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Botanica Pacifica plant chromosome data 2

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ABSTRACT

The chromosome numbers (CN, *2n*) are presented for 83 vascular plant species of 65 genera from 24 families: Alismataceae: *Sagittaria*; Apiaceae: *Cnidium*; Asteraceae: *Arctium*, *Artemisia*, *Carduus*, *Centaurea*, *Crepis*, *Lamyropsis*, *Phalacroloma*, *Picris*, *Pilosella*, *Senecio*, *Taraxacum*, *Tripleurospermum*, *Tussilago*; Balsaminaceae: *Impatiens*; Boraginaceae: *Echium*, *Myosotis*; Brassicaceae: *Arabis*, *Capsella*, *Cardamine*, *Lepidium*, *Thlaspi*; Caryophyllaceae: *Atocion*, *Dianthus*, *Melandrium*, *Oberna*, *Stellaria*; Convolvulaceae: *Convolvulus*; Fabaceae: *Amphicarpaea*, *Argyrolobium*, *Astragalus*, *Coronilla*, *Lotus*, *Medicago*, *Onobrychis*, *Trifolium*, *Vicia*; Isoëtaceae: *Isoëtes*; Lamiaceae: *Ballota*, *Betonica*, *Clinopodium*; Papaveraceae: *Chelidonium*, *Papaver*; Plantaginaceae: *Callitriche*, *Plantago*; Poaceae: *Agrostis*, *Deschampsia*, *Elymus*, *Festuca*, *Microstegium*, *Poa*, *Setaria*, *Stipa*; Polygonaceae: *Persicaria*, *Rumex*; Potamogetonaceae: *Potamogeton*; Primulaceae: *Androsace*; Ranunculaceae: *Ranunculus*; Rosaceae: *Waldsteinia*; Resedaceae: *Reseda*; Saxifragaceae: *Mitella*; Scrophulariaceae: *Mimulus*; Solanaceae: *Nicotiana*; Violaceae: *Viola*. The species studied are from European Russia (Ivanovo Region), Caucasus (Armenia, Georgia, Russia), Siberia and the Russian Far East (Kamchatka Territory, Magadan Region, Primorye Territory). A half of the species are diploids, with different basic numbers (*x*). The 33 species with variable ploidy were revealed. The chromosome numbers data are accompanied with the brief information on ecology and distribution of the species studied. The chromosome numbers (2*n*) for 9 aquatic vascular plant species of 5 genera and 5 families are presented.

Keywords: chromosome numbers, vascular plants, aquatic flora, European Russia, Caucasus, Siberia, Russian Far East

РЕЗЮМЕ

Пробатова Н.С. (ред.), Андриянова Е.А., Чернягина О.А., Конотоп Н.К., Кожевникова З.В., Кривенко Д.А., Виноградова Ю.С. Botanica Pacifica: числа хромосом растений 2. Сообщаются хромосомные числа (*2n*) для 83 видов сосудистых растений из 65 родов и 24 семейств: Alismataceae: *Sagittaria*; Apiaceae: *Cnidium*; Asteraceae: *Arctium*, *Artemisia*, *Carduus*, *Centaurea*, *Crepis*, *Lamyropsis*, *Phalacroloma*, *Picris*, *Pilosella*, *Senecio*, *Taraxacum*, *Tripleurospermum*, *Tussilago*; Balsaminaceae: *Impatiens*; Boraginaceae: *Echium*, *Myosotis*; Brassicaceae: *Arabis*, *Capsella*, *Cardamine*, *Lepidium*, *Thlaspi*; Caryophyllaceae: *Atocion*, *Dianthus*, *Melandrium*, *Oberna*, *Stellaria*; Convolvulaceae: *Convolvulus*; Fabaceae: *Amphicarpaea*, *Argyrolobium*, *Astragalus*, *Coronilla*, *Lotus*, *Medicago*, *Onobrychis*, *Trifolium*, *Vicia*; Isoëtaceae: *Isoëtes*; Lamiaceae: *Ballota*, *Betonica*, *Clinopodium*; Papaveraceae: *Chelidonium*, *Papaver*; Plantaginaceae: *Callitriche*, *Plantago*; Poaceae: *Agrostis*, *Deschampsia*, *Elymus*, *Festuca*, *Microstegium*, *Poa*, *Setaria*, *Stipa*; Polygonaceae: *Persicaria*, *Rumex*; Potamogetonaceae: *Potamogeton*; Primulaceae: *Androsace*; Ranunculaceae: *Ranunculus*; Rosaceae: *Waldsteinia*; Resedaceae: *Reseda*; Saxifragaceae: *Mitella*; Scrophulariaceae: *Mimulus*; Solanaceae: *Nicotiana*; Violaceae: *Viola*. Исследованный материал – происхождением из Европейской России (Ивановская область), с Кавказа, из Сибири и Дальнего Востока России (Камчатский край, Магаданская область, Приморский край). Половина исследованных видов – диплоиды, при различных основных (базовых) числах хромосом (*x*). Выявлены 33 вида с переменной плоидностью. Полученные числа хромосом сопровождаются краткими сведениями об экологии и ареалах видов. Числа хромосом приведены для 9 видов водной флоры из 5 родов и 5 семейств.

Ключевые слова: числа хромосом, сосудистые растения, водная флора, Центральная Россия, Кавказ, Сибирь, Дальний Восток России

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All materials with chromosome studies should be submitted electronically to: Nina S. Probatova, probatova@biosoil.ru.

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Aquatic vascular plants from Ivanovo and Magadan Regions, Russia

Julia S. Vinogradova, Nikita K. Konotop & Elena A. Andriyanova

Vouchers in IBIW and MAG.

ALISMATACEAE

Sagittaria sagittifolia L., **2*n* = 22.** "Ivanovskaya Oblast', Komsomol'skii Raion, 1 km of Kozhevnikovo village, Uvod river, under the bridge, in shallow water, 57°09'45.5"N 40°32'55.9"E, 10 Aug 2020, *J. Vinogradova & N. Konotop V20125*" (Fig. 1A); "Ivanovskaya Oblast', Yurievetskii Raion, 400 m of Fedorkovo village, the River, on the bank, 57°19'49.6"N 42°47'28.0"E, 9 Aug 2020, *J. Vinogradova V20111*"; "Ivanovskaya Oblast', Kineshemskii Raion, Kineshma town, the Kineshemka River, 70 m from Nikolsky bridge, near the pier, on the bank, 57°26'27.1"N 42°10'45.1"E, 9 Aug 2020, *J. Vinogradova V20118*"; "Ivanovskaya Oblast', Yuzhskii Raion, Orekhovoe Lake, in water, near the bank, 56°31'09.7"N 41°45'32.1"E, 11 Aug 2020, *J. Vinogradova & N. Konotop V20162*". Eurasian. The species is common in all districts of the Ivanovo Region. Diploid (2*x*), *x* = 11. The diploid CN (2*n* = 22) is characteristic of this genus, and it has been already reported for this species from Russia (Chepinoga 2014) and elsewhere. First CN count from Ivanovo Region.

PLANTAGINACEAE

Callitriche cophocarpa Sendtn., **2*n* = 10.** "Ivanovskaya Oblast', Kineshemskii Raion, the Korba River, 300 m of Romanovo village, under the bridge, 57°25'01.4"N 42°18'26.9"E, 4 Jul 2020, *J. Vinogradova V20054*"; "Ivanovskaya Oblast', Ivanovskii Raion, Loma village, the Vostra River, under the bridge, 56°52'46.0"N 40°58'29.0"E, 1 Oct 2020, *J. Vinogradova & N. Konotop V20309*"; "Ivanovskaya Oblast', Savinskii Raion, 500 m of Pelhovo village, Shizhegda river, 56°32'52.2"N 41°28'50.7"E, 12 Sep 2019, *J. Vinogradova & N. Konotop V19077*" (Fig. 1B). Northern Eurasia. In the Ivanovskaya Oblast' the species is common in some districts. The CNs are known from Europe (Gregor & Hand 2009). The CN is constant (Prancl et al. 2020), but the genus is polybasic (*x* = 3, 5, 19 – Májovský et al. 1987). This is the first CN count for the species from Russia. Diploid (2*x*), *x* = 5.

ISOETACEAE

Isoetes asiatica (Makino) Makino, **2*n* = 22.** "Magadanskaya Oblast', Olskii Raion, Kisi Lake, near the bank, 59°58'30.64"N 152°35'13.77"E, 1 Jul 2016, *E. Andriyanova A16025*" (Fig. 1C). Yakutia, Russian Far East, Japan. In Magadan Region the species is rare. The same CN has been reported from Japan (Rice et al. 2015). This is the first chromosome count for the species from Russia. Diploid (2*x*), *x* = 11.

Isoetes echinospora Durieu, **2*n* = 22.** "Ivanovskaya Oblast', Palekhskii Raion, in 2 km of Falyushino village, Levinskoe Lake, at the sandy bottom, 56°46'21.4"N 42°05'13.6"E, 25 Aug 2020, *J. Vinogradova & N. Konotop V20271*"; "Ivanovskaya Oblast', Teikovskii Raion, Rubskoe Lake, near Chaika sanatorium, on the sandy bottom, 56°43'53.8"N 40°36'53.2"E, 22 Jun 2019, *J. Vinogradova, N. Konotop, A. Bobrov, E. Chemeris & M. Grigoryan V19003.2*" (Fig. 1D). Holarctic. In the Ivanovo Region the species is very rare. The same chromosome number is known in Europe and Alaska (Britton et al. 1999, Rice et al. 2015). We have already published the first CN from Ivanovskaya Oblast' for this species (Vinogradova & Konotop 2020). Diploid (2*x*), *x* = 11. The CN is constant.

Isoetes lacustris L., **2*n* = 110.** "Ivanovskaya Oblast', Savinskii Raion, Zapadnoe Lake, in 200 m of Zaozerye village, on the sandy bottom, 56°32'33.0"N 40°53'50.9"E, 21 Aug 2020, *J. Vinogradova & N. Konotop V20210*" (Fig. 1E). Holarctic. In the Ivanovo Region the species is very rare. The CN in Russia is known from Ivanovo Region (Vinogradova & Konotop 2020), Arkhangelsk and Tyumen Regions (Grigoryan et al. 2021). Decaploid (10*x*), *x* = 11. The CN is constant.

