic metaphases of: **A**, *Caltha palustris*, 2*n* = ca. 48; **B**, *Ranunculus gmelinii*, 2*n* = 16; **C**, *R. gmelinii*, 2*n* = 16; **D**, *R. gmelinii*, 2*n* = 24; **E**, *R. gmelinii*, 2*n* = 24.

Russia, Magadanskaya Oblast', Olskii Raion, Tanon River, on the bottom at the depth of 0.5 m, 59°42′N, 151°13′E, 4 May 2019, *E. Andriyanova & O. Mochalova M19007* (MAG) [Fig. 1C]; Russia, Magadanskaya Oblast', Olskii Raion, Nalednii Stream, on the bottom near the stream bank, 59°42′N, 151°21′E, 4 May 2019, *E. Andriyanova & O. Mochalova A19008* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, in the vicinity of Stekolnii settlement, left bank of the Khasyn River, in the small stream, 28 May 2019, 60°00′N, 150°40′E, *O. Mochalova M19015* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, in the vicinity of Ola settlement, small pool near the road, 13 Jun 2019, 59°34′N, 151°13′E, *E. Andriyanova A19020* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, near the mouth of the Oksa River, pool in wet tundra, 15 Jun 2019, 59°37′N, 150°25′E, *E. Andriyanova A19022* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, in the vicinity of Ola settlement, near the pool in the meadow, 19 Jun 2019, 59°37′N, 151°10′E, *E. Andriyanova A19023* (MAG); Russia, Magadanskaya Oblast', Khasynskii Raion, upper course of the Maltan River, moss on the bank of a small lake, 60°48′N, 151°39′E, 1 Jul 2019, *O. Mochalova M19103* (MAG).

$2n$ = 24, CHN. Russia, Magadanskaya Oblast', Olskii Raion, Tanon River, in the moss on the bottom, under a thin layer of ice, 59°42′N, 151°13′E, 16 Mar 2018, *O. Mochalova M18003* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, Tanon River valley, tributary of the Tanon River, in the water near the bank, 59°37′N, 151°15′E, 28 Jul 2018, *O. Mochalova M18020* (MAG) [Fig. 1D]; Russia, Magadanskaya Oblast', Olskii Raion, Uglican River, in the moss in non-freezing shallow water, 59°37′N, 151°19′E, 13 Feb 2019, *O. Mochalova M19001* (MAG); Russia, Magadanskaya Oblast', Olskii Raion, Nalednii Stream, on the bottom near the stream bank, 59°42′N, 151°21′E, 4 May 2019, *E. Andriyanova & O. Mochalova A19010* (MAG) [Fig. 1E].

$2n$ = 32, CHN. Russia, Magadanskaya Oblast', Olskii Raion, Czhukcha River valley, Zaton Lake, sandy shore, 59°32′N, 147°19′ E, 25 Jul 2018, *O. Mochalova & A. Bobrov M18056* (MAG).

The most common chromosome number for *Ranunculus gmelinii* in Magadan Region is $2n = 16$; this chromosome race grows in different habitats. Plants with $2n = 24$ are only known from non-freezing rivers and streams. Plants with $2n = 32$ were found only once in a river (Andriyanova & al., 2018).

Ranunculus nipponicus Nakai

$2n = 32$ CHN. Russia, Magadanskaya Oblast', Olskii Raion, upper course of the Lankovaya River, on the pebble bottom in shallow water, 59°44′N, 152°24′E, 30 Jun 2016, *E. Andriyanova A16019* (MAG).

Ranunculus pallasii Schltdl.

$2n = 32$ CHN. Russia, Chukotskii Avtonomnyi Okrug, Bilibinskii Raion, upper course of the Malyi Aniui River, near Tytyl Lake, wet tundra, 67°22′N, 169°27′E, 13 Jul 2018, *O. Mochalova & A. Bobrov M18048* (MAG).

Ranunculus trichophyllus Chaix ex Vill.

$2n$ = 32 CHN. Russia, Magadanskaya Oblast', Khasynskii Raion, in the vicinity of Talaya settlement, in a non-freezing stream, 61°07′N, 152°22′E, 10 May 2019, *O. Mochalova M19013* (MAG).

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IAPT chromosome data 32/2

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METHODS

CHN. — Cytological investigations have been carried out on root meristem. Actively growing seedlings were kept for 2 hours at room temperature in 0.2 % colchicine solution, fixed in acetic acid alcohol (3 : 1). The preparations were stained with acetogematoxilin according to Smirnov (1968), examined with an Axioscope 40 microscope using the AxioVision v.4.8 software and an Axioscope A1 microscope with the Axiocam 506 color camera and ZEN2012 (blue edition) software.

FCM. — Collected plants were packed in plastic bags and stored in the refrigerator for three to five days, until they were delivered to the laboratory for analysis. The fresh leaves were used for measurement of nuclear DNA content of the most plants besides of *Salicornia* aff. *perennans* and one sample of *Kraschenninnikovia ceratoides*. The absolute nuclear DNA amount was assessed by flow cytometry using a Cy Flow Space cytometer (Görlitz, Sysmex Partec, Germany) equipped with a green laser. The sample preparation and FCM procedure followed that of Doležel & al. (2007).

Fresh plant leaves with known DNA content were used as internal standards to calculate the relative DNA content of the studied samples: *Raphanus sativus* L. 'Saxa32' (2C = 1.11 pg; Doležel & al., 1992), *Solanum lycopersicum* Stupicke (2C = 1.96 pg; Doležel & al., 1992), *Pisum sativum* L. 'Ctirad' (2C = 9.09 pg; Doležel & al., 1998), or *Petroselinum crispum* L. (2C = 4.5 pg) according to Skaptsov & al. (2016).

The DNA ploidy level of the studied species was determined by comparing DNA content with chromosome counts of the same plants, or with chromosome numbers for particular studied species available in the Chromosome Counts Data Base (Rice & al., 2015), and additionally in Lomonosova & al. (2019, 2020). The DNA ploidy level of *Kalidium schrenkianum*, the chromosome number of which is still unknown, was inferred by comparing the sample profile with karyologically tested related species *K. foliatum*.

* Genome size determined for the first time for the species.

AMARANTHACEAE

**Atriplex cana* C.A.Mey.

2*n* ~ 2*x* ~ 18, 2C = 2.92–3.09 pg, FCM. Republic of Kazakhstan, Almaty Region, Enbekshikazakh District, Kopa River bank, solonchak, 43°30′57.7″N, 75°48′42.5″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 211(202)* (NS).

**Atriplex micrantha* C.A.Mey.

2*n* = 36, CHN; Republic of Kazakhstan, Karasay District, valley of the Kaskelen River, vicinities of Enbekshi village, solonchak, 43°39′43.3″N, 77°01′32.9″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 204(249)* (NS) [Fig. 2A].

2*n* ~ 4*x* ~ 36, 2C = 3.81–3.94 pg, FCM. Republic of Kazakhstan, Almaty Region, Ile District, vicinities of Zhanaarna village, weeds in the field, 43°35′22.4″N, 77°00′38.9″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 201(247)* (NS).

2*n* ~ 4*x* ~ 36, 2C = 3.82–3.92 pg, FCM. Republic of Kazakhstan, Karasay District, valley of the Kaskelen River, vicinities of Enbekshi village, solonchak, 43°39′43.3″N, 77°01′32.9″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 204 (249)* (NS).

2*n* ~ 4*x* ~ 36, 2C = 3.95–3.97 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, roadside, 43°52′ 47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208c(248)* (NS).

2*n* ~ 4*x* ~ 36, 2C = 3.64–3.95 pg, FCM. Republic of Kazakhstan, Almaty City, roadside, 43°13′32.77″N, 76°54′12.3″E, 6 Nov 2019, *T. An'kova & A. Petruk 214(210)* (NS).

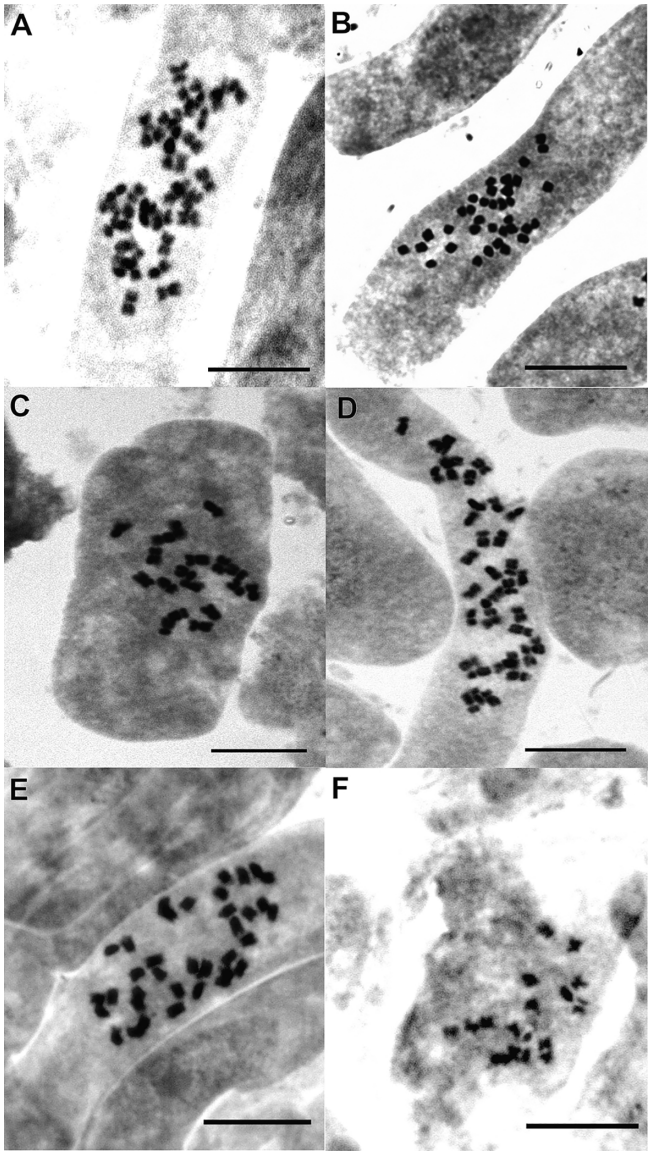

Fig. 2. Mitiotic metaphase: **A**, *Atriplex micrantha*, 2*n* = 36; **B**, *Chenopodium betaceum*, 2*n* = 36; **C**, *Kraschenninnikovia ceratoides*, 2*n* = 18; **D**, *Kraschenninnikovia ceratoides*, 2*n* = 36; **E**, *Salicornia* aff. *perennans*, 2*n* = 36; **F**, *Suaeda heterophylla*, 2*n* = 18. — Scale bars, 10 µm.

Atriplex patula L.

2*n* ~ 4*x* ~ 36, 2C = 3.79–3.89 pg, FCM. Republic of Kazakhstan, Almaty city, roadside, 43°13′32.77″N, 76°54′12.3″E, 6 Nov 2019, *T. An'kova & A. Petruk 214(211)* (NS).

Recently, the DNA amount in this species (2C = 3.79 pg) has been estimated using FCM by Šmarda & al. (2019).

Atriplex tatarica L.

2*n* ~ 2*x* ~ 18, 2C = 1.22–1.35 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, roadside, 43°52′ 47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208c(188)* (NS).

The amount of nuclear DNA was previously reported for *A. tatarica* by Šmarda & al. (2019: 2C = 1.17 pg) and Lomonosova & al. (2020: 2C = 1.30 pg).

Atriplex verrucifera M.Bieb.

2*n* ~ 2*x* ~ 18, 2C = 1.29–1.34 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, solonchak, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208b(201)* (NS).

2*n* ~ 2*x* ~ 18, 2C = 1.27–1.38 pg, FCM. Republic of Kazakhstan, Almaty Region, Enbekshikazakh District, on the Kopa River bank, solonchak, 43°30′57.7″N, 75°48′42.5″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 211(200)* (NS).

Our previous report for this species (2C = 1.29 pg in Lomonosova & al., 2020) agrees with the present one.

Bassia prostrata (L.) Beck

2*n* = 36, CHN. Republic of Kazakhstan, Karaganda Region, Ulytau District, dry steppe, 48°47′00.2N, 67°21′25.1E, 561 m, 7 Oct 2019, *I. Smelyanskiy s.n.* (NS).

**Camphorosma lessingii* Litv.

2*n* = 12, CHN. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, sands, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208a (194)* (NS).

2*n* ~ 2*x* ~ 12, 2C = 1.76–2.06 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, sands, 43°52′ 47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208a(194)* (NS).

2*n* ~ 2*x* ~ 12, 2C = 1.73–1.82 pg, FCM. Republic of Kazakhstan, Almaty Region, Enbekshikazakh District, vicinities of Kopa village, solonchak, 43°30′57.7″N, 75°48′42.5″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali, 211(191)* (NS).

**Ceratocarpus utriculosus* Bluket ex Krylov.

2*n* ~ 2*x* ~ 18, 2C = 1.33–1.47 pg, FCM. Republic of Kazakhstan, Almaty Region, Kapshagay city, sands, 43°50′27.2″N, 77°02′25.6″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 207(197)* (NS).

Chenopodium betaceum Andrz. (*C. strictum* auct.)

2*n* = 36, CHN. Republic of Kazakhstan, Almaty Region, Ile District, vicinities of Zhanaarna village, on the field, 43°35′22.4″N, 77°00′38.3″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 201(198)* (NS) [Fig. 2B].

2*n* ~ 4*x* ~ 36, 2C = 2.03–2.10 pg, FCM. Republic of Kazakhstan, Almaty Region, Ile District, vicinities of Zhanaarna village, on the field, 43°35′22.4″N, 77°00′38.3″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 201(198)* (NS).