POTAMOGETONACEAE

Potamogeton lucens L., **2*n* = 52.** "Ivanovskaya Oblast', Kineshemskii Raion, Stepino village, Mikhailovka River, near the dam, 57°23'19.3"N 42°07'17.2"E, 20 Jun 2020, *J. Vinogradova V20025*" (Fig. 1F). Eurasia and rarely – in N and E Africa. In the Ivanovo Region the species is common. The same CN has been already reported (Kaplan et al. 2013, Chepinoga 2014), but it is the first CN count for Ivanovo Region. Tetraploid (4*x*), *x* = 13. The CN is constant.

RANUNCULACEAE

Ranunculus circinatus Sibth. (≡ *Batrachium circinatum* (Sibth.) Spach), **2*n* = 16.** "Ivanovskaya Oblast', Savinskii Raion, 500 m of Pelhovo village, Shizhegda River, 56°32'52.2"N 41°28'50.7"E, 11 Aug 2020, *J. Vinogradova & N. Konotop V20152*"; "Ivanovskaya Oblast', Gavrilo-Posadskii Raion, Gavrilov Posad town, Irmes River, 56°33'22.7"N 40°08'27.2"E, 14 Aug 2020, *J. Vinogradova, N. Konotop & A. Kurganov V20190*; "Ivanovskaya Oblast', Privolzhskii Raion, Ples town, Shohonka River, 200 m of the dam, 57°27'29.7"N 41°31'17.0"E, 12 Sep 2020, *J. Vinogradova & N.*

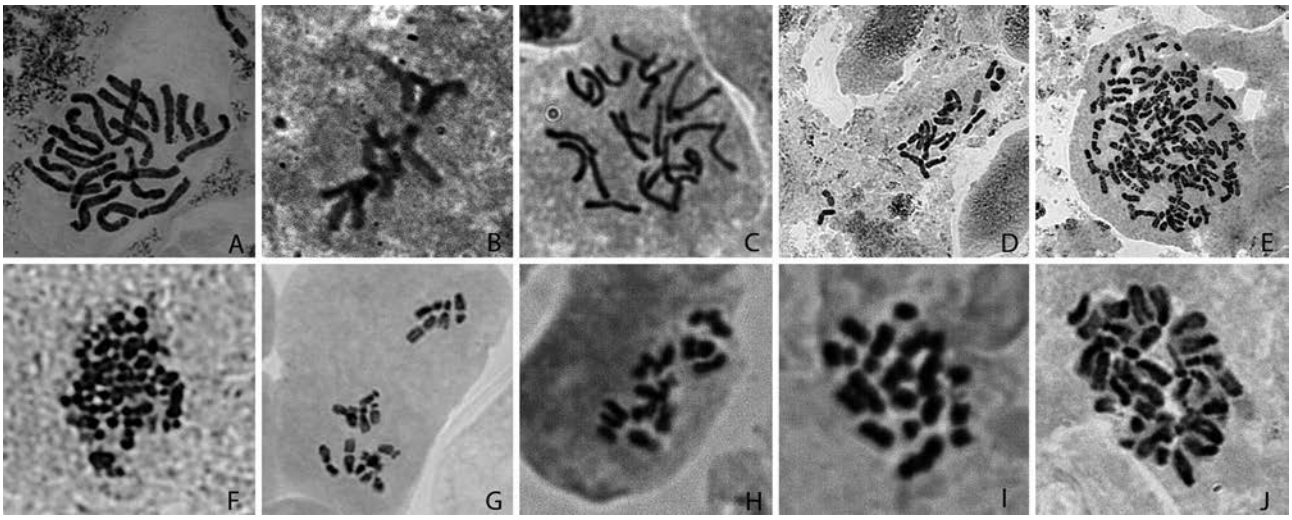

Figure 1 Mitotic metaphases of: A, *Sagittaria sagittifolia* L., 2*n* = 22; B, *Callitriche cophocarpa* Sendtn., 2*n* = 10; C, *Isoetes asiatica* (Makino) Makino, 2*n* = 22; D, *Isoetes echinospora* Durieu, 2*n* = 22; E, *Isoetes lacustris* L., 2*n* = 110; F, *Potamogeton lucens* L., 2*n* = 52; G, *Ranunculus circinatus* Sibth., 2*n* = 16; H, *Ranunculus gmelinii* DC., 2*n* = 16; I, *Ranunculus gmelinii*, 2*n* = 24; J, *Ranunculus kauffmannii* Clerc, 2*n* = 32

Konotop V20299" (Fig. 1G). Holarctic. In the Ivanovo Region the species is rather common. The same CN was reported earlier from Ivanovo Region (Vinogradova & Konotop 2020) and from Europe (Cook 1962, Uhrikova & Rabbit 2000 – cited in Rice et al. 2015). The CN is constant. Diploid (2*x*), *x* = 8.

Ranunculus gmelinii DC., **2*n* = 16.** "Magadanskaya Oblast', Srednekanskii Raion, in vicinity of Seymchan settlement, small lake, 62°51'25.3"N 152°24'35.3"E, 11 Aug 2021, *E. Andriyanova A21039*" (Fig. 1H). **2*n* = 24.** "Magadanskaya Oblast', Magadanskii Raion, Balakhapchan Stream basin, in the pool, 59°36'39.8"N 150°52'16.6"E, 22 Aug 2021, *E. Andriyanova A21051*" (Fig. 1I). Holarctic. In the Magadan Region the species is common in all districts. The triploid (3*x*) was earlier known from only one locality (Krogulevich 1976). We have found triploids (3*x*) in 3 localities in non-freezing streams on the northern coast of the Okhotsk Sea (Andriyanova & Mochalova 2020). Diploids (2*x*), triploids, even tetraploids (4*x*) are known from Eurasia, and octoploids (8*x*) were reported from N America (Rice et al. 2015); *x* = 8. Variable ploidy.

Ranunculus kauffmannii Clerc (≡ *Batrachium kauffmannii* (Clerc) V.I. Krecz.), **2*n* = 32.** "Ivanovskaya Oblast', Ivanovskii Raion, Loma village, Vostra River, under the bridge, 1 Oct 2020, 56°52'46.0"N 40°58'29.0"E, *J. Vinogradova & N. Konotop V20310*" (Fig. 1J). Eurasian. In the Ivanovo Region the species is common in some districts. Tetraploid cytotype (2*n* = 4*x* = 32) was already known from Ivanovo Region (Vinogradova & Konotop 2020), also 2*n* =16, 32 – from other regions (Kornilova et al. 2006, Chepinoga 2014, Bobrov et. al. 2015). Variable ploidy (2*x*, 4*x*), *x* = 8.

Siberia, Russia

Nina S. Probatova & Denis A. Krivenko

ASTERACEAE

Carduus crispus L., **2*n* = 16.** "Novosibirskaya Oblast', the wasteland between International airport Novosibirsk (Tolmachevo) and Ob' town, 110 m a.s.l., weedy-ruderal plant communities, 55°00'13"N 82°40'26"E, 20 Aug 2021, *D.A. Krivenko 13687*" (IRK, VLA). Europe, Asia; alien in N America. Riversides, among shrubs, on roadsides and in settlements. In Primorye Territory we also revealed 2*n* = 16, but once *2n* = 18, sometimes 0–B chromosomes occur (Probatova 2014). Májovský et al. (1987): *x* = 8, 9, 11. Polybasic genus. Diploid (2*x*), *x* = 8. Perhaps the CN of this species is not constant.

Crepis tectorum L., **2*n* = 8.** "Irkutskaya Oblast', Shelekhovskii Raion, Bol'shoi Lug settlement, left riverside of the Olkha river – right tributary of the Irkut river, 480 m a.s.l., weedy roadside, 52°04'42"N 104°05'51"E, 16 Jul 2021, *D.A. Krivenko 13677*" (IRK, VLA). Europe, Asia, but alien in the Russian Far East (RFE); also alien in N America. Weedy places, rooadsides, disturbed habitats. Májovský et al. (1987): in this polybasic genus *x* = 3, 4, 5. We found in this species only 2*n* = 8, from Primorye (see Probatova 2014), as in Baikal Siberia (see Chepinoga 2014) and in multiple authors elsewhere. Diploid (2*x*); *x* = 4. The CN in this species is constant.

Senecio vulgaris L., **2*n* = 40.** "Krasnoyarskii Krai, Krasnoyarsk city, railway station, on the railroad bed, 56°00'21"N 92°49'45"E, 31 Jul 2013, *D.A. Krivenko 13238*" (IRK, VLA). Cosmopolitan. Weedy places, roadsides, river banks. From Primorye 2*n* = 38, 40 (see Probatova 2014). Májovský et al. (1987): for the genus *x* =10. Tetraploid (4*x*), and this CN is likely constant.

Tripleurospermum inodorum (L.) Sch.Bip., **2*n* = 18.** "Irkutskaya Oblast', Irkutskii Raion, left riverside of the Irkut River, between Mamony and Maximowschina villages, weedy-ruderal plant communities along the country road, 52°17'56.4"N 104°07'12.0"E, 9 Aug 2020, *D.A. Krivenko & O.A. Chernysheva 13583*" (IRK, VLA). Europe, SW Asia; alien elsewhere. Meadows, roadsides, river banks, as a weed in the settlements. Multiple CN counts: mainly 2*n* = 36, but 2*n* = 18 is not rare. In the specimens from Kamchatka Peninsula we found 2*n* = 18 and 36 (see below). Májovský et al. (1987): in this genus *x* = 9. Here is a diploid cytotype (2*x*, *x* = 9), but the species has variable ploidy.

BORAGINACEAE

Myosotis caespitosa Schultz, **2*n* = 44.** "Republic of Buryatia, Barguzinskii Raion, E coast of Lake Baikal, Barguzinskii Bay, Maksimikha village, Maksimikha River, 451 m a.s.l., in water, 53°15'52.7"N 108°44'20.6"E, 29 Aug 2019, *O.Yu. Zavgorodnyaya 13533*" (IRK, VLA). Europe, Asia. Moist places, riversides, in water. Mainly the CN 2*n* = 88 was reported for this species, sometimes also 2*n* = 24, 48, ca. 80 and very rare – 2*n* = 22, 44. In the large polybasic genus *Myosotis* L. *x* = 6, 7, 8, 9, 11, 13 (Májovský et al. 1987), and our specimen is tetraploid (4*x*, *x* = 11). Variable ploidy. We revealed a rare CN 2*n* = 44 for this species.