The genome size of this species has been reported by various authors (Mandák & al., 2016: 2C = 2.068 pg; Kolano & al., 2019: 2C = 1.9 pg; Šmarda & al., 2019: 2C = 1.69 pg, 1.75 pg; Lomonosova & al., 2020: 1.98 pg).

**Girgensohnia oppositiflora* (Pall.) Fenzl

2*n* = 36, CHN; Republic of Kazakhstan, Almaty Region, Zhambyl District, vicinities of Targap village, northeastern spur of Zailiysky Alatau, steppe, 43°20′04.8″N, 75°52′50.0″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 213(237)* (NS). New cytotype for the species.

2*n* ~ 2*x* ~ 36, 2C = 6.77–7.94 pg, FCM. Republic of Kazakhstan, Almaty Region, Zhambyl District, vicinities of Targap village, northeastern spur of Zailiysky Alatau, steppe, 43°20′04.8″N, 75°52′50.0″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 213(237)* (NS).

**Kalidium foliatum* Moq.

2*n* ~ 2*x* ~ 18, 2C = 3.92–3.95 pg, FCM. Republic of Kazakhstan, Almaty Region, Enbekshikazakh District, Kopa river bank, solonchak, 43°30′57.7″N, 75°48′42.5″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 211(186)* (NS).

**Kalidium schrenkianum* Bunge ex Ung.-Sternb.

2*n* ~ 2*x* ~ 18, 2C = 4.01–4.11 pg, FCM. Republic of Kazakhstan, Almaty Region, Enbekshikazakh District, Kopa river bank, solonchak, 43°30′57.7″N, 75°48′42.5″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 211(187)* (NS).

Krascheninnikovia ceratoides (L.) Gueldenst.

2*n* = 18, CHN. Republic of Kazakhstan, Almaty Region, Zhambyl District, vicinities of Targap village, northeastern spur of Zailiysky Alatau, steppe, 43°20′04.8″N, 75°52′50.0″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 213(245)* (NS) [Fig. 2C].

2*n* = 36, CHN. Republic of Kazakhstan, Almaty Region, Kapshagay city, sands, 43°50′27.2″N, 77°02′25.6″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 207(243)* (NS) [Fig. 2D].

2*n* ~ 2*x* ~ 18, 2C = 2.26–2.71 pg, FCM. Republic of Kazakhstan, Almaty Region, Zhambyl District, vicinities of Targap village, northeastern spur of the Zailiysky Alatau, steppe, 43°20′04.8″N, 75°52′50.0″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 213(245)* (NS).

2*n* ~ 2*x* ~ 36, 2C = 5.48–5.75 pg, FCM. Republic of Kazakhstan, Almaty Region, Kapshagay city, sands, 43°50′27.2″N, 77°02′25.6″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 207(243)* (NS).

2*n* ~ 2*x* ~ 36, 2C = 5.54–6.09 pg, FCM. Republic of Kazakhstan, Kyzylorda Region, Turan Lowland, valley of Syr-Darya River, sands, 45°54′06.7″N, 62°08′47.8″E, 6 Sep 2019, *B. Osmonali & P. Vesselova 930(170)* (NS).

2*n* = 4*x* = 36, CHN. Republic of Kazakhstan, Karaganda Region, Ulytau District, 48°56′39″N, 67°12′01.0″E, 560 m, 6 Oct 2019, *I. Smelyanskiy s.n*. (NS).

The silica gel-dried leaves have been used for FCM of a sample from Kyzylorda Region. According to extensive measurements of DNA content in broadly sampled plants of *K. ceratoides* conducted by Seidl & al. (2020), diploid individuals have about 2C = 2.9 pg, and tetraploid ones 2C = 5.6 pg. According to our data, DNA content in tetraploid plants collected in Altai Republic and in Novosibirsk Region were 2C = 5.14 pg and 4.79 pg, respectively (Lomonosova & al., 2020).

**Salicornia* aff. *perennans* Willd.

2*n* = 4*x* = 36, CHN. Republic of Kazakhstan, Almaty Region, Enbekshikazakh District, Kopa river bank, solonchak, 43°30′57.7″N, 75°48′42.5″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 211* (NS); Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, solonchak, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208b(250)* (NS) [Fig. 2E].

2*n* ~ 4*x* ~ 36, 2C = 2.04–2.26 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, solonchak, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208b(250)* (NS).

Young seedlings grown from seeds have been used for measurement of nuclear DNA content. These two localities are the first findings of the tetraploid race of *Salicornia* in Central Asia. However, the presence of hidden polyploid accessions of *S*. aff. *perennans* within Central Asian was assumed by Kadereit & al. (2007).

Salsola tragus L.

2*n* ~ 4*x* ~ 36, 2C = 4.48–4.57 pg, FCM. Republic of Kazakhstan, Almaty Region, Kapshagay city, sands, 43°50′27.2″N, 77°02′25.6″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 207(196)* (NS).

The nuclear DNA amount of *S. tragus* was estimated by Ayres & al. (2009) as 2C = 3.15 pg on material from California.

**Suaeda heterophylla* (Kar. & Kir.) Bunge ex Boiss.

2*n* = 18, CHN; Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, sands, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208b(253)* (NS) [Fig. 2F].

2*n* ~ 2*x* ~ 18, 2C = 0.79–0.82 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, solonchak, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208b(253)* (NS).

**Suaeda linifolia* Pall.

2*n* ~ 2*x* ~ 18, 2C = 1.37–1.49 pg, FCM. Republic of Kazakhstan, Almaty Region, vicinities of Kapshagay city, solonchak, 43°52′47.7″N, 77°03′37.4″E, 2 Nov 2019, *T. An'kova, A. Petruk, B. Osmonali & P. Vesselova 208b(181)* (NS).

**Suaeda microphylla* Pall.

2*n* ~ 2*x* ~ 18, 2C = 4.43–4.69 pg, FCM. Republic of Kazakhstan, Almaty Region, Embekshikazakh District, vicinities of Kopa

village, solonchak, 43°29′56.5″N, 75°48′10.6″E, 3 Nov 2019, *T. An'kova, A. Petruk & B. Osmonali 212(185)* (NS).

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IAPT chromosome data 32/3

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* First chromosome count/DNA ploidy level/genome size for the species.
** First DNA ploidy level/genome size for the given region.

NITRARIACEAE

Nitraria pamirica L.I.Vassiljeva

*2*n* = 24, CHN. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, Eastern Pamir, on the cliff of the Djilga River, 3990 m, 37°36′11.88″N, 74°49′39.66″E, 27 Aug 2018, *E.V. Banaev & M.A. Tomoshevich 3000915* (NSK).

*2*n* = 48, CHN. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, Eastern Pamir, on the cliff of the Djilga River, 3990 m, 37°36′11.88″N, 74°49′39.66″E, 27 Aug 2018, *E.V. Banaev & M.A. Tomoshevich 3000917* (NSK).

*2*n* ~ 2*x* ~ 24, 2C = 1.50 pg (single sample), endopolyploidy was noted, FCM. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, Eastern Pamir, on the cliff of the Djilga River, 3990 m, 37°36′11.88″N, 74°49′39.66″E, 27 Aug 2018, *E.V. Banaev & M.A. Tomoshevich 3000915* (NSK) [Fig. 3A].

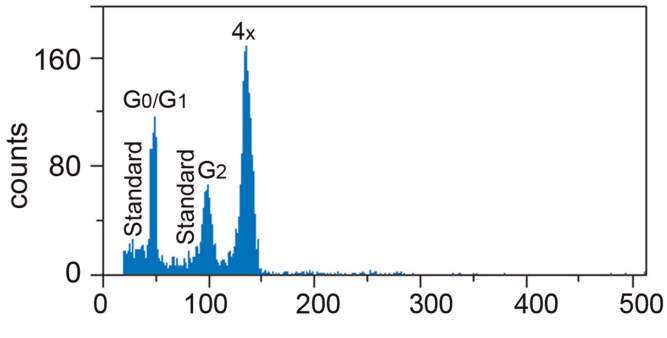
*2*n* ~ 4*x* ~ 48, 2C = 3.15 pg, endopolyploidy was noted, FCM. Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, Eastern Pamir, on the cliff of the Djilga River, 3990 m, 37°36′11.88″N, 74°49′39.66″E, 27 Aug 2018, *E.V. Banaev & M.A. Tomoshevich 3000917* (NSK) [Fig. 3B].

Nitraria schoberi L.

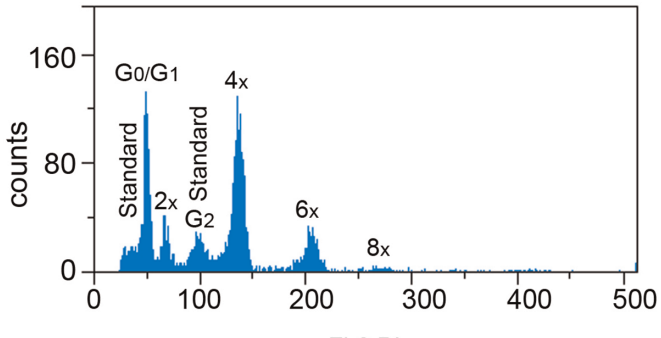
2*n* = 48, CHN. Republic of Kazakhstan, Almaty region, vicinity of Lepsy village, 46°14′04.26″N, 78°55′31.86″E, 11 Aug 2015, *E.V. Banaev & M.A. Tomoshevich 3000996* (NSK).

**2*n* ~ 4*x* ~ 48, 2C = 2.97–3.38 pg, FCM. Crimea, on the sandy shore of the Black Sea in Fox Bay, 44°53′37.38″N, 35°09′25.68″E, 15 Sep 2013, *E.V. Banaev & M.A. Tomoshevich 3000961* (NSK). P. R. China, Xinjiang Uygur Autonomous Region, the vicinity of Altai city, saline land, 47°51′54.02″N, 88°12′59.92″E, 22 Sep 2012, *D.N. Shaulo 3000914* (NSK). Republic of Kazakhstan, Almaty Region, Karatalskii District, vicinity of Ushtobe city, on the terrace of the river Karatal, 45°21′59.70″N, 77°55′02.88″E, 29 May 2016, *E.V. Banaev & M.A. Tomoshevich 3000951* (NSK); Republic of Kazakhstan, Almaty Region, Zhambylskii District, 17 km south of Aydarly village, 44°05′53.22″N, 75°58′41.34″E, 21 Aug 2017, *E.V. Banaev & M.A. Tomoshevich 3000958* (NSK); Republic of Kazakhstan, Almaty Region, on the shore of Lake Balkhash, sandy desert, 46°36′42.84″N, 79°14′12.54″E, 25 Jul 2013, *E.V. Banaev &*

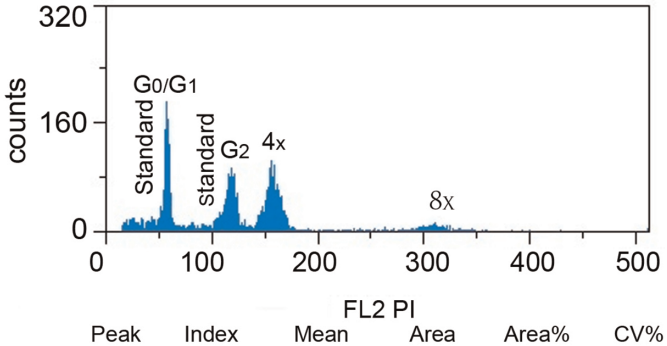
M.A. Tomoshevich 3000959 (NSK); Republic of Kazakhstan, Almaty Region, vicinity of Koktal village, 44°07′58.74″N, 79°43′47.94″E, 30 Jul 2013, *E.V. Banaev & M.A. Tomoshevich 3000999* (NSK); Republic of Kazakhstan, Almaty region, on the bank of the Lepsy River in outskirts of Lepsy village, 46°13′41.22″N, 78°57′43.23″E, 28 Jul 2013, *E.V. Banaev & M.A. Tomoshevich 3000997* (NSK); Republic of Kazakhstan, Almaty Region, 30 km north of Saryozek village, 44°34′54.54″N, 77°56′32.10″E, 29 Jul 2013, *E.V. Banaev & M.A. Tomoshevich 3000995* (NSK); Republic of Kazakhstan, Almaty Region, vicinity of Bashshi village, 44°07′58.74″N, 79°43′47.94″E, 30 Jul 2013, *E.V. Banaev & M.A. Tomoshevich 3000998* (NSK); Republic of Kazakhstan, Almaty Region, on the shore of Lake Balkhash, sandy desert, 46°46′14.70″N, 79°31′17.70″E, 25 Jul 2013, *E.V. Banaev & M.A. Tomoshevich 3000984* (NSK); Republic of Kazakhstan, Mangistauskaya Oblast', 6 km south of Tigen village, 44°25′40.62″N, 52°05′24.12″E, 10 Aug 2017, *E.V. Banaev & M.A. Tomoshevich 3000913* (NSK); Republic of Kazakhstan, Mangistauskaya oblast', vicinity of Aktau city, on sandy mound, 43°37′53.76″N, 51°14′07.68″E, 12 Jun 2012, *E.V. Banaev & M.A. Tomoshevich 3000978* (NSK); Republic of Kazakhstan, Mangistauskaya oblast', vicinity of Aktau city, on sandy mound, 43°34′48.18″N, 51°15′27.18″E, 12 Jun 2012, *E.V. Banaev & M.A. Tomoshevich 3000979* (NSK). Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, 10 km north of Ishkashim village, on the bank of the Pyanj River, 36°48′27.96″N, 71°33′32.16″E, 8 Aug 2014, *E.V. Banaev & M.A. Tomoshevich 3000993* (NSK); Republic of Tajikistan, Gorno-Badakhshan Autonomous Region, on the sandy bank of the Pyanj River, 36°56′53.34″N, 71°28′37.32′′E, 8 Aug 2014, *E.V. Banaev & M.A. Tomoshevich 3000994* (NSK). Russian Federation, Altaiskii krai, Slavgorodskii District, on the shore of Lake Kulundinskoe 52°56′26.82″ N, 79°42′54.90″E, 2 Jun 2011, *E.V. Banaev & M.A. Tomoshevich 3000975* (NSK); Russian Federation, Altaiskii krai, Mikhailovskii District, on the shore of Lake Malinovoe, 51°41′23.28″N, 79°45′19.50″E, 1 Jun 2011, *E.V. Banaev & M.A. Tomoshevich 3000971* (NSK); Russian Federation, Astrakhanskaya Oblast', Ikryaninskii District, 18 km south of Ikryanoye village, 45°57′26.52″N, 47°37′24.36″E, 25 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000933* (NSK); Russian Federation, Astrakhanskaya Oblast', Limanskii District, vicinity of Peschanoe village, 45°49′13.62″N, 47°19′46.56″E, 25 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000934* (NSK); Russian Federation, Astrakhanskaya oblast', Limanskii District, vicinity of Lesnoe village, 45°46′58.98″N, 47°28′55.86″E, 25 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000930* (NSK); Russian Federation, Astrakhanskaya oblast', Limanskii District, vicinity of Vyshka village, 45°37′51.12″N, 47°36′57.30″E, 25 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000935* (NSK); Russian Federation, Astrakhanskaya oblast', Volodarskii District, 5 km northwest of Volodarskii village, 46°24′



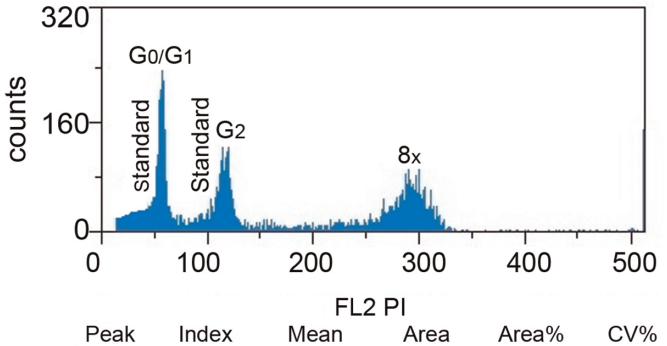
Peak	Index	Mean	Area	Area%	CV%
1	1.000	47.62	590	19.06	5.20
2	2.062	98.22	689	22.25	5.60
3	2.855	135.96	1816	58.69	3.57



Peak	Index	Mean	Area	Area%	CV%
1	1.000	49.24	789	25.22	6.23
2	1.365	67.20	266	8.49	4.92
3	2.068	101.81	429	13.70	4.86
4	2.769	136.32	1263	40.37	3.55
5	4.167	205.16	382	12.22	2.98



Peak	Index	Mean	Area	Area%	CV%
1	1.000	57.45	924	29.69	4.74
2	2.038	117.08	904	29.04	4.29
3	2.741	157.47	1285	41.27	4.02



Peak	Index	Mean	Area	Area%	CV%
1	1.000	56.59	717	29.35	6.59
2	2.040	115.42	646	26.45	5.26
3	5.182	293.24	1080	44.20	4.55

Fig. 3. Histogram of fluorescence intensity of propidium iodide: **A**, *N. pamirica*, $2n \sim 2x$; **B**, *N. pamirica*, $2n \sim 4x$; **C**, *N. schoberi*, $2n \sim 4x$; **D**, *N. schoberi*, $2n \sim 8x$.

32.76″N, 48°28′14.04″E, 27 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000936* (NSK); Russian Federation, Astrakhanskaya oblast', Akhtubinskii District, vicinity of Nizhnii Baskunchak village, 48°13′35.46″N, 46°50′09.42″E, 28 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000929* (NSK); Russian Federation, Astrakhanskaya oblast', Kamyzyakskii District, vicinity of Karalat village, 45°59′02.28″N, 48°16′42.18″E, 26 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000937* (NSK) [Fig. 3C]; Russian Federation, Novosibirskaya Oblast', southwest of the village Grushevka, on the terrace of Lake Bol'shoy Bagan, 53°53′08.55″N, 77°08′09.34″E, 4 Jun 2011, *E.V. Banaev & M.A. Tomoshevich 3000973* (NSK);

**2*n* ~ 8*x* ~ 96, 2C = 5.75 pg (single sample), FCM. Russian Federation, Astrakhanskaya oblast', Kamyzyakskii District, vicinity of Karalat village, 45°59′02.28″N, 48°16′42.18″E, 26 Jul 2018, *E.V. Banaev & M.A. Tomoshevich 3000938* (NSK) [Fig. 3D].

Nitraria tangutorum Bobrov

**2*n* = 24, 26, CHN. P. R. China, Ningxia Hui Autonomous Region, sandy desert, 38°45′50.47″N, 105°23′02.51″E, 25 Aug 2015, *E.V. Banaev & M.A. Tomoshevich 3000916* (NSK).

**2*n* ~ 2*x* ~ 24, 2C = 1.57 pg, FCM. P. R. China, Ningxia Hui Autonomous Region, sandy desert, 38°45′50.47″N, 105°23′02.51″E, 25 Aug 2015, *E.V. Banaev & M.A. Tomoshevich 3000916* (NSK).

METHODS

DNA ploidy levels and average genome size (AGS) were estimated from seeds. Results were acquired using a flow cytometer CyFlow SL (Partec, Münster, Germany) equipped with a green laser.

As an internal standard, we used fresh leaves of *Raphanus sativus* L. 'Saxa' (2C DNA = 1.11 pg) grown from seeds obtained from the Laboratory of Molecular Cytogenetics and Cytometry, Institute of Experimental Botany, Academy of Sciences of the Czech Republic, in Olomouc-Holice (Doležel & al., 1992). Samples were prepared from fresh, intact leaves in a two-step laboratory procedure according to the manufacturer's protocol. First, the sample and standard were co-chopped with a sharp razor blade in a Petri dish in 0.5 ml of ice-cold extracting buffer (Nuclei Extraction Buffer) (Sysmex Partec), and the cell suspension was filtered through a 42 µm nylon mesh. Then, the filtered solution was supplemented with staining solution containing the staining buffer (Sysmex Partec) with propidium iodide (50 µg/ml) and RNAse A (50 µg/ml) added PVP and analyzed (Banaev & al., 2018).

Ten thousand nuclei were recorded for each measurement. To avoid potential biases caused by random instrumental drift and presence of secondary metabolites the following tests were carried out: the AGS of each individual was measured independently three times in different days; the coefficient of variation (CV) of sample and standard were accepted only if they did not exceed 3%–5% in snowbell sample and 5%–7% in standard; the day-to-day difference among particular measurements did not exceed the critical threshold of 2%.

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Banaev, E.V., Tomoshevich, M.A. & Voronkova, M.S. 2018. Flow cytometry analysis of the relative content of nuclear DNA in *Nitraria schoberi* L. seeds. *Bot. Pacifica* 7: 89–92. https://doi.org/10.17581/bp.2018.071

Doležel, J., Sgorbati, S. & Lucretti, S. 1992. Comparison of three DNA fluorochromes for flow cytometric estimation of nuclear DNA content in plants. *Physiol. Pl. (Copenhagen)* 85: 625–631. https://doi.org/10.1111/j.1399-3054.1992.tb04764.x

IAPT chromosome data 32/4

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The authors are thankful to curators of CSBG (NS, NSK) for scanning the specimens and creating the Digital Herbarium CSBG (http://herb.csbg.nsc.ru:8081).

Samples of species of violets (*Viola* L., Violaceae) reported in this communication are cultivated in the collections of the Central Siberian Botanical Garden of the SB RAS, Novosibirsk (by T.V. Elisafenko).

* First chromosome count for the species.

LAMIACEAE

Nepeta bucharica Lipsky

2*n* = 16, CHN. Kyrgyzstan, Talas Oblast', pass of Alabel, the upper river of Chichkan, along the river bed, alpine belt, 42°15′16.10″N, 73°00′08.40″E, 2800 m, 11 Aug 2017, *A.Yu. Astashenkov & V.A. Cheryomushkina s.n.* (NSK NSK0068401).

Nepeta densiflora Kar. & Kir.

*2*n* = 18, CHN. Kazakhstan, East Kazakhstan Oblast', the axial part of Narymsky ridge, Jaidak River, along a temporary watercourse, pebble, subalpine belt, 49°03′47.6″N, 84°56′12.7″E, 2041 m, 15 Aug 2016, *A.Yu. Astashenkov & V.A. Cheryomushkina s.n.* (NSK NSK0068403) [Fig. 4A].

Nepeta mariae Regel

*2*n* = 16, CHN. Tajikistan, Sogdian Oblast', Zeravshan ridge, ravines of Voru, rocky slope, steppe belt, 39°13′31.1″N, 67°56′16.4″E, 3016 m, 13 Jul 2014, *A.Yu. Astashenkov & V.A. Cheryomushkina s.n.* (NSK NSK0068402).

VIOLACEAE

Viola ingolensis T.Elisafenko

*2*n* = 24, CHN. Russia, Republic of Khakasiya, Askizskii Raion, valley of the Kamyshta River, salted steppe with *Achnatherum*, 53°17′N, 90°47′E, 312 m, 26 May 2014, *T.V. Elisafenko s.n.* (NSK NSK0068409) [Fig. 4B].

Viola irinae Zolot.

2*n* = 24, CHN. Russia, Altaiskii Krai, Biyskii Raion, vicinity of Srostki village, Mount Picket, hay meadow, 52°24.767′N, 85°42.678′E, 27 May 2015, *T.V. Elisafenko s.n.* (NSK NSK0068410); Russia, Republic of Altai, Chemal'skii Raion, Kuyum River, at the intersection with the Chemal Highway, 51.50°N, 85.97°E, 25 Jun 2011, *T.V. Elisafenko s.n.* (NSK NSK0068406) [Fig. 4C].

Viola jeniseensis Zuev

*2*n* = 24, CHN. Russia, Republic of Khakasiya, Abakan city, Park of Culture and Rest, clearings among poplar, 53.72608°N, 91.47688°E, 25 May 2014, *T.V. Elisafenko s.n.* (NSK NSK0068412); Russia, Krasnoyarskii Krai, Ilyichevo village, shrubby, herbaceous and grassy black poplar park near the House of Culture, 54.81982°N, 83.10579°E, 28 May 2014, *T.V. Elisafenko s.n.* (NSK NSK0068405) [Fig. 4D].

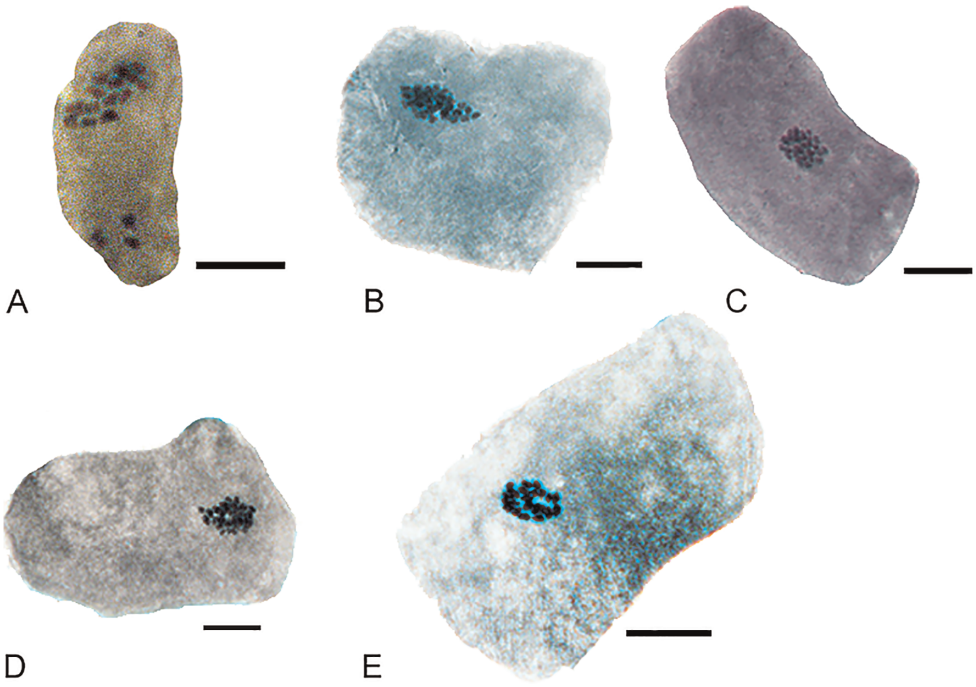

Fig. 4. Mitotic metaphases: **A**, *Nepeta densiflora*, 2*n* = 18; **B**, *Viola ingolensis*, 2*n* = 24; **C**, *Viola irinae*, 2*n* = 24; **D**, *Viola jeniseensis*, 2*n* = 24; **E**, *Viola pacifica*, 2*n* = 24. — Scale bars = 10 µm.

Viola milanae Vl.V.Nikitin

*2*n* = 24, CHN. Russia, Republic of Buryatiya, Tunkinskii Raion, vicinity of Mondy village, grass-legume larch forest, 51.67°N, 100.98°E, 23 Aug 2015, *T.V. Elisafenko & S.G. Kazanovsky s.n*. (NSK NSK0068408); Russia, Irkutskaya Oblast', left bank of the Slyudyanka River, meadow on south-facing slope, 51°38′039″N, 103°40′449″E, 586 m, 8 Aug 2015, *T.V. Elisafenko & S.G. Kazanovsky s.n*. (NSK NSK0068407).

Viola pacifica Juz.

2*n* = 24, CHN. Russia, Primorskii Krai, Khasansky Raion, Gamov Peninsula, Cape Shulza, broadleaf forest, 42.58°N, 131.17°E, 13 Oct 2014, *T.V. Elisafenko s.n*. (NSK NSK0068404) [Fig. 4E].