Myosotis scorpioides L., **2*n* = 66.** "Republic of Buryatia, Pribaikal'skii Raion, Goryachinsk village, Goryachinskii thermal spring, 488 m a.s.l., in water, 52°59'14.6"N 108°16'27.40"E, 28 Aug 2019, *O.Yu. Zavgorodnyaya 13532*" (IRK, VLA). Holarctic? Sometimes the species is considered as a synonym of *M. palustris* (L.) Hill. Most CN counts give 2*n* = 66, but also 2*n* = 22, 42, 44, 63, 64. Hexaploid (6*x*; *x* = 11), and this CN is more common in this species and in *M. palustris* as well (Májovský et al. 1987). However, there is variable ploidy.

BRASSICACEAE

Thlaspi arvense L., **2*n* = 14.** "Irkutskaya Oblast', Irkutsk City, left riverside of the Angara river, 6th urban settlement of hydroelectric power station, 450 m a.s.l., ruderal plant communities, 52°13'47"N 104°17'07"E, 11 Jul 2021, *D.A. Krivenko 13678*" (IRK, VLA). Holarctic, but alien in the RFE. Roadsides, vegetable gardens, as a weed in the fields. Májovský et al. (1987): in the genus *x* = 7. Diploid (2*x*).

CARYOPHYLLACEAE

Melandrium album (Mill.) Garcke (≡ *Silene latifolia* subsp. *alba* (Mill.) Greuter & Burdet), **2*n* = 24.** "Irkutskaya Oblast', Ust'-Ordynskii Buryatskii Okrug, Alarskii Raion, Aleksandrovsk settlement, forest edge, 53°20'49.07"N 102°39'54.81"E, 29 Aug 2021, *O.Yu. Zavgorodnyaya 13722*" (IRK, VLA). Europe, Asia; alien in the N America. Meadows, clearings, roadsides, waste grounds, vegetable gardens, railway embankments, forest margins, riversides, marine terraces. Májovský et al. (1987): *x* = 10, 12 in the genus. The species was studied in Pimorye: 2*n* = 24. Diploid (2*x*), *x* = 12. The CN is constant.

PAPAVERACEAE

Papaver popovii Sipliv., **2*n* = 56.** "Irkutskaya Oblast', Bratskii Raion, right riverside of the Angara river, Bratskaya barrage, Hydroelectric power station, rocky hold-on to the river, *Pinus–Betula* forb forest, 56°17'04.64"N 101°47'25.81"E, 25 Jul 2020, *O.A. Chernysheva 13601*" (IRKU, IRK, LE, VLA). Endemic of the Baikal Siberia. Rare species. In polybasic genus *Papaver* L. *x* = 6, 7, 8; however, *x* = 7 is the most common (Májovský et al. 1987). For this species, the previously reported CN (Probatova et al. 2015) was confirmed. Octoploid (8*x*; *x* = 7).

Papaver rhoeas L., **2*n* = 14.** "Irkutskaya Oblast', Irkutskii Raion, left riverside of the Irkut River, between Mamony and Maximowschina villages, weedy-ruderal plant communities along the country road, 52°17'56.4"N 104°07'12.0"E, 9 Aug 2020, *D.A. Krivenko & O.A. Chernysheva 13582*" (IRK, VLA). Europe, Asia, N Africa; as alien in N America and elsewhere as a weed. Roadsides, agricultural lands, fallow lands, sometimes on the slopes. Multiple CN counts: 2*n* =14 (rarely 15 and 21). Diploid (2*x*).

POACEAE

Agrostis clavata Trin., **2*n* = 42.** "Republic of Sakha (Yakutia), Mirninskii Raion, in vicinity of Tas-Yuriakh village, near the base of "Yakutskgeofizika", ruderal plant communities,

61°46'56"N 113°05'30"E, 29 Aug 2012, *D.A. Krivenko 13251*" (IRK, NSK, VLA). Europe (excl. S), Caucasus (Centr.), Asia, N America (Alaska). Coniferous and mixed forests, among shrubs, on clearings, meadows, riverside sands and pebbles. Caryologically the species have been studied in Baikal Siberia and in various subregions of RFE, many times: $2n = 42$ (see Tzvelev & Probatova 2019). Hexaploid (6*x*), $x = 7$. The CN is constant. First CN count from Yakutia.

Setaria pumila (Poir.) Roem. et Schult., **$2n = 18$.** "Irkutskaya Oblast', Irkutsk city, left riverside of the Angara river, near railway station Akademicheskaya, 450 m a.s.l., on the gravel of the railroad bed, 52°15'23"N 104°16'22"E, 29 Aug 2020, *D.A. Krivenko & M.A. Markaryan 13610*" (IRK, VLA). Cosmopolitan (?), occurs everywhere, except the Arctic and extreme north of the forest zone. On plantations (as a weed), disturbed meadows, riversides, roadsides, in settlements. Here we revealed a rare CN $2n = 18$, which was earlier found in Amur Region as well as in Armenia (see Tzvelev & Probatova 2019). First diploid report from Siberia. Most common is tetraploid CN $2n = 4x = 36$, reported by many authors from everywhere, incl. Siberia and the RFE. Variable ploidy (2*x* and 4*x*; $x = 9$).

Setaria viridis (L.) P. Beauv., **$2n = 18$.** "Irkutskaya Oblast', Irkutskii Raion, Maloe Goloustnoe settlement, on the right riverside of the Goloustnaya River, 52°18'15.20"N 105°21'00.05"E, 16 Aug 2012, *D.A. Krivenko 13250*" (IRK, VLA). Cosmopolitan. In roadsides, settlements, weedy places, on plantations, on riverside sands and pebbles. Extremely polymorphic species. Multiple CN data (Bolkhovskikh et al. 1969, Agapova et al. 1993, Marhold et al. 2007, Chepinoga 2014, Probatova 2014, etc.). Diploid (2*x*; $x = 9$). The CN is constant.

Stipa pennata L., **$2n = 44$.** "Altaiskii Krai, Mikhailovskii Raion, outskirts of Malinovoe Ozero settlement, near Malinovoe Lake, 163 m a.s.l., the light forb-grassy-stipa pine forest, 51°39'50"N 79°49'59"E, 17 Jun 2012, *D.A. Krivenko 13239*" (IRK, VLA). Europe, Siberia, Centr. Asia. Steppes, stony slopes. Many CN reports: $2n = 44$. Tetraploid (4*x*; $x = 11$), the CN is constant.

POLYGONACEAE

Persicaria scabra (Moench) Moldenke, **$2n = 22$.** "Irkutskaya Oblast', Irkutskii Raion, left riverside of the Irkut River, between Mamony and Maximowschina villages, weedy-ruderal plant communities along the country road, 52°17'56.4"N 104°07'12"E, 9 Aug 2020, *D.A. Krivenko & O.A. Chernysheva 13590*" (IRK, VLA). Holarctic. Riverside and seacoastal sands and pebbles, on the riverbanks, as a weed on roadsides, in the settlements. Poorly studied species. In the genus *Persicaria* Mill. $x = 10, 11, 12$ (Májovský et al.1987). Bolkhovskikh et al. (1969) report $2n = 22$ and 44 for *P. scabra*. However, in Rice et al. (2015) only $n = 11$ and $2n = 22$ are given for *P. scabra*. The species probably has variable ploidy: 2*x* and 4*x*; $x = 11$. Polymorphic species.

Rumex longifolius DC., **$2n = 60$.** "Irkutskaya Oblast', Irkutskii Raion, W lakeside of Baikal, outlet of Angara River, right riverside, Listvyanka settlement, at the building of Baikal Museum of the Irkutsk Scientific Center SB RAS, 470 m a.s.l., forb-grassy plant community, 51°52'05.39"N 104°49'57.53"E, 18 Sep 2020, *D.A. Krivenko 13602*" (IRK, VLA). Holarctic; somewhere perhaps alien. In the settlements, on roadsides, in disturbed meadows and clearings, riverside sands and pebbles. Májovský et al. (1987): $x = 10$ for the genus. *R. longifolius* is well studied species, hexaploid (6*x*). The CN $2n = 60$ is the most common in *R. longifolius* (Rice et al. 2015), rarely $2n = 80$, as to $2n = 40$ – it can be erroneous.

PRIMULACEAE

Androsace maxima L., **$2n = 40$.** "Irkutskaya Oblast', Irkutsk city, left riverside of the Angara River, Akademgorodok, 460 m a.s.l., on roadside, 52°14'44"N 104°16'19"E, 16 Jul 2021, *D.A. Krivenko 13679*" (IRK, VLA). Europe, Caucasus, W and Centr. Siberia, W, Centr. and E Asia (but absent in the RFE), N Africa; as alien in USA. Riversides, stony places, montane meadows and steppes, roadsides. In this species $2n = 40$ was counted three times, incl. specimen from Irkutsk Region (Chepinoga 2014), rarely 58–60 и 60 (Májovský et al. 1987); $x = (9), 10, (19)$. Tetraploid (4*x*), if it is not variable ploidy.

SAXIFRAGACEAE

Mitella nuda L., **$2n = 14$.** "Irkutskaya Oblast', Taishetskii Raion, Oblepikha settlement, 357 m a.s.l., *Pinus–Picea–Betula* forest with *Ribes* and *Equisetum*, watercourse of a rivulet, 55°39'42.6"N 98°27'20.4"E, 20 Jul 2020, *O.A. Chernysheva 13615*" (IRK, VLA). Siberia, RFE (Primorye, Amur, Okhotia), E Asia, N America. Coniferous, mixed and deciduous humid forests, on rich forest soils. There is a mistake in Agapova et al. 1993: not $2n = 38$, but 28 must be (Sokolovskaya 1966). Tetraploid plants ($2n = 4x = 28$) occur more often: in Primorye (see Probatova 2014), Siberia (see Chepinoga 2014 – Khamar-Daban Ridge) and in Japan (Nishikawa 2008). It was noticed (Kharkevich 1989), that diploid plant seems to have some morphological differences from tetraploid one. Variable ploidy: $2n = 14$ and 28 ($x = 7$).

Kamchatka Territory, Russia

Nina S. Probatova & Ol'ga A. Chernyagina

Vouchers in VLA.

ASTERACEAE

Arctium tomentosum Mill., **$2n = 36$.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, abandoned vegetable garden, rare, 20 Sep 2021, *O.A. Chernyagina 13717*". Eurasian, but alien in the Russian Far East and, probably, elsewhere. Weedy places, vegetable gardens, roadsides, in the settlements. In the genus $x = 9$ (Májovský et al. 1987). In RFE it was studied in Primorye (see Probatova 2014). There are multiple CN data for species and hybrids in the genus *Arctium* L., but from Kamchatka this is our first CN report. For this species only tetraploid (4*x*) CN $2n = 36$ is known.