IAPT chromosome data 32/5

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POACEAE

Agropyron cristatum (L.) Gaertn.

2*n* = 28, CHN. Russia, West Siberia, Altaiskii Krai, Rubtsovskii Raion, riverside of the Kiziha River, canyon, 51.46722°N, 81.615°E, 9 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-21* (LE).

Agrostis gigantea Roth

2*n* = 42, CHN. Russia, West Siberia, Republic of Altai, Chemalskii Raion, confluence of the Edikhta and Adylda Rivers, cedar-fir forest, 880 m, 51.216111°N, 86.470833°E, 21 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-486* (LE).

Alopecurus aequalis Sobol.

2*n* = 14, CHN. Russia, Northwestern Russia, Arkhangelskaya Oblast', Onezhskii Raion, surroundings of Purnema settlement, coast of a lake, 64.366667°N, 37.416667°E, 25 Jul 2019, *N. Nosov, A. Gnutikov & A. Rodionov Pur19-29* (LE).

Alopecurus arundinaceus Poir.

2*n* = 28, CHN. Russia, Northwestern Russia, Arkhangelskaya Oblast', Onezhskii Raion, surroundings of Purnema settlement, coast of a lake, 64.366667°N, 37.416667°E, 25 Jul 2019, *N. Nosov, A. Gnutikov & A. Rodionov Pur19-45* (LE).

Alopecurus geniculatus L.

2*n* = 28, CHN. Russia, Northwestern Russia, Leningradskaya Oblast', Vsevolozhskii Raion, the surroundings of Steklyannyi settlement, 1 Aug 2018, *E. Punina LO-3* (LE).

Alopecurus pratensis L.

2*n* = 28, CHN. Russia, Northwestern Russia, Leningradskaya Oblast, Lomonosovskii Raion, the surroundings of Villosi settlement, 25 Aug 2018, *E. Punina LO-2* (LE).

Alopecurus vlassowii Trin.

2*n* = ca. 120, CHN. Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, lakeside of the Bol'shie Boguty Lake, 49.920833°N, 89.586944°E, 31 Aug 2019, *E. Punina, A. Gnutikov & A. Rodionov Alt19-161* (LE).

Beckmannia syzigachne (Steud.) Fernald

2*n* = 14, CHN. Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, lakeside of the Bol'shie Boguty Lake, on the gravel in the water, 49.9075°N, 89.691944°E, 31 Aug 2019, *E. Punina, A. Gnutikov & A. Rodionov Alt19-178* (LE); Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, riverside of the Boguty River, 49.768611°N, 89.658611°E, 30 Aug 2019, *E. Punina, A. Gnutikov & A. Rodionov Alt19-192* (LE).

Cinna latifolia (Trevir. ex Göpp.) Griseb.

2*n* = 28, CHN. Russia, West Siberia, Republic of Altai, Chemalskii Raion, confluence of the Edikhta and Adylda Rivers, cedar-fir forest, 880 m, 51.216111°N, 86.470833°E, 21 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-459* (LE).

Deschampsia cespitosa (L.) P.Beauv.

2*n* = 26, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Topol'noe settlement, near the confluence of the Askati and Anuy Rivers, 51.597778°N, 84.742222°E, 11 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-84* (LE).

Elymus mutabilis (Drobow) Tzvelev

2*n* = 28, CHN. Russia, West Siberia, Republic of Altai, Ulaganskii Raion, W of Chibit village, left bank of the Chuya River, 50.483056°N, 87.487778°E, 13 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-314* (LE).

Elymus peschkovae Tzvelev

2*n* = 28, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Topol'noe settlement, confluence of the Askati and Anuy Rivers, 650 m, 51.597778°N, 84.74222°E, 11 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-87* (LE).

Elytrigia gmelinii (Trin.) Nevski

2*n* = 14, CHN. Russia, West Siberia, Republic of Altai, Ulaganskii Raion, steep slope, near the Bashkaus River, 1340 m, 50.56777°N, 88.30416°E, 23 Aug 2012, *E. Punina, N. Nosov & A. Rodionov Alt12-181* (LE).

Melica altissima L.

2*n* = 18, CHN. Russia, West Siberia, Altaiskii Krai, Rubtsovskii Raion, riverside of the Kiziha River, canyon, 51.46722°N, 81.615°E, 9 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-27* (LE); Russia, West Siberia, Republic of Altai, Chemalskii Raion, riverside of the Katun River, between Elanda and Edigan settlements, 51.18333°N, 86.26611°E, 21 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-402* (LE).

Melica transsilvanica Schur

2*n* = 18, CHN. Russia, West Siberia, Republic of Altai, Ongudaiskii Raion, right riverside of the Ursul River, near the Russian route M52 (Chuya Highway), 50.813889°N, 86.410833°E, 6 Sep 2019, *E. Punina, A. Gnutikov & A. Rodionov Alt19-359* (LE).

Molinia caerulea (L.) Moench

2*n* = 36, CHN. Russia, Central Russia, Republic of Mordovia, Temnikovskii Raion, Mordovskii zapovednik (Nature Reserve), pine forest, edge of a swamp, 54.786029°N, 43.440295°E, 28 Oct 2017, *O. Grishutkin Mr-1* (LE).

Phleum alpinum L.

2*n* = 28, CHN. Russia, North Caucasus, Republic of Adygea, Maikopskii Raion, Oshten Mountain, north slope, alpine meadow, 2094 m, 19 Sep 2005, *E. Punina, A. Rodionov & S. Bondarenko K-30* (LE).

Phleum bertolonii DC.

2*n* = 14, CHN. Russia, Northwestern Russia, Leningradskaya Oblast', Vsevolozhskii Raion, surroundings of Steklyannyi settlement, clearing in the forest, 1 Aug 2018, *E. Punina LO-1* (LE).

Phleum montanum K.Koch

2*n* = 14, CHN. Russia, North Caucasus, Republic of Adygea, Maykopskii Raion, surroundings of Guzeripl' settlement, steep slope, 15 Sep 2005, *E. Punina, A. Rodionov & S. Bondarenko K-1* (LE).

Phleum phleoides (L.) H.Karst.

2*n* = 14, CHN. Russia, West Siberia, Altaiskii Krai, Rubtsovskii Raion, riverside of the Kiziha River, canyon, 51.46722°N, 81.615°E, 9 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-11* (LE); Russia, West Siberia, Republic of Altai, Ongudaiskii Raion, right riverside of the Ursul River, near the Russian route M52 (Chuya Highway), 50.813889°N, 86.410833°E, 6 Sep 2019, *E. Punina, A. Gnutikov & A. Rodionov Alt19-376* (LE).

Phleum pratense L.

2*n* = 42, CHN. Russia, Northwestern Russia, Arkhangelskaya Oblast', Onezhskii Raion, surroundings of Purnema settlement, the coast of lake, 64.366667°N, 37.416667°E, 25 Jul 2019, *N. Nosov, A. Gnutikov & A. Rodionov Pur19-13* (LE).

Ptilagrostis mongholica (Turcz. ex Trin.) Griseb.

2*n* = 22, CHN. Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, road to Adai Lake, alpine tundra, 49.777778°N, 89.63583°E, 29 Aug 2018, *E. Punina, A. Gnutikov & A. Rodionov Alt19-224* (LE).

Puccinellia kalininae Bubnova

2*n* = 14, CHN. Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, left riverside of the Justyt River, brackish meadow, willow thicket, 1820 m, 49.91666°N, 88.91666°E, 27 Aug 2006, *E. Punina & A. Rodionov Alt516* (LE).

Schizachne callosa (Turcz. ex Griseb.) Ohwi

2*n* = 20, CHN. Russia, West Siberia, Republic of Altai, Ulaganskii Raion, W of Chibit village, left bank of the Chuya River, 50.483056°N, 87.487778°E, 13 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-303* (LE); Russia, West Siberia, Republic of Altai, Chemalskii Raion, riverside of the Katun River, Patmos island, near Church of St. John the Evangelist, 51.604167°N, 86.124722°E, 22 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-460* (LE).

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POACEAE

Alopecurus aequalis Sobol.

2*n* = 14, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Tal'menka settlement, riverside of the Bol'-shaya Rechka River, 51.810556°N, 84.201944°E, 10 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-54* (LE); Russia, West Siberia, Republic of Altai, Ongudaiskii Raion, subalpine meadow, 1597 m, 51.286944°N, 86.726389°E, 22 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-525* (LE).

Alopecurus pratensis L.

2*n* = 28, CHN. Russia, West Siberia, Altaiskii Krai, Rubtsovskii Raion, riverside of the Kiziha River, canyon, 51.46722°N, 81.615°E, 9 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-08* (LE); Russia, West Siberia, Republic of Altai, Ust'-Kanskii Raion, mountain pass Keleiskii, 1300 m, 51.316389°N, 84.85722°E, 12 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-106* (LE); Russia, West Siberia, Republic of Altai, Shebalinskii Raion, riverside of the Sema River, 51.2675°N, 85.680556°E, 20 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-391* (LE); Russia, West Siberia, Republic of Altai, Ongudaiskii Raion, mountain range Kuminskii Belki, Kabarga mountain, 51.315556°N, 86.528889°E, 22 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-475* (LE).

Beckmannia syzigachne (Steud.) Fernald

2*n* = 14, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Tal'menka settlement, riverside of the Bol'shaya Rechka River, 51.810556°N, 84.201944°E, 10 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-57* (LE); Russia, West Siberia, Altaiskii Krai, Krasnoshchekovskii Raion, outskirts of Novoshipunovo settlement, riverside of the Vydrikha River, 51.895°N, 83.24333°E, 10 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-65* (LE); Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Topol'noe settlement, confluence of the Askati and Anuy Rivers, 650 m, 51.597778°N, 84.74222°E, 11 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-109* (LE); Russia, West Siberia, Republic of Altai, Shebalinskii Raion, riverside of the Sema River, 51.2675°N, 85.680556°E, 20 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-392, Alt18-394* (LE).

Melica altissima L.

2*n* = 18, CHN. Russia, West Siberia, Altaiskii Krai, Rubtsovskii Raion, riverside of the Kiziha River, canyon, 51.46722°N, 81.615°E, 9 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-19* (LE); Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, rocky cliffs between Topolnoe settlement and Tog-Altai village, 51.569722°N, 84.568889°E, 12 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-80* (LE).

Melica transsilvanica Schur

2*n* = 18, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Soloneshnoe settlement, stony steppe, 540 m, 51.761111°N, 84.546111°E, 10 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-68* (LE).

Milium effusum L.

2*n* = 28, CHN. Russia, West Siberia, Republic of Altai, Chemalskii Raion, riverside of the Kuzhoy River, 51.080278°N, 86.48°E, 21 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-489* (LE).

Phleum alpinum L.

2*n* = 28, CHN. Russia, West Siberia, Republic of Altai, Chemalskii Raion, lakeside of the Manas Lake, 1922 m, 51.100241°N, 86.53746°E, 22 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-428* (LE); Russia, West Siberia, Republic of Altai, Ongudaiskii Raion, road to Manas Lake, subalpine meadow, 51.28694°N, 84.726389°E, 22 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-495* (LE).

Phleum phleoides (L.) H.Karst.

2*n* = 14, CHN. Russia, West Siberia, Altaiskii Krai, Rubtsovskii Raion, riverside of the Kiziha River, canyon, 51.46722°N, 81.615°E, 9 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-02* (LE); Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Tal'menka settlement, riverside of the Bol'schaya Rechka River, 51.810556°N, 84.201944°E, 10 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-56* (LE); Russia, West Siberia, Republic of Altai, Ulagansky Raion, W of Chibit village, left bank of the Chuya River, waterfall by the Kara-Suu River, 50.502778°N, 87.504167°E, 13 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-291* (LE); Russia, West Siberia, Republic of Altai, Chemalskii Raion, surroundings of Chemal settlement, 51.4825°N, 86.056389°E, 20 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-398* (LE); Russia, West Siberia, Republic of Altai, Chemalskii Raion, riverside of the Katun River, between Elanda and Edigan settlements, 51.18333°N, 86.26611°E, 21 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-403* (LE).

Phleum pratense L.

2*n* = 42, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Tal'menka settlement, riverside of the Bol'schaya Rechka River, 51.810556°N, 84.201944°E, 10 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-55* (LE); Russia, West Siberia, Altaiskii Krai, Krasnoshchekovskii Raion, near the Novoshipunovo settlement, riverside of the Vydricha River, 400 m, 51.895°N, 83.24333°E, 10 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-63* (LE); Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, the surroundings of Topol'noe settlement, near the confluence of the Askati and Anuy Rivers, 51.597778°N, 84.742222°E, 11 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-81* (LE); Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Topol'noe settlement, near the confluence of the Askati and Anuy Rivers, 51.597778°N, 84.742222°E, 11 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-100* (LE); Russia, West Siberia, Republic of Altai, Ulagansky Raion, W of Chibit village, left bank of the Chuya River, waterfall by the Kara-Suu River, 50.502778°N, 87.504167°E, 13 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-290* (LE); Russia, West Siberia, Republic of Altai, Chemalskii Raion, riverside of the Edigan River, surroundings of Edigan settlement, 51.195556°N, 86.148333°E, 21 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-478* (LE).

Poa trivialis L.

2*n* = 14, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Topol'noe settlement, near the confluence of the Askati and Anuy Rivers, 51.597778°N, 84.742222°E, 11 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-95* (LE).

Ptilagrostis junatovii Grubov

2*n* = 22, CHN. Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, Kuray Mountain range, W of the Tobogok River, alpine tundra, 2630 m, 50.2475°N, 88.958611°E, 14 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-266* (LE).

Ptilagrostis mongholica (Turcz. ex Trin.) Griseb.