Picris kamtschatica Ledeb., **$2n = 10$.** "Kamchatka Peninsula, Bystrinskii Raion, Esso settlement, terrace of the Uksichan river, on the slope, 31 Aug 2019, *O.A. Chernyagina 13647*". NW Pacific. Stone-birch forest margins, among shrubs, in seacoast meadows, riverside pebbles. Májovský et al. (1987): $x = 5$ for the genus. The CN was studied from Kamchatka Peninsula and from S Kurils (see Agapova et al. 1990). The diploid CN is constant.

Pilosella aurantiaca (L.) F.W.Schultz et Sch.Bip., **$2n = 36$.** "Kamchatka Peninsula, in the center of Petropavlovsk-Kamchatskii City, as a weed on the lawn, 7 Nov 2019, *O.A. Chernyagina 13472*". Euro-Mediterranean; as alien – in N America. In the RFE the species is alien as well, but naturalized especially in Sakhalin, where it penetrated into natural plant communities. *P. aurantiaca* (≡ *Hieracium aurantiacum* L.) is facultative apomictic species. The CNs recorded by many authors were $2n = 18$ (very rare), 27, 30, 36, 45, 54, 63 and 72. In Sakhalin only tetraploid CN $2n = 36$ was found (see Probatova et al. 2007). We suggest that tetraploid cytotype may be the most active as a weed. Májovský et al. (1987): $x = 9$ for the genus *Pilosella* Hill. Variable ploidy. From Kamchatka this is the first CN report.

Taraxacum ceratophorum Host, **$2n = 32$.** "Kamchatka Peninsula, Yelizovskii Raion, Avachinsky Volcano, submountain area, at the temporary watercourse, 15 Aug 2019, *O.A. Chernyagina 13642*". Species aggregate, there are many species within (Tzvelev 1992). Holarctic. Their CNs were studied from northern subregions of the RFE: $2n = 24$ and 32. The basic number of the genus (*x*) is 8. So, we revealed a tetraploid cytotype (4*x*). Variable ploidy.

Taraxacum longicorne Dahlst., **$*2n = 16$.** "Kamchatka Peninsula, Mil'kovskii Raion, Lazo settlement, 6 Aug 2019, *O.A. Chernyagina 13648*". Central Asia, East Siberia, RFE. Meadows, pebbles, stony slopes and rocks, seacoastal sands, to the South – in alpine mountain belt. Previously, in the RFE (Chukotka and Magan Region), for this species triploid CN was found: $2n = 24$ (Tzvelev & Zhukova 1986, Probatova et al. 2006). Variable ploidy. First CN count from Kamchatka.

Taraxacum stenolobum Stschegl., **2*n* = 24.** "Kamchatka Peninsula, Mil'kovskii Raion, Lazo settlement, on the waste ground, 10 Aug 2019, *O.A. Chernyagina 13662*". Siberia, Central Asia. Alien in the RFE. It is reported firstly from Kamchatka. On roadsides, in the settlements, disturbed meadows, on pebbles. The CN of the species is studied for the first time. Triploid (3*x*); $x = 8$.

Tripleurospermum inodorum (L.) Sch.Bip., **2*n* = 18.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, on the waste ground, 18 Sep 2021, *O.A. Chernyagina 13680*". **2*n* = 36**. "Kamchatka Peninsula, Tighil'skii Raion, Palana settlement, airport, 12 Sep 2019, *O.A. Chernyagina 13640*". Europe, SW Asia; alien elsewhere. Waste grounds, roadsides, as a weed in the settlements. In Irkutsk Region we revealed 2*n* = 18 (see above), in Primorye – 2*n* = 18 and 36 (see Probatova 2014). In Kamchatka we also found both cytotypes 2*n* = 18 (2*x*) and 36 (4*x*). Variable ploidy. The distribution of di- and tetraploid cytotypes within the species distribution area is of interest.

Tussilago farfara L., **2*n* = 60.** "Kamchatka Peninsula, Petropavlovsk-Kamchatskii city, 6, Partizanskaya Str., probably escaped from the culture, 28 May 2021, *O.A. Chernyagina 13657*". Europe, Central Asia, Siberia; as adventive in RFE, in N America and N Africa. Widely spreads as alien. On the lawns, waste grounds, roadsides. Májovský et al. (1987): $x = 10$. Monotypic genus. Its only one species is hexaploid (6*x*). First CN count from Kamchatka.

BRASSICACEAE

Arabis pendula L., **2*n* = 16.** "Kamchatka Peninsula, Karaginskii Raion, Tymlat settlement, on the waste ground, 12 Sep 2021, *O.A. Chernyagina 13723*". Siberia, RFE, Centr. and E Asia. Riversides, among shrubs, valley forests, roadsides. Májovský et al. (1987): $x = 7, 8$ in the genus. Diploid (2*x*, $x = 8$). First CN count from Kamchatka.

Capsella bursa-pastoris (L.) Medik., **2*n* = 16.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, on the waste ground, 18 Sep 2021, *O.A. Chernyagina 13718*". Cosmopolitan. Common weed in the RFE. Roadsides, in the fields and vegetable gardens, in the settlements. Májovský et al. (1987): $x = 8$ in the genus. In the literature for *C. bursa-pastoris* more often is reported 2*n* = 32, rarely 16. In Primorye we also revealed 2*n* = 16 (see Probatova 2014). First CN count from Kamchatka. Variable ploidy in the species.

CARYOPHYLLACEAE

Oberna behen (L.) Ikonn. (≡ *Silene vulgaris* (Moench) Garcke), **2*n* = 24.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, waste grounds, vegetable gardens, 6 Sep 2021, *O.A. Chernyagina 13719*". Eurasian; as alien in the N and S Americas. Along forest roads, in clearings, meadows, among shrubs, in the fields, agricultural lands. Májovský et al. (1987): $x = 10, 12$ for this genus. Multiple CN counts: only 2*n* = 24. Diploid (2*x*; $x = 12$). First CN count from Kamchatka.

Stellaria graminea L., **2*n* = 26.** "Kamchatka Peninsula, Mil'kovskii Raion, Lazo settlement, on roadside, 10 Aug 2019, *O.A. Chernyagina 13661*". Europe, Caucasus, Siberia, Centr. Asia; alien in the RFE and in N America. Roadsides, railway embankments, near settlements. Májovský et al. (1987): $x = 10, 11, 12, 13$ (for the genus). For *S. graminea* most authors give 2*n* = 26, rarely 39 and 52, even 104. Diploid (2*x*; $x = 13$), the same in Primorye, Khabarovsk Territory and Irkutsk Region. First CN count from Kamchatka. Variable ploidy.

FABACEAE

Vicia cracca L., **2*n* = 14.** "Kamchatka Peninsula, Tigil'skii Raion, Palana settlement, on the waste ground, 11 Sep 2019, *O.A. Chernyagina* 13644". Holarctic. Meadows, among shrubs, in forest margins, waste places. Májovský et al. (1987): for this genus $x = 5, 6, 7$. Extremely polymorphous species. There are multiple CN counts for *V. cracca* in the literature, giving 2*n* = 12, 14, 21, 24, 28 (Bolkhovskikh et al. 1969; Agapova et al. 1990; Marhold et al. 2007; Nishikawa 2008). Only diploid CN 2*n* = 14 belongs to our species in the RFE (Primorye, Lower Amur River valley, Sakhalin – see Probatova et al. 2007; Probatova 2014, etc.). The CN 2*n* = 28 occurs in *V. cracca* in some regions, but 2*n* = 12 must be referred to another species. Variable ploidy (2*x*, 4*x*). Extremely polymorphous species, with many synonymes. Second CN count from Kamchatka.

PAPAVERACEAE

Chelidonium asiaticum (H. Hara) Krachulc., **2*n* = 10.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, on the waste ground, rare, 18 Sep 2021, *O.A. Chernyagina 13684*". E Siberia (Baikal), RFE, E Asia. Light forests, forest edges, burns, riverside pebbles, as a weed in the settlements. Multiple CN counts from Primorye (see Probatova 2014). Diploid (2*x*), $x = 5$. The CN is constant. First CN count from Kamchatka.

Chelidonium majus L., **2*n* = 12.** "Kamchatka Peninsula, Mil'kovskii Raion, Lazo settlement, in vegetable gardens, escaped from the culture (?), 6 Aug 2019, *O.A. Chernyagina 13653*". Europe, Caucasus, Siberia (but rare in Baikal Siberia and absent in the RFE); alien in N America. In forests. Cultivated? Diploid (2*x*), $x = 6$. The CN is constant. First CN count from Kamchatka.

Papaver croceum Ledeb., **2*n* = 14.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, the border of gravel road, often, 18 Sep 2021, *O.A. Chernyagina 13728*". W Siberia (Altai), E Siberia (Buryatia), Centr. Asia, E Asia (Mongolia, China), N America (alien?). Riverside sands and pebbles, stony slopes, among shrubs, meadows, pastures and on the dumps. 2*n* = 14, 28 (see Rice et al. 2015). First CN count from Kamchatka. Variable ploidy.

PLANTAGINACEAE

Plantago major L., **2*n* = 12.** "Kamchatka Peninsula, Karaginskii Raion, Ossora settlement, at the fence, 21 Sep 2021, *O.A. Chernyagina 13731*". Cosmopolitan. Riverside sands and pebbles, disturbed meadows, in settlements, on roadsides. Very many CN counts in the literature. It was studied from Kamchatka, too. Diploid (2*x*; $x = 6$), the CN is constant.

POACEAE

Agrostis anadyrensis Soczawa, **2*n* = 56.** "Kamchatka Territory, Penzhinskii Raion, Penzhinskii Range, upper course of Kichavayam River, moist plots on small stony terrace at the rivulet, near the gold-miners base, more common on moist roadsides, ca. 410 m a.s.l., 62°17'08.9"N 167°07'07.1"E, 17 Aug 2019, *V.V. Yakubov 13547*". E Siberia, RFE, N America (Alaska). Meadows, riverside sands and pebbles, among shrubs. It has been studied from Republic Sakha (Yakutia), Chukotka, N Koryakia, Magadan Region. Probably, the species is of hybrid origin (see Tzvelev & Probatova 2019). Octoploid (8*x*), $x = 7$. The CN is constant.

Deschampsia komarovii V.N.Vassil., **2*n* = 26.** "Kamchatka Territory, Olyutorskii Raion, NW of Goven Peninsula, Srednyaya Bay, marshy meadow at the mouth of the stream, 60°25'17.4"N 167°22'22.4"E, 27 Jul 2019, *V.V. Yakubov 13550*". Baikal Siberia (Vitimskii Nature Reserve), RFE. Endemic. Riverside and seacoastal meadows, sands and pebbles. 2*n* = 26, 38, 42, 52 – from E Chukotka, Wrangel Isl., Kamchatka (see Agapova et al. 1993, Tzvelev & Probatova 2019; $x = 13$ – most common for the genus). Variable ploidy?

Elymus peschkovae Tzvelev, **2*n* = 28.** "Kamchatka Territory, Penzhinskii Raion, Penzhinskii Range, upper course of Kichavayam river, on tiny rubble near the housing of gold-miners base, 62°17'08.9"N 167°07'07.1"E, 17 Aug 2019, *V.V. Yakubov 13545*". E Siberia, RFE; NE China. On stony slopes, rocks and pebbles. The species related to *E. sibiricus* L. and *E. confusus* (Roshev.) Tzvelev, probably of hybrid origin. The CN was studied from Irkutsk, Magadan and Amur Regions and Khabarovsk Territory. Tetraploid (4*x*).

Festuca brachyphylla Schult. et Schult.f., **2*n* = 42.** "Kamchatka Territory, Olyutorskii Raion, NW of Goven Peninsula, mountains along the coast of Lavrova Bay, stony slopes, on agglomerations of melkozem, 330 m a.s.l., 15 Jul 2019, *V.V. Yakubov 13554*". N Europe, Siberia, Centr. Asia, N RFE, N America. Stony slopes, various tundras, in the Arctic and in the upper mountain belt. The CN was well studied

from Yakutia, Wrangel Isl., Chukotka, N Koryakia, Karaginskii Isl., Magadanskaya Oblast' (see Tzvelev & Probatova 2019). Hexaploid (6*x*; *x* = 7). The CN is constant.

Poa arctica R.Br., **2*n* = 56.** "Kamchatka Territory, Penzhinskii Raion, Penzhinskii Range, upper course of Kichavayam River, nival-tundra slopes, below rocky ribs, near the pass to Parapol'skii Dol, ca. 530 m a.s.l., 62°16'39.7"N 166°08'52.8"E, 19 Aug 2019, *V.V. Yakubov 13552*". N Europe, Siberia, N RFE, N America. In various tundras, on riverside pebbles, among shrubs; in the Arctic and in the alpine belt. Multiple CN data, from Arkhangelsk Region, Krasnoyarsk Territory, Baikal Siberia, Yakutia, Wrangel Isl., Chukotka, N Koryakia: 2*n* = 42, 56, 60, 62, 70, 74 (see Tzvelev & Probatova 2019). Variable ploidy.

Poa radula Franch. et Sav., **2*n* = 42.** "Kamchatka Peninsula, the flood-plain of the Levaya Schapina River, alder forest, Nizhne-Schapinskie ("Kipelye") hot springs, 31 Aug 2019, *O.A. Chernyagina 13650*". Kamchatka, Sakhalin, S Kurils; Japan. Tall herbage meadows, forest clearings, among shrubs, in the ravines, on the riversides. The species is well studied in RFE (see Pobatova et al. 2007). Hexaploid (6*x*; *x* = 7). The CN is constant.

VIOLACEAE

Viola arvensis Murray, **2*n* = 34.** "Kamchatka Peninsula, Karaginskii Raion, Drankinskie hot springs, 29 Aug 2015, *O.A. Chernyagina 13652*". Europe; as alien in W and Centr. Asia, Siberia, RFE and N America. Roadsides, as a weed in the fields. Multiple CN records. Májovský et al. (1987): for the genus *x* = 5, 6, 8, 11, 13, 17, 29. Diploid (2*x*), *x* = 17. First CN count from Kamchatka.

Viola tricolor L., **2*n* = 26.** "Kamchatka Peninsula, Mil'kovskii Raion, Lazo settlement, rare, 6 Aug 2019, *O.A. Chernyagina 13660*". Europe, W Siberia; alien in the RFE and elsewhere. Forest edges and clearings, as a weed in the fields and in settlements. Many CN counts. Diploid (2*x*), *x* = 13. First CN count from Kamchatka.

Primorye Territory, Russian Far East

Nina S. Probatova, Zoya V. Kozhevnikova & O.A. Chernyagina

Vaucher in VLA.

APIACEAE

Cnidium monnieri (L.) Cusson., **2*n* = 12.** "Primorye Territory, Dal'negorskii Raion, outskirts of Dal'negorsk town, Zarechnaya Str., near the Svetlyi Spring after the bridge on the Rudnaya River, clearings and between farms, 1 Jun 2021, *G.M. Gulariantz 13655*". Europe (alien), Mediterranea, E Siberia, Centr. and E Asia. Valley forb meadows, roadsides, weedy places, fallow lands. From RFE (Amur Region, Primorye Territory) we know 2*n* = 12, 20 (see Agapova et al. 1990), others also give 2*n* = 22. Májovský et al. (1987): *x* = 11 for the genus *Cnidium* Cusson ex Juss. Variable ploidy (?) and three basic numbers (5, 6, 11).

ASTERACEAE

Artemisia scoparia Waldst. et Kit.., **2*n* = 16.** "Primorye Territory, Kavalerovskii Raion, near Kavalerovo settlement, the rock Dersu, in the fissures of the rock, 5 Oct 2021, *O.A. Chernyagina 13672*". Eurasian. On riverside pebbles and sands, stony placers, among shrubs, as ruderal in settlements, on waste grounds. Májovský et al. (1987): in the genus *x* = 7, 8, 9. The species has been studied in Primorye several times: 2*n* = 16, but one CN count 2*n* =18, probably, was erroneous (see Probatova 2014). Diploid (2*x*); *x* = 8.

Tripleurospermum inodorum (L.) Sch.Bip., **2*n* = 36.** "Primorye Territory, Nadezhdinskii Raion, 7 km of the railway station Kiparissovo, holiday village "Kiparis", as a weed in the vegetable garden, 20 May 2021, *V. Razdaibeda 13632*".

BALSAMINACEAE

Impatiens glandulifera Royle, **2*n* = 18.** "Primorye Territory, Dal'negorskii Raion, Dal'negorsk town, at the building near the former embarkment of decauville, 21 May 2021, *G.M. Gulariantz 13625*". Asia (SE – Himalaya), alien in Europe and N America. Escaped from the culture, expanded rapidly the riversides, moist ravines, open slopes, weedy places. Májovský et al. (1987): *x* = 6, 7, 8, 9, 10, 13 for this genus. In *I. glandulifera* mostly 2*n* = 18, rarely 20 (see Rice et al. 2015). Diploid (2*x*; *x* = 9).

BRASSICACEAE

Cardamine leucantha (Tausch) O.E.Schulz, **2*n* = 16.** "Primorye Territory, Vladivostok city, Lugovaya place, the remnants of forest vegetation in the park, 20 May 2021, *G.G. Probatova 13635*". E Siberia, RFE. In humid forests, among shrubs on riversides. Májovský et al. (1987): *x* = 8, 15 for the genus. Diploid (2*x*), *x* = 8. Among CN reports, the 2*n* = 16 is the most common, but there are some others: 2*n* = 18, 24, ca. 48 (Bolkhovskikh et al. 1969, Agapova et al. 1990, Probatova et al. 2007): the CN obviously is not constant.

CONVOLVULACEAE

Convolvulus arvensis L., ***2*n* = 24.** "Primorye Territory, Vladivostok city, on the railway embankment near wayside stop Morskoi Gorodok, 27 Aug 2020, *G.G. Probatova 13574*". Practically cosmopolitan (alien in RFE and in N America). Weedy places, railway embankments, on roadsides, as a weed in vegetable gardens (but not in the RFE). Májovský et al. (1987): in this genus they give *x* = 5; in *C. arvensis* – 2*n* = 48, 50. We found a new cytotype in *C. arvensis* – 2*n* = 24; perhaps there are more basic numbers (*x*), beside 5 (*x* = 6?).

FABACEAE

Amphicarpaea japonica (Oliv.) B. Fedtsch., **2*n* = 22.** "Primorye Territory, Vladivostok city, at the Patroclus Bay, as a weed on the lawn, 25 Sep 2016, *G.M. Gulariants 13645*". E Asia. Forest margins, among shrubs, rarely in valley meadows. This is the most common CN for this species, in Primorye and in Japan (Nishikawa 2008), but sometimes 2*n* = 20 also occurs. The CN is not constant: from 6 specimens in Primorye the results divided almost equally between 2*n* = 20 and 2*n* = 22. Such situation in Fabaceae also occurs within the species in *Lespedeza* Michx. and *Kummerowia* Schindl.

Trifolium arvense L., **2*n* = 14.** "Primorye Territory, Kavalerovskii Raion, in vicinity of the Ol'ginskii Pass, country road, on roadside, 5 Oct 2021, *O.A. Chernyagina 13682*". Europe, Siberia, Centr. Asia; alien in the RFE, N America. Roadsides, railway embankments, seacoastal and riverside pebbles, waste grounds. Májovský et al. (1987): in this genus *x* = 5, 6, 7, 8. Well studied species. Diploid (2*x*), *x* = 7.

LAMIACEAE

Clinopodium chinense (Benth.) Kuntze, **2*n* = 20.** "Primorye Territory, Dal'negorskii Raion, outskirts of Dal'negorsk town, in vicinity of Zarechnaya Str., secondary forest edge between the Svetlyi Spring and the bridge on the Rudnaya river, 1 Jun 2021, *G.M. Gulariantz 13656*". Amur, Primorye, rare in S Sakhalin and S Kurils; China, Korea. Meadows, forest edges and clearings, among shrubs. In this species from Primorye 6 specimens showed 2*n* = 20, but in 3 specimens 2*n* = 36 were revealed (see Probatova 2014). The genus *Clinopodium* L. (and *C. chinense*) are evidently polybasic: in Sakhalin and the Kurils *C. sachalinense* (F. Schmidt) Koidz. (2*n* = 16) and *C. kunashirense* Prob. (2*n* = 30) occur. Májovský et al. (1987) give *x* = 5 for the genus, moreover, we also suggest *x* = 6 and 8 (Probatova et al. 2007). In *C. chinense* the CN is not constant.