2*n* = 22, CHN. Russia, West Siberia, Republic of Altai, Kosh-Agachskii Raion, Kuray Mountain range, W of the Tobogok River, alpine tundra, 2630 m, 50.2475°N, 88.958611°E, 14 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-267* (LE).

Schedonorus pratensis (Huds.) P.Beauv.

2*n* = 14, CHN. Russia, West Siberia, Altaiskii Krai, Soloneshenskii Raion, surroundings of Topol'noe settlement, confluence of the Askati and Anuy Rivers, 650 m, 51.597778°N, 84.74222°E, 11 Aug 2018, *E. Punina, A. Gnutikov, N. Nosov & A. Rodionov Alt18-91* (LE).

Schizachne callosa (Turcz. ex Griseb.) Ohwi

2*n* = 20, CHN. Russia, West Siberia, Republic of Altai, Ulaganskii Raion, W of Chibit village, left bank of the Chuya River, 50.483056°N, 87.487778°E, 13 Aug 2018, *E. Punina, N. Nosov, A. Gnutikov & A. Rodionov Alt18-317* (LE).

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POACEAE

Anisantha tectorum (L.) Nevski

2*n* = 14, CHN. Russia, Central Russia, Tambovskaya Oblast', train station "Michurinsk-Voronezh", along the railway, 18 Jun 2011, *A. Gnutikov & R. Ufimov Tam11-2* (LE); Russia, North Caucasus, Republic of Dagestan, Agulskii Raion, surroundings of Amuh village, alpine meadow, 2287 m, 41.91122°N, 47.54883°E, 23 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-13* (LE).

Brachypodium sylvaticum (L.) P.Beauv.

2*n* = 18, CHN. Abkhazia, Sukhumskii Raion, 6 km N of Sukhumi city, left riverside of the Gumisty River, on rocks, near the water, 10 Oct 2011, *A. Gnutikov & R. Ufimov Ab11-4* (LE); Russia, North Caucasus, Republic of Dagestan, Derbentskii Raion, Derbent sity, vicinity of the citadel of Naryn-Kala, oak forest, 151 m, 42.0518°N, 47.27483°E, 27 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-15* (LE).

Bromus commutatus Schrad.

2*n* = 28, CHN. Russia, North Caucasus, Republic of Dagestan, Derbentskii Raion, Derbent city, vicinity of the citadel of Naryn-Kala, oak forest, 151 m, 42.0518°N, 47.27483°E, 27 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-14* (LE).

C*alamagrostis caucasica* Trin.

2*n* = 28, CHN. Russia, North Caucasus, Republic of Dagestan, Agulskii Raion, vicinity of Amuh village, alpine meadow, 2287 m, 41.91122°N, 47.54883°E, 23 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-16* (LE).

Colpodium versicolor (Steven) Schmalh.

2*n* = 4, CHN. Russia, North Caucasus, Republic of Dagestan, Dokuzparinskii Raion, Shalbuzdag Mountain, rocky slope, 3645 m, 41.33583°N, 47.80797°E, 17 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-7* (LE); Russia, North Caucasus, Republic of Dagestan, Dokuzparinskii Raion, Shalbuzdag Mountain, rocky slope, 3240 m, 41.34853°N, 47.80864°E, 17 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-9* (LE); Russia, North Caucasus, Republic of Dagestan, Dokuzparinskii Raion, Shalbuzdag Mountain, rocky slope, 3320 m, 41.34486°N, 47.80997°E, 17 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-10* (LE).

Deschampsia media (Gouan) Roem. & Schult.

2*n* = 26, CHN. Russia, Southern Russia, Krasnodar Krai, vicinity of Novorossiisk city, on sand, 15 Jun 2012, *A. Gnutikov Kr12-1* (LE).

Holcus lanatus L.

2*n* = 14, CHN. Abkhazia, Gudauta District, New Athos town, along the trail to Iverian Mountain, 26 Jun 2011, *A. Gnutikov & R. Ufimov Ab11-3* (LE).

Phleum paniculatum Huds.

2*n* = 28, CHN. Russia, North Caucasus, Republic of Dagestan, Magaramkentskii Raion, surroundings of Garah village, at a stream, 790 m, 41.4798°N, 48.04217°E, 18 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-2* (LE).

Phleum pratense L.

2*n* = 42, CHN. Russia, North Caucasus, Republic of Dagestan, Agulskii Raion, surroundings of Richa village, basin of the Charag-Chai River, subalpine meadow, 23 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-11* (LE).

Poa alpina L.

2*n* = 35, CHN. Russia, North Caucasus, Republic of Dagestan, Dokuzparinskii Raion, Shalbuzdag Mountain, rocky slope, 3029 m, 41.36069°N, 47.81247°E, 17 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-5* (LE).

Poa badensis Haenke ex Willd.

2*n* = 14, CHN. Russia, North Caucasus, Republic of Dagestan, Agulskii Raion, surroundings of Chirag village, alpine meadow, 2113 m, 41.80906°N, 47.45306°E, 24 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-3* (LE).

Poa biebersteinii H.N.Pojark.

2*n* = 56, CHN. Russia, North Caucasus, Republic of Dagestan, Agulskii Raion, surroundings of Chirag village, alpine meadow,

2113 m, 41.80906°N, 47.45306°E, 24 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-4* (LE).

Poa compressa L.

2*n* = 42, CHN. Abkhazia, Gagra District, along the road to waterfall Gegsky, rocky slope, 500 m, 43.573333°N, 40.611389°E, 1 Jul 2011, *A. Gnutikov & R. Ufimov Ab11-1* (LE); Russia, North Caucasus, Republic of Dagestan, Derbentskii Raion, Derbent city, vicinity of the citadel of Naryn-Kala, oak forest, 151 m, 42.0518°N, 47.27483°E, 27 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-8* (LE).

Poa glauca Vahl

2*n* = 56, CHN. Russia, North Caucasus, Republic of Dagestan, Dokuzparinskii Raion, Shalbuzdag Mountain, rocky slope, 3423 m, 41.3447°N, 47.809°E, 17 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-6* (LE).

Poa pratensis L.

2*n* = 52, CHN. Abkhazia, Gagra District, along the road to waterfall Gegsky, rocky slope, 500 m, 43.573333°N, 40.611389°E, 1 Jul 2011, *A. Gnutikov & R. Ufimov Ab11-2* (LE).

Poa sterilis M.Bieb.

2*n* = 35, CHN. Russia, North Caucasus, Republic of Dagestan, Dokuzparinskii Raion, Shalbuzdag Mountain, rocky slope, 3302 m, 41.34486°N, 47.80997°E, 17 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-12* (LE).

Setaria viridis (L.) P.Beauv.

2*n* = 18, CHN. Russia, North Caucasus, Republic of Dagestan, Magaramkentskii Raion, 2 km N of Samur settlement, oak-hornbeam forest, 10 m, 41.83406°N, 48.48489°E, 29 Sep 2011, *A. Gnutikov & R. Ufimov Dag11-1* (LE).

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ASTERACEAE

Doronicum altaicum Pall.

2*n* = 60, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, river sources of the Nizhnyaya Buyba, Raduzhnoe lakeside, open fir woodland, 1467 m, 52.835038°N, 93.347137°E, 13 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1688* (IRKU).

FABACEAE

Lathyrus frolovii Rupr.

2*n* = 14, CHN. Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., northern spurs of the Monysh Ridge, near Highway P257 – 'Enisei', Ona riverside, 2.5 km above the confluence with the Maly On River, floodplain fir-cedar forest with birch, 784 m, 52.057791°N, 89.730494°E, 16 Jun 2018, *V.V. Chepinoga, V.V. Pavlichenko & M.V. Protopopova C1703* (IRKU).

GENTIANACEAE

Gentiana grandiflora Laxm.

2*n* = 26, CHN. Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., near Highway P257 – 'Enisei', upper course of the Bol'shoy On River, 1.5 km N of Sayan pass, an alpine meadow along the riverside, 2080 m, 51.715213°N 89.885315°E, 15 Jun 2018 *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1701* (IRKU).

OROBANCHACEAE

Pedicularis incarnata L.

2*n* = 16, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, Nizhnyaya Buyba River sources, Raduzhnoe lakeside, open cedar-fir woodland near the timberline, 1384 m, 52.833887°N, 93.328608°E, 13 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1693* (IRKU).

Pedicularis oederi Vahl ex Hornem.

2*n* = 16, CHN. Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., near Highway P257 – 'Enisei', 1.5 km N of Sayan pass, upper course of the Bol'shoy On River, lichen tundra, 2095 m, 51.715994°N, 89.883452°E, 15 Jun 2018, *V.V. Chepinoga & V.V. Pavlichenko C1698* (IRKU).

PRIMULACEAE

Primula nivalis Pall.

2*n* = 22, CHN. Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., near Highway P257 – 'Enisei', upper course of the Bol'shoy On River, 1.5 km N of Sayan pass, alpine meadow along the riverside, 2080 m, 51.715213°N 89.885315°E, 15 Jun 2018, *V.V. Chepinoga, V.V. Pavlichenko & M.V. Protopopova C1697* (IRKU).

Primula pallasii Lehm.

2*n* = 22, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, upper course of the Nizhnyaya Buyba River (a tributary of the Us River), subalpine meadow, 1313 m, 52.824383°N, 93.309001°E, 11 Jun 2018, *V.V. Pavlichenko, V.V. Chepinoga & M.V. Protopopova C1680* (IRKU).

RANUNCULACEAE

Anemone altaica Fisch. ex C.A.Mey.

2*n* = 32, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, upper course of the Nizhnyaya Buyba River (a tributary of the Us River), subalpine meadow, 1313 m, 52.824383°N, 93.309001°E, 11 Jun 2018, *V.V. Pavlichenko, V.V. Chepinoga & M.V. Protopopova C1681* (IRKU).

Anemone baicalensis Turcz. (≡ *Anemonastrum baicalense* (Turcz.) Mosyakin)

2*n* = 28, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., 14 km SE of Tanzybey settlement, middle course of the Bol'shoy Kebezh River, near the Krutoi Klyuch River mouth, a floodplain birch-fir forest, 406 m, 53.071575°N, 93.132594°E, 11 Jun 2018, *V.V. Pavlichenko, V.V. Chepinoga & M.V. Protopopova C1678* (IRKU); Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., 6 km NW of Tanzybey settlement, aspen forest, 467 m, 53.170783°N, 92.880918°E, 12 Jun 2018, *V.V. Pavlichenko, V.V. Chepinoga, N.V. Stepanov & M.V. Protopopova C1686* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Slyudyanskii Raion, Khamar-Daban Ridge, upper course of the Saibat River (a tributary of the Khara-Mutin River), 2 km SW from the peak of Mt. Osinovsky Golets, wet meadow along a stream bank, 1579 m, 51.406169°N, E104.134802°E, 2 Aug 2018, *V.V. Pavlichenko & M.V. Protopopova C1711* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Slyudyanskii Raion, Khamar-Daban Ridge, left bank of the Snezhnaya River lower course, 9 km S of Lake Baikal, surroundings of the Warm Lakes, floodplain mixed forest, 484 m, 51.391674°N, 104.657386°E, 6 Aug 2018, *V.V. Pavlichenko C1723* (IRKU).

Anemone sibirica L. (≡ *Anemonastrum sibiricum* (L.) Holub)

2*n* = 14, CHN. Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., near Highway P257 – 'Enisei', 1.5 km N of Sayan pass, upper course of the Bol'shoy On River, dwarf birch–lichen tundra, 2088 m, 51.715669°N, 89.886004°E, 15 Jun 2018, *V.V. Chepinoga, V.V. Pavlichenko & M.V. Protopopova, C1695* (IRKU).

Callianthemum sajanense (Regel) Witasek

2*n* = 16, CHN. Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., near Highway P257 – 'Enisei', upper course of the Bol'shoy On River, 1.5 km N of Sayan pass, alpine meadow along the riverside, 2080 m, 51.715213°N, 89.885315°E, 15 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1700* (IRKU).

Caltha palustris L.

2*n* = 32, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, the Nizhnyaya Buyba River sources, Raduzhnoe lakeside, open fir woodland, 1467 m, 52.835038°N, 93.347137°E, 13 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1689* (IRKU); Russia, West Siberia, Republic of Khakassia, Tashtypskii Raion, Western Sayan Mts., near Highway P257 – 'Enisei', upper course of the Bol'shoy On River, 1.5 km N of Sayan pass, alpine meadow along the riverside, 2080 m, 51.715213°N, 89.885315°E, 15 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1699* (IRKU).

Trollius vitalii Stepanov

2*n* = 16, CHN. Russia, East Siberia, Krasnoyarskii Krai, Yermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, Nizhnyaya Buyba River sources, Raduzhnoe lakeside, open cedar-fir woodland near the timberline, 1384 m, 52.833887°N, 93.328608°E, 13 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1694* (IRKU).

ROSACEAE

Waldsteinia ternata (Stephan) Fritsch

2*n* = 28, CHN. Russia, East Siberia, Irkutskaya Oblast', Slyudyanskii Raion, Khamar-Daban Ridge, left bank of the Snezhnaya River lower course, 9 km S of Lake Baikal, surroundings of the Warm Lakes, floodplain mixed forest, 484 m, 51.391674°N, 104.657386°E, 6 Aug 2018, *V.V. Pavlichenko C1725* (IRKU); Russia, East Siberia, Irkutskaya Oblast', Slyudyanskii Raion, Khamar-Daban Ridge, middle course of the Tal'tsynka River (a tributary of the Snezhnaya River), 14 km S of Lake Baikal, fir-cedar-fern forest, 599 m, 51.357040°N, 104.633476°E, 6 Aug 2018, *M.V. Protopopova C1732* (IRKU).