PAPAVERACEAE

Chelidonium asiaticum (H. Hara) Krahulc., **2*n* = 10.** "Primorye Territory, Kavalerovskii Raion, E ridges of the Sikhote-Alin' mountains, SW slope of the Ol'ginskii Pass, broadleaved forest with *Pinus koraiensis*, 5 Oct 2021, *O.A. Chernyagina 13673*". E Siberia (Baikal, rare), RFE, E Asia. Forest edges, burns, riverside pebbles, as a weed in the settlements. Multiple CN counts from Primorye (see Probatova 2014). Diploid (2*x*), *x* = 5. The CN is constant.

ROSACEAE

Waldsteinia maximowicziana (Teppner) Prob., **2*n* = 14.** "Primorye Territory, Partizanskii Raion, near wayside stop "94 km",

right tributary of Tigrovaya river, Takhinka rivulet, at the cross with oil line, 8 May 2021, *Yu. Dochevoi 13637*". Lower Amur, Primorye, S Sakhalin, S Kurils (?); China, Korea, Japan. Moist coniferous and deciduous forests. Májovský et al. (1987): $x = 7$ for the genus. Within the species area two CNs (cytotypes) were revealed: $2x$ ($2n = 14$, from Primorye) and $4x$ ($2n = 28$, from Primorye, Amur, Sakhalin), but we still cannot follow ecological or geographical preferences of these "chromosome races". Tetraploid cytotype is more common (Probatova et al. 2007, Probatova 2014). In Japan only tetraploid CN was revealed (Nishikawa 2008). The $2n = 42$ for this species is doubtful, we never found it in the RFE. Perhaps in Primorye we have the ancient part of that species geographical area where diploid cytotype still occurs. Variable ploidy.

SCROPHULARIACEAE

Mimulus tenellus Bunge, **$2n = 32$.** "Primorye Territory, Kavalerovskii Raion, sandy bank of Zerkal'naya river, under the rock Dersu, on damped soil, 5 Oct 2021, *O.A. Chernyagina 13674*". Amur, Primorye; N China. Mixed forests, forest roads, in the valley riversides, on pebbles. Májovský et al. (1987): $x = 7, 8$. Tetraploid ($4x$), $x = 8$. The CN is counted twice in Primorye (Probatova 2014) and it is constant.

SOLANACEAE

Nicotiana alata Link et Otto, **$2n = 18$.** "Primorye Territory, Nadezhdinskii Raion, Kl'uchevoe holiday village, escaped and spread from the culture, 15 Aug 2019, *Z.V. Kozhevnikova 13559*". Májovský et al. (1987): $x = 6, 8, 9, 10, 11$ for the genus. In *N. alata* mostly $2n = 18$ was reported (Marhold et al. 2007), and the same in *N.* × *sanderae* hort.[*ulanorum*]; rarely 16 or 18–20. Diploid ($2x$), $x = 9$. First CN count for Russia.

Caucasus (Armenia, Georgia, Russia)

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ASTERACEAE

Centaurea arenaria M.Bieb. ex Willd., **$2n = 32$.** "Russia, Republic of Dagestan, Magaramkentskii Raion, Great Caucasus, Samurskii Range (the system of Bokovoi Ridge), left riverside of the Samur river, 1.5 km ENE of Filya village, 850 m a.s.l., mountain steppe, 41°29'10"N 47°59'57"E, 9 Aug 2021, *D.A. Krivenko 13711*" (IRK, VLA). S and E Europe, Crimea, Caucasus. Seacoastal sands, steppes, saline sands, at the salt lakes. $2n = 32, 36$ (see Rice et al. 2015). In this genus $x = 6, 8, 9, 11$. *C. arenaria* is tetraploid ($4x$; $x = 8$). Also reported $2n = 36$ ($x = 6$ or 9?). Polybasic genus. Variable ploidy. First CN count for Russia.

****Lamyropsis sinuata*** (Trautv.) Dittrich, **$2n = 26$.** "Russia, Republic of Daghestan, Akhtynskii Raion, Great Caucasus, Samurskii Ridge (the system of Bokovoi Range), left riverside of the Samur River, NE of Lutkun village, 1230 m a.s.l., mountain stony steppe, 41°29'07.42"N 47°42'22.58"E, 9 Aug 2021, *D.A. Krivenko 13732*" (IRK, VLA). Europe, Caucasus, W Asia. Poorly studied genus. We found CN counts only for *L. microcephala* (Moris) Dittrich et Greuter (see Rice et al. 2015): $2n = 26$ ($x = 13$). First CN count for *L. sinuata*. Diploid ($2x$), $x = 13$.

Phalacroloma annuum (L.) Dumort. (≡ *Erigeron annuus* (L.) Desf, *Stenactis annua* (L.) Cass. ex Less.), **$2n = 27$**. "Russia, Kabardino-Balkaria Republic, Cherekskii Raion, Great Caucasus, the third advanced ridge of N macroslope, Skalistyi Range, Cherekskoe gorge, left riverside of the Cherek Balkarskii River, near Verkhn'aya Balkaria settlement (former Zilgi village), 1134 m a.s.l., steppe meadow, 43°09'22.14"N 43°28'38.32"E, 15 Aug 2021, *D.A. Krivenko 13741*" (IRK, VLA). N America; as alien in Europe, Asia, Centr. America; in Russia – Caucasus, the RFE (Primorye, S Sakhalin, S Kurils) and elsewhere. As a weed, it propagates rapidly. In Primorye it becomes a persistent weed in vegetable gardens, along country roads (as two other weedy species of the genus – *Ph. strigosum* (Muhl. ex Willd.) Tzvelev and *Ph. septentrionale* (Fernald et Wiegand) Tzvelev). Apomictic species. Triploid ($3x$), $x = 9$. The CN $2n = 27$ occurs in most cases in Májovský et al. (1987), Probatova et al. (2007). First CN count for Caucasus.

BORAGINACEAE

Echium vulgare L., **$2n = 32$.** "Russia, Republic of Dagestan, Levashinskii Raion, Great Caucasus, NE spurs of Kulimeer Range, Nizhnie Chugly village, right riverside of the Nakkher River, 1250 m a.s.l., ruderal plant communities, 41°29'34"N 48°01'24"E, 10 Aug 2021, *D.A. Krivenko 13694*" (IRK, VLA). Europe, Crimea, Caucasus, W and Centr. Asia; introduced in Siberia and the RFE (Primorye, Kamchatka), N America and the South Island of New Zealand. Májovský et al. (1987): $x = 6, 7, 8$ for the genus. Well studied plant species. Multiple CN counts. The CN $2n = 32$ ($x = 8$) is the most common for *E. vulgare*, but $2n = 16$ also occur. Variable ploidy.

BRASSICACEAE

****Lepidium lyratum*** L., **$2n = 16$.** "Russia, Republic of Dagestan, Magaramkentskii Raion, Great Caucasus, Samurskii Range (the system of Bokovoi Ridge), left riverside of the Samur River, 1.5 km ENE of Filya village, 850 m a.s.l., mountain steppe, 41°29'10"N 47°59'57"E, 9 Aug 2021, *D.A. Krivenko 13712*" (IRK, VLA). Caucasus. Steppes. Rare species. Diploid ($2x$, $x = 8$). First CN data for *L. lyratum*.

CARYOPHYLLACEAE

Atocion compactum (Fisch. ex Hornem.) Tzvelev (≡ *Silene compacta* Fisch. ex Hornem.), **$2n = 24$.** "Georgia, Samtskhe-Dzhavakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, on the way from Greli settlement to monastery Sapara, 1310 m a.s.l., roadside, 41°36'20"N 43°01'49"E, 23 Jul 2019, *D.A. Krivenko et al. 13505*" (IRK, VLA). Europe, Caucasus, SW Asia. Riversides, mountain slopes, roadsides. Májovský et al. (1987): $x = 10, 12$ (for the genus *Silene* L.). Many CN data for "*Silene compacta*" (Rice et al. 2015). Diploid ($x = 12$). The CN is constant.

****Dianthus daghestanicus*** **Kharadze**, **$2n = 30$.** "Russia, Republic of Dagestan, Tsuntinskii Raion, Great Caucasus, Bogosskii Range, left riverside of the Khzanor River, 6 km WNW of Bezhta village, the road to Guenukhskii Pass, 2000 m a.s.l., steppe meadow on the slope, 42°09'35.15"N 46°02'26.64"E, 12 Aug 2021, *D.A. Krivenko 13740*" (IRK, VLA). Endemic of Caucasus. Mountain steppes and meadows. In this genus $x = 15$ (Májovský et al. 1987). Diploid ($2x$; $x = 15$). First CN data for *D. daghestanicus*.

FABACEAE

****Argyrolobium biebersteinii*** P.W. Ball, **$2n = 46$.** "Georgia, Samtskhe-Javakheti Mkhare, Akhaltsikhe municipality, at the S entrance to Borjomi gorge, left riverside of the Kura River, near Atskuri fortress, 1300 m a.s.l., ruderal steppe meadow with forbs, 41°42'26"N 43°08'19"E, 23 Jul 2019, *D.A. Krivenko et al. 62028*" (Fig. 2A) (IRK, LE, NSK, PVB); "Georgia, Shida Kartli Mkhare, Gori municipality, left riverside of the Tana river, near Didi Ateni village, 740 m a.s.l., steep rocky-shale slope, 41°54'38"N 44°05'33"E, 24 Jul 2019, *D.A. Krivenko et al. 62033*" (IRK). The genus occurs in Caucasus, S Asia, Africa, N, Centr. and S Americas; *A. biebersteinii* – semishrub in Caucasus, S Asia. Poorly studied genus. The 3 other species with CNs were known: $2n = 26, 30, 48$; perhaps $x = 6$ or 8 (?), 13, 15, 23.

Astragalus galegiformis L., **$2n = 16$.** "Georgia, Samtskhe-Javakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, on the way of Greli village to Sapara monastery, 1310 m a.s.l., roadside, 41°36'20"N 43°01'49"E, 23 Jul 2019, *D.A. Krivenko et al. 59090*" (Fig. 2B) (IRK); "Russia, Kabardino-Balkaria Republic, El'brusskii Raion, Great Caucasus, Baksanskoe gorge, left riverside of the Baksan River, Tegenekli village, 1830 m a.s.l., mountain slope, 43°14'59"N 42°37'06"E, 6 Aug 2019, *D.A. Krivenko 59089* (IRK). Caucasus. Riverbanks, mountain slopes, roadsides. In the genus *Astragalus* L. $x = 8$ (Májovský et al. 1987). There are several CN reports from N Caucasus and Transcaucasia (see Rice et al. 2015). Diploid ($2x$), the CN is constant.