SAXIFRAGACEAE

Bergenia crassifolia (L.) Fritsch

2*n* = 34, CHN. Russia, East Siberia, Krasnoyarskii Krai, Ermakovskii Raion, Western Sayan Mts., Ergaki Nature Park, the Nizhnyaya Buyba River sources, Raduzhnoe lakeside, open fir woodland, 1467 m, 52.835038°N, 93.347137°E, 13 Jun 2018, *V.V. Pavlichenko, M.V. Protopopova & V.V. Chepinoga C1690* (IRKU).

IAPT chromosome data 32/9

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MATERIALS AND METHODS

Plant materials (living specimens) were collected from natural habitats in Bulgaria and cultivated in the experimental greenhouse of the Institute of Biodiversity and Ecosystem Research – BAS. In two cases, seeds were collected from the populations of endangered species in their natural habitats. All cytological investigations have been carried out on root tips. The method is described in Ivanova & al. (2006). Chromosome plates were photographed using a Olympus BX51 microscope equipped with a Pro-Series High Performance CCD Camera, or a Nikon ECLIPSE 50i microscope equipped with a Nikon DS-5Mc digital camera. Chromosome numbers in literature were checked using CCDB v.1.45 (Rice & al., 2015; http://ccdb.tau.ac.il/), *IPCN* (Goldblatt & Johnson, 1979+), and all other available sources.

***** First chromosome count from a Bulgarian accession.

APIACEAE

**Laserpitium archangelica* Wulfen

2*n* = 22, CHN. Bulgaria, Northern Pirin Mts, "Krusheto" locality near the border with Pirin National Park, 41°51′17″N, 23°22′10″E, 14 Aug 2003, *D. Ivanova DI 92.03* (SOM) [Fig. 5A].

The species is Critically Endangered in Bulgaria (Bancheva, 2015). Seeds were used to determine the chromosome number. The finding, reported here for the first time from Bulgaria, is in agreement with the counts by Druskovic (1995) and Javůrková-Jarolímová (1992) from Slovenia and Slovakia, respectively.

BETULACEAE

Betula pendula Roth

2*n* = 28, CHN. Bulgaria, Northern Pirin Mts, by the road to Yavorov hut at the road fork for hotel Shatev, 41°51′03″N, 23°23′54″E, 4 Nov 2004, *D. Ivanova & V. Vladimirov VV 04-287* (SOM) [Fig. 5B].

Betula chromosomes are extremely small (in our study less than 2.5 μm), and the frequency of dividing cells is low, so the birch represents particularly difficult material for the study of chromosomes (Gill & Davy, 1983). The chromosome number found by us agrees with the reports by Iliev (1992) and Petrova & al. (2007) for trees

from other Bulgarian localities. The same number $2n = 28$ is reported by many authors for other countries (see Rice & al., 2015, http://ccdb.tau.ac.il/; Goldblatt & Johnson, 1979+).

However, different chromosome numbers were also reported, e.g., $2n = 28–38, 42$ (Skvortsov & Solovjeva, 2000), ca. $2n = 42$ (Sarvas, 1958), $2n = 42$ (Magulaev, 1976), and $2n = 56$ (Valanne, 1972; Gill & Davy, 1983). Data of Sarvas (1958) concern two old triploid trees. The tetraploid number reported by Valanne (1972) has been induced by colchicine treatment. The report of 56 chromosomes by Gill & Davy (1983) could probably concern *B. pubescens*.

ERICACEAE

**Rhododendron ponticum* L. subsp. *ponticum*

$2n = 26$, CHN. Bulgaria, Strandzha, Uzunbudzhak Reserve, Maluk Budzhak locality, 41°57′ N, 27°48′ E, ca. 175 m, 9 Nov 2004, *D. Ivanova 204491* (SOM) [Fig. 5C].

There is no earlier chromosome count for this species from Bulgaria. The diploid number found by us agrees with the report by Janaki-Ammal & al. (1950) for naturalised material from Wisley Gardens, England.

GERANIACEAE

**Erodium absinthoides* subsp. *balcanicum* (Micevski) Greuter & Burdet

$2n = 36$, CHN. Bulgaria, West Frontier Mts – Mt Vlahina, 0.5 km N of Logodazh village, 41°59′54″N, 22°55′51″E, ca. 840 m, stony pastures, plants with flowers and fruits, 28 May 2011, *D. Ivanova s.n*. (SOM) [Fig. 5D].

The species is Endangered in Bulgaria (Ignatova, 2015). Data were obtained from seeds and represent the first report from a Bulgarian accession. Our chromosome number differs from the counts established by Kentziger (1974) for *E. absinthoides* subsp. *absinthoides* from Turkey ($2n = 18$ and $2n = 19$) and by Strid & Franzen (1981) for *E. absinthoides* from Greece ($2n = 56$).

MALVACEAE (SUBFAM. TILIOIDEAE)

**Tilia tomentosa* Moench (= *T. argentea* DC.)

$2n = 82$, CHN. Bulgaria, Western Forebalkan – Vrachanska Mt, in mixed deciduous forest near St. Ivan Pusti Monastery, 43°14′38″ N, 23°27′48″E, 8 Sep 2004, *D. Ivanova 204488* (SOM).

The chromosomes of *Tilia* are very small, and very little structure can be resolved optically (Pigott, 2002). Often, it is very difficult to obtain completely unambiguous counts. The chromosome number found by us confirms the results of Butorina & Gavrilov (2001) for trees from Russia and Pigott (2002) from France and Montenegro. However, Butorina & Gavrilov (2001) reported also mixoploidy of

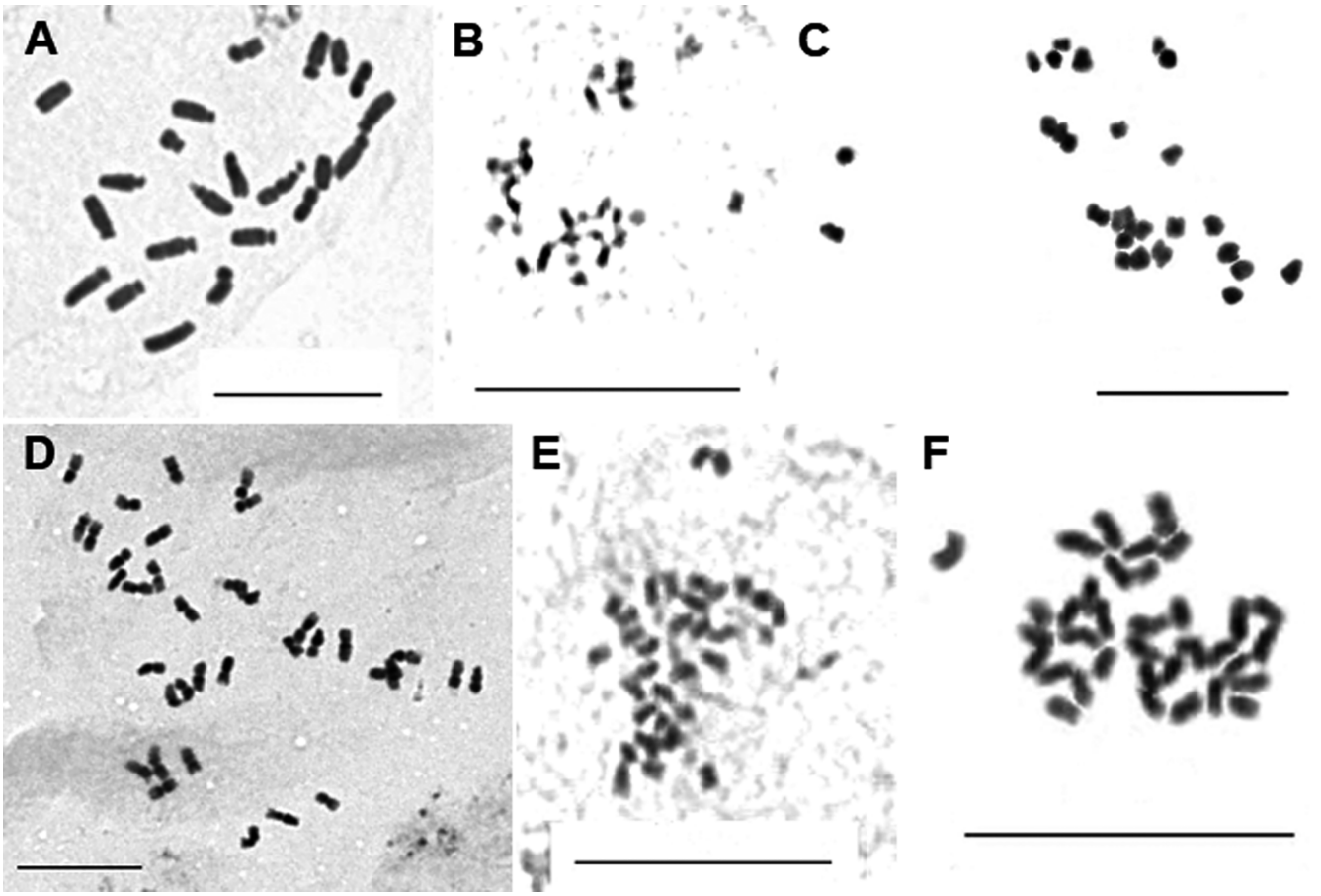

Fig. 5. Microphotographs of mitotic metaphase plates of: **A**, *Laserpitium archangelica*, $2n = 22$; **B**, *Betula pendula*, $2n = 28$; **C**, *Rhododendron ponticum* subsp. *ponticum*, $2n = 26$; **D**, *Erodium absinthoides* subsp. *balcanicum*, $2n = 36$; **E**, *Mespilus germanica*, $2n = 34$; **F**, *Rosa pulverulenta*, $2n = 35$.

meristematic tissue cells; they found two cells with 2*n* = 120–124 and 2*n* = 140–146, respectively.

ROSACEAE

**Mespilus germanica* L. (≡ *Crataegus germanica* (L.) Kuntze)

2*n* = 34, CHN. Bulgaria, Strandzha, Uzunbudzhak Reserve, Maluk Budzhak locality, 41°57′N, 27°48′E, 9 Nov 2004, *D. Ivanova 204512* (SOM) [Fig. 5E].

Our finding of 2*n* = 34 is the first count for Bulgaria and is in accordance with the data of the few authors referred to in Fedorov (1969). Since then, no other published original data have been found in the literature except that by Dickson & al. (1992), who estimated the nuclear DNA content of *M. germanica* and simply mentioned its ploidy level, as well as by Byatt & al. (1977), who noted that the medlar is "normally diploid with 2n = 34 chromosomes".

**Prunus laurocerasus* L.

2*n* = 144, CHN. Bulgaria, Strandzha, Protected Area "Marina Reka", 11 Nov 2004, *D. Ivanova 204505* (SOM).

Our chromosome number determination is the first one for plants of Bulgarian origin. *Prunus laurocerasus* is a cytological anomaly due to its high ploidy (Contreras & Meneghelli, 2016). According to Fedorov (1969), the earliest published chromosome counts for this species appear to be those of Kobel (1927, 1928 sec. Fedorov, 1969), who reported 2*n* = 144. Later, Meurman (1929) reported *P. laurocerasus* to be a 22-ploid with a chromosome number of 2*n* = 170–180. This number (more precisely, 176) is the highest in the genus. As 8 is the base number of the genus *Prunus*, our count of 2*n* = 144 turns out to be an 18-ploid.

**Rosa pulverulenta* M.Bieb.

2*n* = 35, CHN. Bulgaria, Northern Pirin Mts, by the road between Banderitsa hut and Vihren hut, on the slope near Baikushev's pine (Baikushevata mura), 41°46′00″N, 23°25′23″E, 4 Nov 2004, *D. Ivanova & V. Vladimirov VV 04 281* (SOM) [Fig. 5F].

From Bulgaria, this chromosome number is reported here for the first time. The same pentaploid number 2*n* = 35 was published by Strid & Andersson (1985) from Mt Olympus in Greece and by Popek & al. (1991) from Hungary (sub *R. pulverulenta* var. *dalmatica*). The latter plant material has been cultivated in a Botanical garden in Budapest, originating, however, from Bulgaria, Pirin Mts. A hexaploid chromosome number (2*n* = 42) for this species was reported by Jowkar & al. (2009) and Kermani & al. (2019) from Iran.

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IAPT chromosome data 32/10

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ASTERACEAE (COMPOSITAE)

Achillea asiatica Serg.

2*n* = 36, CHN. Russia, Altaiskii Krai, Aleiskii Raion, 1.5 km NE of Serebrennikovo village, between Serebrennikovskoe Lake and Peschanoe Lake, bank of Uste anabranch, steppefied cereal meadow, 51°46′09″N, 81°25′20″E, 19 Sep 2018, *D.A. Krivenko 2019-12* (LE); Russia, Altaiskii Krai, Aleiskii Raion, NE from Mokhovskoe village, ruderal motley grass-cereal meadow, 52°37′39″N, 82°30′40″E, 22 Sep 2018, *D.A. Krivenko 2019-13* (LE); Russia, Irkutskaya Oblast', Irkutsk city, right bank of the Angara River, Solnechnyi Microdistrict, roadside, 473 m, 52°15′30.2″N, 104°20′51.0″E, 22 Aug 2018, *D.A. Krivenko 51112* (IRK, LE).

Achillea micrantha Willd.

2*n* = 18, CHN. Russia, Altaiskii Krai, Aleiskii Raion, 6 km to NW from Pervomaiskii village, right bank of the Levaya Gorevka River, ruderal steppefied meadow, 52°31′59″N, 82°33′52″E, 22 Sep 2018, *D.A. Krivenko 2019-15* (LE).

Artemisia abrotanum L.

2*n* = 18, CHN. Russia, Altaiskii Krai, Rubtsovskii Raion, near Bezrukavka village, left bank of the Alei River, weedy-ruderal plant groups, 51°35′35″N, 81°16′20″E, 18 Sep 2018, *D.A. Krivenko 2019-17* (LE), *D.A. Krivenko 2019-18* (LE).

Artemisia absinthium L.

2*n* = 18, CHN. Georgia, Mtskheta-Mtianeti Mkhare, Dusheti municipality, vicinity of Mtskheta town, on the territory of Ananuri fortress, 24 Nov 2018, *Ye.B. Portenier 2019-38* (LE); Georgia, Samtskhe-Javakheti Mkhare, Ninotsminda municipality, lakeside of Paravani, 2100 m, 25 Nov 2018, *Ye.B. Portenier 2019-37* (LE).

Artemisia annua L.

2*n* = 18, CHN. Georgia, Samtskhe-Javakheti Mkhare, Akhalkalaki municipality, Borjomi-Kharagauli National Park, 16 Nov 2018, *Ye.B. Portenier 2019-35* (LE), *Ye.B. Portenier 2019-36* (LE).

Artemisia arenaria DC.

2*n* = 36, CHN. Kazakhstan, Aktyubinskaya Oblast', Baiganinskii Raion, Baig River, Danyrtau Mt, 46°25′50″N, 56°52′22″E, 22 Sep 2018, *Zh.N. Kuanbai 2019-59* (LE).

Artemisia austriaca Jacq.

2*n* = ca. 16, CHN. Russia, Altaiskii Krai, Rubtsovskii Raion, near Mamontovo village, reed grass meadow, 51°46′09″N, 81°25′20″E, 19 Sep 2018, *D.A. Krivenko 2019-48* (LE).

2*n* = 32, CHN. Russia, Altaiskii Krai, Aleiskii Raion, NE from Mokhovskoe village, ruderal motley grass-cereal meadow, 52°37′39″N, 82°30′40″E, 22 Sep 2018, *D.A. Krivenko 2019-52* (LE).

2*n* = ca. 48, CHN. Kazakhstan, Vostochno-Kazakhstanskaya Oblast', Semei city, Irtysh River, Polkovnichii Island, weedy-ruderal plant groups, 50°23′06.85″N, 80°16′39.26″E, 23 Sep 2018, *D.A. Krivenko 2019-53* (LE).

Artemisia commutata Besser

2*n* = 18, CHN. Mongolia, Ulaanbaatar city, territory of Joint Russian-Mongolian complex biological expedition base, cereal-motley grass plant group, 4 Aug 2017, *A.A. Korobkov 2019-60* (LE).

Artemisia cuspidata Krasch.

2*n* = 54, CHN. Russia, Irkutskaya Oblast', Olkhonskii Raion, W coast of Lake Baikal, near Sakhyurta village, rocky steppe, 514 m, 53°00′30″N, 106°51′41″E, 12 Sep 2018, *D.A. Krivenko 2019-43* (LE).

Artemisia depauperata Krasch.

2*n* = 18, CHN. Mongolia, Zavkhan Aimak, Bayankhairkhan somon, N from Mogoin-daba pass, granite N slopes, steppe, 1822 m, 49°23′30″N, 96°22′59″E, 14 Jul 2017, *V.I. Dorofeev, A.A. Korobkov & al. 2019-61* (LE).

Artemisia dracunculus L.

2*n* = 18, CHN. Russia, Irkutskaya Oblast', Irkutskii Raion, SW coast of Lake Baikal, Khargino Bay, lakeside, 463 m, 52°19′13″N, 105°46′36″E, 28 Aug 2018, *O.A. Zavgorodnyaya 2019-32* (LE).

2*n* = 54, CHN. Russia, Altaiskii Krai, Rubtsovskii Raion, near Bezrukavka village, left bank of the Alei River, weedy-ruderal plant groups, 51°35′35″N, 81°16′20″E, 18 Sep 2018, *D.A. Krivenko 2019-24* (LE); Russia, Altaiskii Krai, Rubtsovskii Raion, near Mamontovo village, reed grass meadow, 51°46′09″N, 81°25′20″E, 19 Sep 2018, *D.A. Krivenko 2019-26* (LE); Russia, Altaiskii Krai, Pospelikhinskii Raion, 7.5 km to NW from Posëlok imeni Mamontova settlement, motley grass-reed grass steppefied meadow, 51°53′59″N, 81°36′21″E, 19 Sep 2018, *D.A. Krivenko 2019-30* (LE); Russia, Altaiskii Krai, Shipunovskii Raion, 10 km to NE from Bykovo village, sagebrush-cereal steppe, 52°11′25″N, 82°04′17″E, 21 Sep 2018, *D.A. Krivenko 2019-27* (LE).

Artemisia frigida Willd.

2*n* = 18, CHN. Russia, Irkutskaya Oblast', Olkhonskii Raion, Lake Baikal, NE part of Olkhon Island, near Uzury settlement, steppe, 595 m, 53°20′10″N, 107°44′40″E, 19 Oct 2018, *O.A. Zavgorodnyaya 2019-31* (LE).

Artemisia furcata M.Bieb.

2*n* = 18, CHN. Russia, Republic of Buryatiya, Kabanskii Raion, N macroslope of Khamar-Daban Ridge, 17 Aug 2018, *N.V. Gamova 2019-01* (LE).

Artemisia glauca Pall. ex Willd.

2*n* = 18, CHN. Russia, Altaiskii Krai, Aleiskii Raion, right bank of the Solonovka River, a left tributary of the Alei River, 4 km to NW from Krasnyi Yar village, sagebrush-feather grass steppe, 52°25′34″N, 82°34′50″E, 24 Sep 2018, *D.A. Krivenko 2019-22* (LE), *D.A. Krivenko 2019-22* (LE).

Artemisia marschalliana Spreng.

2*n* = 18, CHN. Russia, Stavropol'skii Krai, Kislovodsk city, Kislovodskii National Park, Krasnoe Solnyshko Mt., territorial station No. 55, 1050 m, 26 Feb 2019, *Ye.B. Portenier 2019-42* (LE).

2*n* = 36, CHN. Kazakhstan, Aktyubinskaya Oblast', Baiganinskii Raion, Baig River, Danyrtau Mt., 46°26′50″N, 56°52′22″E, 20 Sep 2019, *Zh.N. Kuanbai 2019-58* (LE); Russia, Stavropol'skii Krai, Kislovodsk city, Kislovodskii National Park, Krasnoe Solnyshko Mt., territorial station no. 55, 1050 m, 26 Feb 2019, *Ye.B. Portenier 2019-41* (LE); Russia, Altaiskii Krai, Shipunovskii Raion, left bank of the Klepechikha River, 8 km to NW from Bykovo village, sagebrush-cereal steppe, 52°10′47″N, 82°04′08″E, 21 Sep 2018, *D.A. Krivenko 2019-19* (LE); Russia, Altaiskii Krai, Shipunovskii Raion, 10 km NE of Bykovo village, sagebrush-cereal steppe, 52°11′25″N, 82°04′17″E, 21 Sep 2018, *D.A. Krivenko 2019-28* (LE); Russia, Altaiskii Krai, Rebrikhinskii Raion, 1 km NE of Rebrikha railway station, Trubachikha riverbank, mixed forest, 53°01′01″N, 82°19′40″E, 26 Sep 2018, *D.A. Krivenko 2019-21* (LE).

Artemisia mongolica (Fisch. ex Besser) Fisch. ex Nakai

2*n* = 16, CHN. Russia, Irkutskaya Oblast', Slyudyanskii Raion, W coast of Lake Baikal, 94 km of Circum-Baikal Railway, lakeside, 456 m, 51°48′01″N, 104°34′11″E, 14 Sep 2018, *O.Yu. Zavgorodnyaya 2019-46* (LE).

Artemisia nitrosa Weber ex Stechm.

2*n* = 18, CHN. Russia, Altaiskii Krai, Rebrikhinskii Raion, 7 km W of Rozhnev Log village, steppefied cereal meadow, 52°51′27″N, 82°18′26″E, 27 Sep 2018, *D.A. Krivenko 2019-54* (LE).

Artemisia rupestris L.

2*n* = 18, CHN. Russia, Altaiskii Krai, Rebrikhinskii Raion, 7 km W of Rozhnev Log village, steppefied cereal meadow, 52°51′27″N, 82°18′26″E, 27 Sep 2018, *D.A. Krivenko 2019-49* (LE).

Artemisia santonicum L.

2*n* = 18, CHN. Russia, Altaiskii Krai, Aleiskii Raion, right bank of the Levaya Gorevka River, 6 km NW of Pervomaiskii settlement, ruderal steppefied meadow, 52°31′59″N, 82°33′52″E, 21 Sep 2018, *D.A. Krivenko 2019-55* (LE).

Artemisia schrenkiana Ledeb.

2*n* = 36, CHN. Russia, Altaiskii Krai, Rubtsovskii Raion, left bank of the Alei River, near Bezrukavka village, weedy-ruderal plant groups, 51°35′35″N, 81°16′20″E, 18 Sep 2018, *D.A. Krivenko 2019-57* (LE); Russia, Altaiskii Krai, Shipunovskii raion, left bank of the Klepechikha River, 8 km to NW from Bykovo village, sagebrush-cereal steppe, 52°10′47″N, 82°04′08″E, 21 Sep 2018, *D.A. Krivenko 2019-56* (LE).

Artemisia scoparia Waldst. & Kit.

2*n* = 16, CHN. Russia, Altaiskii Krai, Rubtsovskii Raion, left bank of the Alei River, near Bezrukavka village, weedy-ruderal plant groups, 51°34′27″N, 81°14′58″E, 18 Sep 2018, *D.A. Krivenko 2019-20* (LE); Russia, Altaiskii Krai, Shipunovskii Raion, 10 km to NW from Bykovo village, sagebrush-cereal steppe, 52°11′25″N, 82°04′17″E, 21 Sep 2018, *D.A. Krivenko 2019-29* (LE).

Artemisia sieversiana Ehrh. ex Willd.

2*n* = 18, CHN. Russia, Irkutskaya Oblast', Olkhonskii Raion, W coast of Lake Baikal, near Sakhyurta village, rocky steppe, 514 m, 53°00′30″N 106°51′46″E, 12 Sep 2018, *D.A. Krivenko 2019-44* (LE); Russia, Altaiskii Krai, Rubtsovskii Raion, left bank of the Alei River, near Bezrukavka village, weedy-ruderal plant groups, 51°34′27″N, 81°14′58″E, 18 Sep 2018, *D.A. Krivenko 2019-47* (LE); Russia, Altaiskii Krai, Shipunovskii Raion, 10 km NW of Bykovo village, sagebrush-cerial steppe, 52°11′25″N, 82°04′17″E, 21 Sep 2018, *D.A. Krivenko 2019-50* (LE), *D.A. Krivenko 2019-51* (LE).

Artemisia viridis Willd. ex A.DC.

2*n* = 18, CHN. Russia, Republic of Altai, Kosh-Agachskii Raion, Ukok Plateau, 19 Jul 2018, *G.A. Tyusov 2019-62* (LE).

Artemisia xylorhiza Krasch. ex Filatova

2*n* = 36, CHN. Russia, Irkutskaya Oblast', Olkhonskii Raion, W coast of Lake Baikal, near Sakhyurta village, rocky steppe, 514 m, 53°00′30″N 106°51′46″E, 12 Sep 2018, *D.A. Krivenko 2019-45* (LE); Russia, Irkutskaya Oblast', Olkhonskii Raion, Lake Baikal, NE part of Olkhon Island, near Uzury settlement, steppe, 595 m, 53°20′10″N, 107°44′40″E, 19 Oct 2018, *O.Yu. Zavgorodnyaya 2019-25* (LE).

Leucanthemum vulgare Lam.

2*n* = 36, CHN. Russia, Irkutskaya Oblast', Irkutskii Raion, right bank of the Angara River, 51 km of Baikal tract, forested riverbank, 462 m, 51°58′26″N, 104°41′58″E, 20 Aug 2018, *D.A. Krivenko 2019-11* (IRK, LE).

Tanacetum bipinnatum (L.) Sch.Bip.

2*n* = 72, CHN. Russia, Tyumenskaya Oblast', Yamalo-Nenetskii Avtonomnyi Okrug, Yamal Peninsula, 277 km NW of

Bovanenkovo settlement, roadside, 70°35′06.7″N, 68°04′56.9″E, 1 Sep 2018, *V.V. Byalt 2019-33* (LE).

Tanacetum vulgare L.

2*n* = 18, CHN. Russia, Irkutskaya Oblast', Irkutskii Raion, SW coast of Lake Baikal, in the area of Khargino Bay, tall grass mixed forest, 801 m, 52°18′48″N, 105°44′53″E, 29 Aug 2018, *O.Yu. Zavgorodnyaya 2019-09* (LE); Russia, Irkutskaya Oblast', Slyudyanskii Raion, W coast of Lake Baikal, 94 km of Circum-Baikal Railway, right bank of Pylovka River, motley grass edge of mixed forest, 485 m, 51°48′05″N, 104°34′10″E, 14 Sep 2018, *O.Yu. Zavgorodnyaya 2019-08* (LE).

Tripleurospermum inodorum (L.) Sch.Bip.

2*n* = 36, CHN. Russia, Leningradskaya Oblast', Vsevolozhskii Raion, Murino town, west side, under the high-voltage power line, 3 Sep 2018, *L.I. Krupkina 2019-02* (LE), *L.I. Krupkina 2019-03* (LE); Russia, Altaiskii Krai, Rubtsovskii Raion, left bank of the Alei River, near Bezrukavka village, weedy-ruderal plant groups, 51°35′ 35″N, 81°16′20″E, 18 Sep 2018, *D.A. Krivenko 2019-04* (IRK, LE); Russia, Altaiskii Krai, Pospelikhinskii Raion, near Kotlyarovka village, weedy-ruderal plant groups, 52°06′05″N, 81°52′07″E, 18 Sep 2018, *D.A. Krivenko 2019-05* (IRK, LE); Russia, Kemerovskaya Oblast', Mariinskii Raion, near Suslovo village, ruderal plant groups, 210 m, 56°12′04″N, 88°09′12″E, 7 Oct 2018, *D.A. Krivenko 2019-07* (IRK, LE); Russia, Krasnoyarskii Krai, Emel'yanovskii Raion, interfluve of the Malyi Ibryul' River and Ibryul' River, 20 km to WSW from Malyi Kemchug village, roadside, 310 m, 56°13′02″N, 91°48′53″E, 7 Oct 2018, *D.A. Krivenko 2019-06* (IRK, LE).