Coronilla varia L. (≡ *Securigera varia* (L.) Lassen), **$2n = 24$.** "Georgia, Samtskhe-Javakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, near Sapara monastery, 1300 m a.s.l., grassy slope in the gorge, 41°36'07.39"N

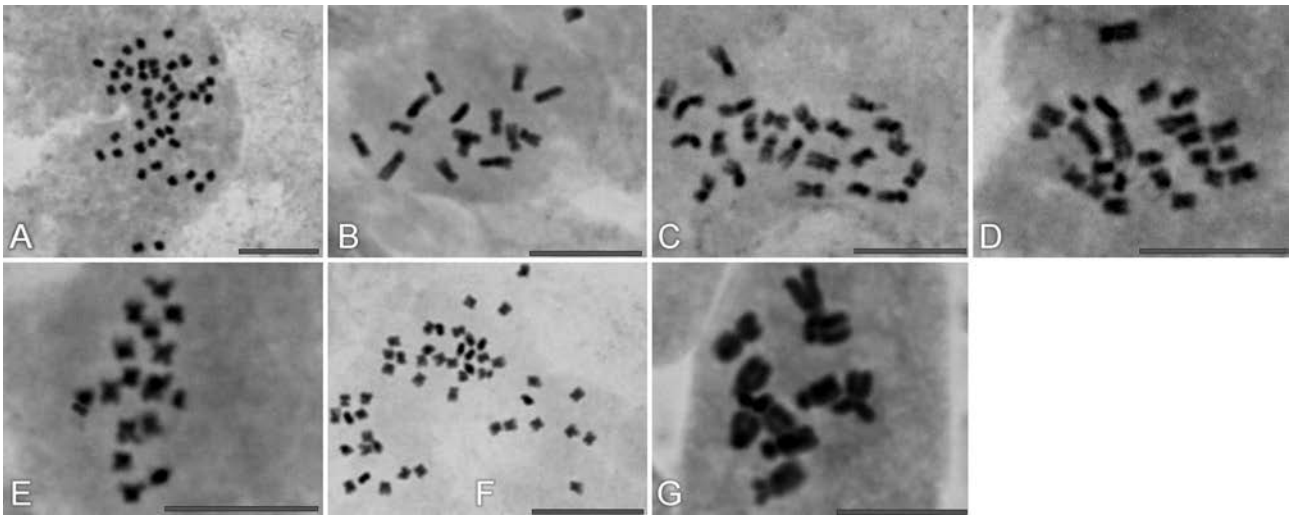

Figure 2 Mitotic metaphase chromosomes: A – *Argyrolobium biebersteinii* P.W. Ball (62028), 2*n* = 46; B – *Astragalus galegiformis* L. (59090), 2*n* = 16; C – *Coronilla varia* L., 2*n* = 24; D – *Lotus corniculatus* L. (62929), 2*n* = 24; E – *Medicago lupulina* L. (62599), 2*n* = 16; F – *Trifolium ambiguum* M. Bieb., 2*n* = 48; G – *Vicia armena* Boiss., 2*n* = 10. Scale bars = 10 μm

43°01'50.37"E, 23 Jul 2019, *D.A. Krivenko et al. 62873*" (Fig. 2C) (IRK). Europe, Caucasus, W Asia; alien in the RFE (S Primorye). Forest margins, meadows, roadsides. In the genus *Coronilla* L. *x* = 5, 6, 7, 9 (Májovský et al. 1987). The species is well studied caryologically: mostly 2*n* = 24, rarely 2*n* = 48. Variable ploidy.

Lotus corniculatus L., **2*n* = 24.** "Georgia, Samtskhe-Javakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, on the way of Greli village to Sapara monastery, 1310 m a.s.l., roadside, 41°36'20"N 43°01'49"E, 23 Jul 2019, *D.A. Krivenko et al. 62929*" (Fig. 2D) (IRK); "Russia, Republic of Dagestan, Dokuzparinskii Raion, Great Caucasus, 4.5. km WSW of Kurush village, left riverside of the Mullarchai River of Chekhychai River basin, opposite Mt. Ragdan, 2450 m a.s.l., steppe meadow, 41°16'08"N 47°46'51"E, 14 Aug 2019, *D.A. Krivenko 62888*" (IRK). Eurasian, but alien in the RFE (S Primorye) and elsewhere. Forest margins, meadows, riverside pebbles, roadsides. Májovský et al. (1987): in the genus *x* = 6. For *L. corniculatus* there are multiple CN reports, mostly 2*n* = 24 (4*x*), also 2*n* = 12, 26 (rare). Possibly, variable ploidy.

Medicago lupulina L., **2*n* = 16.** "Georgia, Samtskhe-Javakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, near the Sapara monastery, 1300 m a.s.l., grassy slope in the gorge, 41°36'07.39"N 43°01'50.37"E, 23 Jul 2019, *D.A. Krivenko et al. 62599*" (Fig. 2E) (IRK); "Russia, Kabardino-Balkaria Republic, El'brusskii Raion, Great Caucasus, Bokovoi Range, foot of Mt. Elbrus, Polyana Azau settlement, 2380 m a.s.l., sandy-pebbly deposits, 43°16'10"N 42°28'47"E, 7 Aug 2019, *D.A. Krivenko 62594* (IRK, LE). Holarctic (?), alien in many regions (probably, also in the RFE). Dry slopes, marine terraces, meadows, railway embankments, weedy places. Májovský et al. (1987): in the genus *x* = 7, 8. Most CN counts give 2*n* = 16 (2*x*), sometimes 2*n* = 24 (3*x*) and 32 (4*x*). Variable ploidy.

Onobrychis arenaria (Kit.) DC., **2*n* = 28.** "Georgia, Samtskhe-Javakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, on the way of Greli village to Sapara monastery, 1310 m a.s.l., roadside, 41°36'20"N 43°01'49"E, 23 Jul 2019, *D.A. Krivenko et al. 62736*" (IRK). Europe, Caucasus, Siberia, Central Asia. Riversides, meadows, roadsides. Májovský et al. (1987): in the genus *x* = 7. For *O. arenaria* 2*n* = 14 (2*x*) and 2*n* = 28, 4*x* (more often) have been reported. Variable ploidy.

Trifolium ambiguum M. Bieb., **2*n* = 48.** "Russia, Republic of Dagestan, Dokuzparinskii Raion, Great Caucasus, 4 km SSW of Kurush village, right riverside of the Ragdanchai River (right tributary of the Mullarchai River), the slope of Mt. Nesindag, 2670 m a.s.l., abrupt stony slope, 41°14'55"N 47°47'59.00"E, 15 Aug 2019, *D.A. Krivenko 62774*" (Fig. 2F) (IRK). Caucasus. Mountain meadows, stony slopes. Májovský et al. (1987): in the genus *x* = 5, 6, 7, 8. In *T. ambiguum* 2*n* = 16 (2*x*; *x* = 8) prevails, sometimes 2*n* = 24, 48, a little more often 2*n* = 32. Variable ploidy.

Vicia armena Boiss., **2*n* = 10.** "Armenia, Vayots Dzor Marz, right riverside of the Arpa River, 9 km NE of Malishka village, crater of Vayots Sar (Tapasi-Dalik) volcano, 2557 m a.s.l., rocky steppe forb meadow, 39°47'42.6"N 45°29'48.0"E, 21 Jul 2019, *D.A. Krivenko et al. 62856*" (Fig. 2G) (IRK, LE). Transcaucasia, Turkey, Iran. Steppes, dry meadows. Májovský et al. (1987): in the genus *x* = 5, 6, 7. Second CN count for the species: the first was from Iran (Pakravan et al. 2016). Diploid (2*x*), *x* = 5.

LAMIACEAE

Ballota nigra L., **2*n* = 20.** "Russia, Republic of Dagestan, Levashinskii Raion, Great Caucasus, NE spurs of Kulimeer Range, Nizhnie Chugly village, right riverside of the Nakkher River, 1250 m a.s.l., ruderal plant communities, 42°27'26"N 47°18'18"E, 10 Aug 2021, *D.A. Krivenko 13736*" (IRK, VLA). Mediterranean region to Centr. Asia; alien in Europe, (naturalized?) in Argentina, New Zealand, Canada and E United States. Májovský et al. (1987): in the genus *x* = 7, 10, 11. In *B. nigra* 2*n* = (18), 20, 22, multiple CN counts (Májovský et al. 1987, Rice et al. 2015). Diploid (2*x*), *x* = 10.

Betonica macrantha K.Koch, **2*n* = 32.** "Russia, Republic of Ingushetia, Dzheyrakhskii Raion, Great Caucasus, Skalistyi Range, right riverside of the Armkhi River, foot of Mt. Stolovaya near Beini village, 1660 m a.s.l., forb meadow on the slope, 42°50'23"N 44°43'29"E, 16 Aug 2021, *D.A. Krivenko 13725*" (IRK, VLA). Caucasus, NE Turkey, NW Iran. Mountain meadows. Májovský et al. (1987): in the genus *x* = 8. The species is poorly studied yet. The tetraploid CN 2*n* = 32 was known from N Caucasus (Magulaev 1976 – cited in Rice et al. 2015); in other parts of Caucasus three CN counts gave 2*n* = 16. Variable ploidy.

PAPAVERACEAE

Papaver arenarium M. Bieb., **2*n* = 14.** "Georgia, Samtskhe-Dzhavakheti Mkhare, Akhaltsikhe municipality, right riverside of the Kura River, on the way from Greli village to monastery Sapara, graded steppe slope, 1290 m a.s.l., 41°36'54"N 43°00'27"E, 23 Jul 2019, *D.A. Krivenko et al. 13517*" (IRK, VLA). E Mediterranean (S of European Russia, Caucasus, Caspian Regions). Poorly studied species. Two CNs are reported for *P. arenarium*: 2*n* = 14 and 28 (see Rice et al. 2015). In the genus *Papaver* L. *x* = 6, 7, 8 (Májovský et al. 1987). Variable ploidy.

POACEAE

Microstegium japonicum (Miq.) Koidz., **2*n* = 20.** "Georgia, Adjara, Kobuleti town, Ispani 2 swamp, riverside, 10 Oct 2019, *A.A. Przhiboro 13620*" (VLA). E Asia (Japan); as alien – Transcaucasia (Georgia) and elsewhere in the world. Riversides, near the swamps, in plantations as a weed. This species has been collected as a weed in the bamboo plantation of Adjara, Chakvi since 1926 (Tzvelev 1976). There were only three CN reports in the literature, all from Japan: 2*n* = 20 (Rice et al. 2015). Second CN count from Caucasus: the first was from Abkhazia (Gnutikov et al. 2021). The species still exists and extends in Caucasus. Diploid (2*x*; *x* = 10), the CN is constant.