FABACEAE (LEGUMINOSAE)

Glycyrrhiza echinata L.

2*n* = 16, CHN. Russia, Republic of Dagestan, Makhachkala city, on the Irchi Kazaka Str., 42°58′01.44″N, 47°30′01.79″E, 18 Aug 2019, *D.A. Krivenko 58568* (IRK).

Glycyrrhiza glabra L.

2*n* = 16, CHN. Russia, Republic of Dagestan, Kumtorkalinskii Raion, left bank of the Shura-ozen' River, Sarykum barkhan, sandy slope of railway, 80 m, 43°00′00″N, 47°13′42″E, 10 Aug 2019, *D.A. Krivenko 58566* (IRK).

Robinia pseudoacacia L.

2*n* = 22, CHN. Armenia, Vaiotsdzorskaya Oblast', right bank of the Arpa River, Malishka village, introduced plant, 39°44′31.14″N, 45°23′57.42″E, 21 Jul 2019, *D.A. Krivenko & al. 58573* (IRK, PVB); Armenia, Erevan city, park of Tsitsernakaberd, introduced plant, 1060 m, 40°11′21″N, 44°29′15″E, 29 Jul 2019, *D.A. Krivenko & al. 58570* (IRK, PVB).

Spartium junceum L.

2*n* = 48, CHN. Georgia, Shida Kartli Mkhare, Karel'skii municipality, left bank of the Kura River, 2 km WNW of Urbnisi village, roadside, 740 m, 42°01′06″N, 44°01′10″E, 24 Jul 2019, *D.A. Krivenko & al. 58563* (IRK, PVB).

Styphnolobium japonicum (L.) Schott

2*n* = 28, CHN. Armenia, Erevan city, park of Tsitsernakaberd, introduced plant, 1080 m, 40°11′11.00″N, 44°29′18.00″E, 31 Jul 2019, *D.A. Krivenko & al. 58576* (IRK); Georgia, Shida Kartli Mkhare, Goriiskii municipality, Kartliiskaya valley, Kartliiskaya at the interflow of the Kura River and its left tributary Bol'shaya Liakhvi River, Gori town, Goristsikhe fortress, introduced plant, 610 m, 41°59′10″N, 44°06′29″E, 24 Jul 2019, *D.A. Krivenko & al. 58578* (IRK).

RANUNCULACEAE

Anemone sylvestris L. (≡ *Anemonoides sylvestris* (L.) Galasso, Banfi & Soldano)

2*n* = 16, CHN. Russia, Novosibirskaya Oblast', Novosibirskii Raion, Niva Gardens, birch forest, 54°50′24.0″N, 83°08′22.9″E, 23 May 2020, *A.S. Erst & T. Erst s.n.* (NS).

Eranthis sibirica DC.

2*n* = 28, CHN. Russia, Irkutskaya Oblast', Usolskii Raion, 13 km SW of Oktyabrskii village, along the banks of the Alangar River, a tributary of the Kitoi River, 500–600 m above the mouth, spruce forest, 621 m, 52°20′17.0″N, 102°49′38.6″E, 19 May 2020, *O.A. Chernysheva 59060* (IRK, NS); Russia, Irkutskaya Oblast', Usolskii Raion, right bank of the Kholomkha River, birch-spruce forest with willow, 679 m, 52°11′19.3″N, 102°46′52.9″E, 19 May 2020, *O.A. Chernysheva 59062* (IRK, NS).

Trollius asiaticus L.

2*n* = 16, CHN. Russia, Novosibirskaya Oblast', Novosibirskii Raion, Niva Gardens, birch forest, 54°50′24.0″N, 83°08′22.9″E, 23 May 2020, *A.S. Erst & T. Erst s.n.* (NS).

IAPT chromosome data 32/11

Julia V. Shner,* Tatiana V. Alexeeva, Eugene V. Kljuykov & Uljana A. Ukrainskaja

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* First chromosome count for the species.

** First chromosome count from the given country.

UMBELLIFERAE (APIACEAE)

Angelica sylvestris L.

2*n* = 22, CHN. Greece, northern Greece, Imathia, Aliakmon valley, next to a stream between Veria and Vergina, 40°29.106′N, 22°13.504′E, 313 m, 25 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 10-17* (MW) [Fig. 6A].

Athamanta macedonica Spreng.

2*n* = 22, CHN. Greece, northern Greece, Trikala, Southern Pindos mountain range, NE part of region, Koziakas Mountains, road between Pirra and Neraidochori, on rocks, 39°32.557′N, 21°23.106′E, 1164 m, 27 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 16-17* (MW) [Fig. 6B].

**Bupleurum commutatum* Boiss. & Balansa

2*n* = 16, CHN. Greece, northern Greece, Trikala, road Grevena–Kalabaka, near the road, 39°56.667′N, 21°34.108′E, 626 m, 27 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 14-17* (MW) [Fig. 6C].

This annual Mediterranean species of *Bupleurum* has the same chromosome number 2*n* = 16 as all the 12 previously studied species from *Bupleurum* subsect. *Juncea* Briq. (see Snogerup & Snogerup, 2001; Pimenov & al., 2002; Shner & al., 2004a,b, 2013).

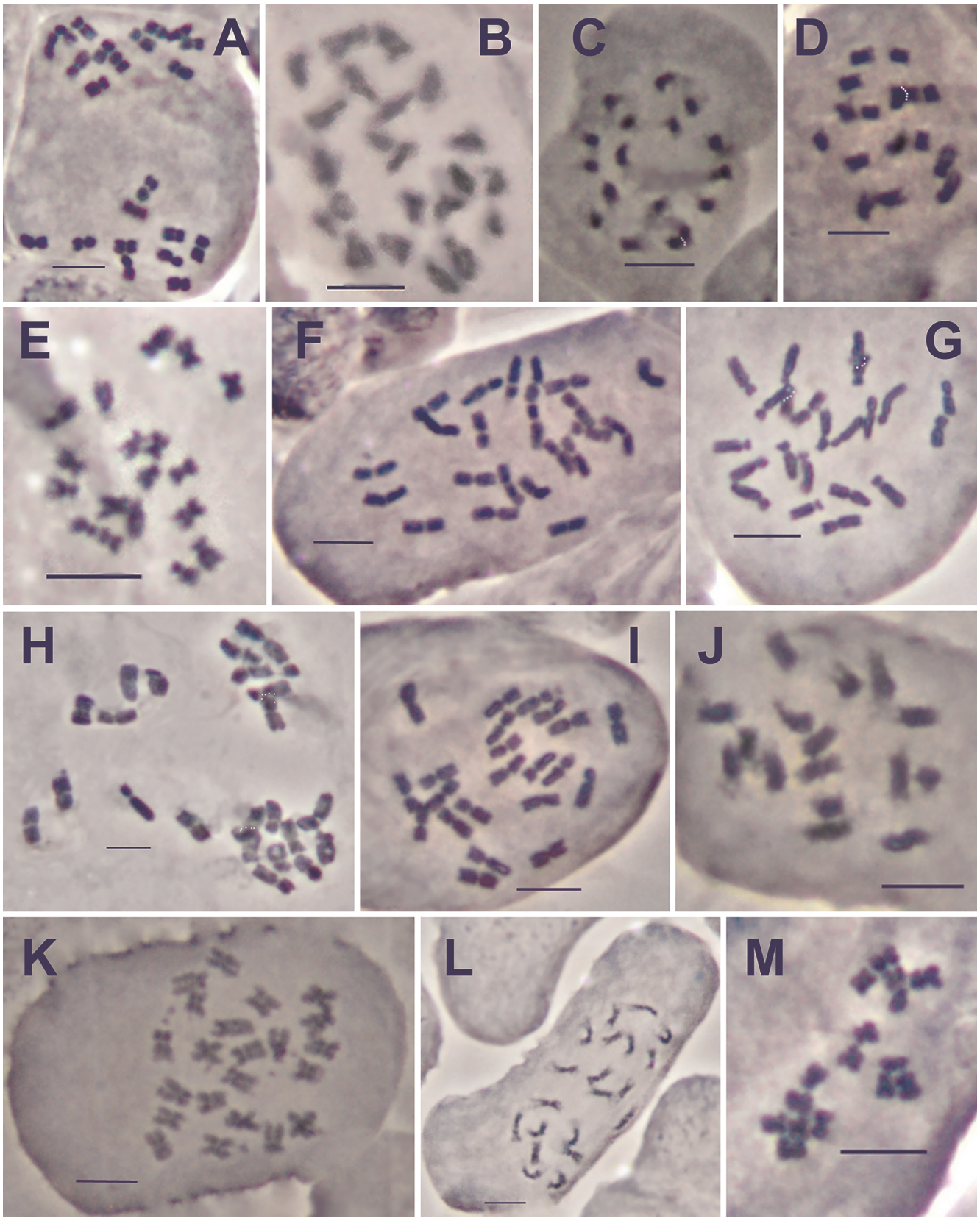

Fig. 6. Mitotic chromosomes: **A**, *Angelica sylvestris*, 2*n* = 22; **B**, *Athamanta macedonica*, 2*n* = 22; **C**, *Bupleurum commutatum*, 2*n* = 16; **D**, *Bupleurum falcatum*, 2*n* = 16; **E**, *Daucus carota*, 2*n* = 18; **F**, *Katapsuxis silaifolia*, 2*n* = 22; **G**, *Opopanax chironium*, 2*n* = 22; **H**, *Opopanax hispidus*, 2*n* = 22; **I**, *Peucedanum austriacum*, 2*n* = 22; **J**, *Sanicula europaea*, 2*n* = 16; **K**, *Seseli montanum*, 2*n* = 22; **L**, *Tordylium maximum*, 2*n* = 20; **M**, *Torilis ucranica*, 2*n* = 16. — Scale bars = 5 µm.

Bupleurum falcatum L.

2*n* = 16, CHN. Greece, northern Greece, border of Kozani and Imathia, Vermio mountain range, road Akrini–Kato Vermio, E-facing slope, in grasslands, 40°29.503′N, 21°59.782′E, 1580 m, 25 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 5-17* (MW) [Fig. 6D].

Daucus carota L.

2*n* = 18, CHN. Greece, northern Greece, Grevena, 9.5 km SE from Grevena city, road Grevena–Kalabaka, left bank of the Venetikos River, near the bridge, 27 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 13a-17* (MW) [Fig. 6E].

Katapsuxis silaifolia (Jacq.) Reduron, Charpin & Pimenov

2*n* = 22, CHN. Greece, northern Greece, Pieria, E slope of Mt. Olympus, above Litochoro town, road to Prionia, near the road, 3 Oct 2016, *E.V. Kljuykov & U.A. Ukrainskaja s n*. (MW) [Fig. 6F].

***Opopanax chironium* (L.) W.D.J.Koch

2*n* = 22, CHN. Greece, northern Greece, Kozani, 6.5 km SW from Ptolemaida city, plain between Ardassa and Kriovrisi villages, near the road, 40°28.854′N, 21°36.889′E. 644 m, 26 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 11-17* (MW) [Fig. 6G].

Opopanax hispidus (Friv.) Griseb.

2*n* = 22, CHN. Greece, northern Greece, Kozani, 6.5 km SW from Ptolemaida city, plain between Ardassa and Kriovrisi villages, near the road, 40°28.854′N, 21°36.889′E. 644 m, 26 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja s.n*. (MW) [Fig. 6H].

***Peucedanum austriacum* (Jacq.) W.D.J.Koch

2*n* = 22, CHN. North Macedonia, Ohrid city neighborhood, southern part of Nacionalen Park Galicica, E slope of mountain range, in *Fagus sylvatica* forest, 40°58.153′N, 20°51.552′E, 1373 m, 30 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 22-17* (MW) [Fig. 6I].

Sanicula europaea L.

2*n* = 16, CHN. Greece, northern Greece, Pieria, E slope of Mt. Olympus, above Litochoro town, mountain shelter Prionia, right bank of Mavrolongos River, 1100 m, 9 Oct 2016, *E.V. Kljuykov & U.A. Ukrainskaja s n*. (MW) [Fig. 6J].

***Seseli montanum* L.

2*n* = 22, CHN. North Macedonia, Ohrid city neighborhood, southern part of Nacionalen Park Galicica, W slope of mountain range, 40°58.010′N, 20°48.873′E, 1380 m, 30 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 18-17* (MW) [Fig. 6K].

Tordylium maximum L.

2*n* = 20, CHN. Greece, northern Greece, border of Kozani and Imathia, Vermio mountain range, road Akrini–Kato Vermio, timberline, E-facing slope, near the road, fine earth, 40°31.508′N, 22°01.699′E, 1588 m, 25 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja 9-17* (MW) [Fig. 6L].

***Torilis ucranica* Spreng.

2*n* = 16, CHN. Greece, northern Greece, Kozani, 6.5 km SW from Ptolemaida city, plain between Ardassa and Kriovrisi villages, near the road, 40°28.854′N, 21°36.889′E, 644 m, 26 Sep 2017, *E.V. Kljuykov & U.A. Ukrainskaja s.n*. (MW) [Fig. 6M].

Chromosome numbers of this Mediterranean species were previously determined for plants from Turkey (Shner & al., 2010, 2013), and our record agrees with those previous ones.

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