POLYGONACEAE

Rumex scutatus L., **2*n* = 20.** "Russia, Republic of Dagestan, Magaramkentskii Raion, Great Caucasus, W spurs of Samurskii Range (the system of Bokovoi Ridge), left riverside of the Samur River, opposite Maka-Kazmalar, 960 m a.s.l., mountain steppe, 41°29'34"N 48°01'24"E, 9 Aug 2021, *D.A. Krivenko 13715*" (IRK, VLA). Europe, Caucasus. Steppes. 2*n* = 20 (see Rice et al. 2015). Diploid (2*x*; *x* = 10). First CN count from Caucasus and for Russia.

RESEDACEAE

Reseda lutea L., **2*n* = 24.** "Russia, Republic of Dagestan, Levashinskii Raion, Great Caucasus, NE spurs of the Kulimeer Range, Nizhnie Chugli village, right riverside of the Nakkher River, 1250 m a.s.l., ruderal plant communities, 41°29'34"N 48°01'24"E, 10 Aug 2021, *D.A. Krivenko 13721*" (IRK, VLA). Euro-Mediterranean; alien in N America. Dry steppes, open clay and rubbly slopes, limestone and chalky outcrops, roadsides, waste rounds, vegetable gardens. Májovský et al. (1987): in this genus *x* = 6, 7, 13, and for the species CN 2*n* = 48 reported many times, rarely 2*n* = 24 (Rice et al. 2015). Tetraploid cytotype (4*x*, *x* = 6). Variable ploidy.

VIOLACEAE

Viola somchetica K. Koch, **2*n* = 24.** "Russia, Republic of Ingushetia, Dzheyrakhskii Raion, Great Caucasus, right riverside of the Armkhi River, 1 km SW of Beini village, 1530 m a.s.l., clay slope, 42°49'31"N 44°42'30"E, 16 Aug 2021, *D.A. Krivenko 13742* (IRK, VLA). Caucasus, Transcaucasia. Endemic. Mountain meadows. Májovský et al. (1987): for the genus *x* = 5, 6, 8, 11, 13, 17, 29. Little-studied species. There were two CN reports for *V. somchetica*: 2*n* = 22 and 24 (see Bolkhovskikh et al. 1969, Agapova et al. 1993). Tetraploid CN 2*n* = 24 (*x* = 6) seems to be more correct. Further studies are needed.

CONCLUSION

First chromosome data are presented here for *Argyrolobium biebersteinii* (2*n* = 46), *Dianthus daghestanicus* (2*n* = 30), *Lamyropsis sinuata* (2*n* = 26), *Lepidium lyratum* (2*n* = 16), *Taraxacum stenolobum* (2*n* = 24). For Russia there are first CN determinations in *Callitriche cophocarpa*, *Centaurea arenaria*, *Isoetes asiatica*, *Nicotiana alata* and *Rumex scutatus*. For Caucasus – first CN data in *Ballota nigra*, *Phalacroloma annuum*, *Rumex scutatus* and *Vicia armena*. In *Arabis pendula*, *Arctium tomentosum*, *Capsella bursa-pastoris*, *Chelidonium asiaticum*, *Ch. majus*, *Oberna behen*, *Papaver croceum*, *Pilosella aurantiaca*, *Stellaria graminea*, *Taraxacum longcorne*, *Tussilago farfara*, *Viola arvensis* and *V. tricolor* the CN data were obtained the first time from Kamchatka Territory, in *Agrostis clavata* – firstly from Republic Sakha (Yakutia). *Potamogeton lucens* and *Sagittaria sagittifolia* – first CN data from Ivanovo Region. The new or rare cytotypes are revealed in: *Betonica macrantha* (2*n* = 32), *Convolvulus arvensis* (2*n* = 24), *Myosotis caespitosa* (2*n* = 44), *Reseda lutea* (2*n* = 24), *Setaria pumila* (2*n* = 18) and *Taraxacum longicorne* (2*n* =16). The diploids slightly prevail, their basic numbers *x* = 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 17 and 23. Variable ploidy observed or suggested in 33 species.

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LITERATURE CITED

Agapova, N.D., K.B. Arkharova, L.I. Vakhtina, E.A. Zemskova & L.V. Tarvis. 1990. *Chromosome numbers of flowering plants in the USSR flora: Aceraceae–Menyanthaceae families*. Nauka, Leningrad, 509 pp. (in Russian). [Агапова Н.Д., Архарова К.Б., Вахтина Л.И., Земскова Е.А., Тарвис Л.В. 1990. Числа хромосом цветковых растений флоры СССР: семейства Aceraceae–Menyanthaceae. Ленинград: Наука. 509 с.].

Agapova, N.D., K.B. Arkharova, L.I. Vakhtina, E.A. Zemskova & L.V. Tarvis. 1993. *Chromosome numbers of flowering plants in the USSR flora: Moraceae–Zygophyllaceae families*. Nauka, Saint Petersburg, 450 pp. (in Russian). [Агапова Н.Д., Архарова К.Б., Вахтина Л.И., Земскова Е.А., Тарвис Л.В. 1993. Числа хромосом цветковых растений флоры СССР: семейства Moraceae–Zygophyllaceae. Санкт-Петербург: Наука. 450 с.].

Andriyanova, E.A. & O.A. Mochalova 2020. IAPT/IOPB chromosome data 32 (K. Marhold, ed.). *Taxon* 69(5): 1126–1132.

Bobrov, A.A., A.S. Erst, T.V. Ankova & E.A. Movergoz 2015. Chromosome numbers of water crowfoods (*Ranunculus* section *Batrachium*, Ranunculaceae) of the flora of Russia. *Botanicheskii Zurnal* 100(6):595–601 (in Russian). [Бобров А.А., Эрст А.С., Анькова Т.В., Мовергоз Е.А. 2015. Числа хромосом водяных лютиков (*Ranunculus* секция *Batrachium*, Ranunculaceae) флоры России // Ботанический журнал. Т. 100, № 6. С. 595–601].

Bolkhovskikh, Z.V., V.G. Grif, O.I. Zakharyeva & T.S. Matveeva 1969. *Chromosome numbers of flowering plants*. Nauka, Leningrad, 926 pp. (in Russian). [Болховских З.В., Гриф В.П., Захарьева О.И., Матвеева Т.С. 1969. Хромосомные числа цветковых растений. Ленинград: Наука. 926 с.].

Britton, D.M., D.F. Brunton & S.S. Talbot 1999. *Isoëtes* in Alaska and the Aleutians. *American Fern Journal* 89(2):133–141.

Chepinoga, V.V. 2014. *Chromosome numbers of plants of the flora of Baikal Siberia*. Nauka, Novosibirsk, 419 pp. (in Russian). [Чепинога В.В. 2014. Хромосомные числа растений флоры Байкальской Сибири. Наука: Новосибирск, 419 с.].

Cook, C.D.K. 1962. Studies on *Ranunculus* L. subgenus *Batrachium* (DC.) A. Gray. I. Chromosome numbers. *Watsonia* 5(3):123–126.

Gnutikov, A.A., N.N. Nosov, Yu.A. Myakoshina & A.V. Rodionov 2021. IAPT chromosome data 34/4 (K. Marhold, ed.). *Taxon* 70(5):1149.

Gregor, T. & R. Hand 2009. Chromosomenzahlen von Farn- und Samenpflanzen aus Deutschland 2. *Kochia* 4:37–46.

Grigoryan, M.Yu., A. A. Bobrov, D.F. Brunton, P.A. Volkova, M.D. Logacheva & T.V. Neretina 2021. Next generation DNA sequencing reveals allopolyploid origin of decaploid *Isoëtes lacustris* (Isoetaceae). *Aquatic Botany* 170:103326.

Kaplan Z., V. Jarolímová & J. Fehrer 2013. Revision of chromosome numbers of Potamogetonaceae: a new ba-

sis for taxonomic and evolutionary implications. *Preslia* 85(4):421–482.

Kharkevich, S.S. 1989. *Mitella* L. In: *Vascular Plants of the Soviet Far East, vol. 4* (S.S. Kharkevich, ed.), pp. 174–175, Nauka, Leningrad (in Russian). [Харкевич С.С. 1989. *Mitella* L. // Сосудистые растения советского Дальнего Востока / отв. ред. С.С. Харкевич. Л.: Наука. Т. 4. С. 174–175].

Kornilova, M.G., O.V. Kvitko & O.S. Vladimirova 2006. Cytogenetic study of *Batrachium kauffmannii* in the channels of the Yenisei River. In: *Proceedings of the I (IX) Conference of Young Botanists in Saint Petersburg (St. Petersburg, 21–21 May 2006)*, pp. 31, Izdatelstvo GETU, St. Petersburg (in Russian). [Корнилова М.Г., Квитко О.В., Владимирова О.С. 2006. Цитогенетическое изучение *Batrachium kauffmannii* в протоках реки Енисей // Матер. I (IX) Междунар. конф. молодых ботаников в Санкт-Петербурге (Санкт-Петербург, 21–26 мая 2006 г.). СПб: Изд-во ГЭТУ. С. 31].

Krogulevich, R.E. 1976. Polyploidy in the flora of Putorana Plateau genesis. In: *Flora Putorana* (L.I. Malyshev, ed.), pp. 217–235, Nauka, Novosibirsk (in Russian). [Крогулевич Р.Е. 1976. Роль полиплоидии в генезисе флоры Путорана // Флора Путорана / отв. ред. Л.И. Малышева. Новосибирск: Наука. С. 217–235].

Májovský, J., A. Murin, V. Feráková, M. Hindáková, T. Schwarzová, A. Uhríková, M. Váchová & J. Záborský 1987. *Karyotaxonomický prehl'áad flory Slovenska*. VEDA, Bratislava, 436 pp.

Marhold, K., P. Mártonfi, P. Mered'a jun. & P. Mráz (eds.). 2007. *Chromosome number survey of the ferns and flowering plants of Slovakia*. VEDA, Bratislava, 650 pp.

Nishikawa, T. (ed.) 2008. *Chromosome atlas of flowering plants in Japan*. National Museum of Nature & Science, Tokyo, 706 pp.

Pakravan, M., A. Tavassoli, H. Zare & Z. Hosseinzadeh 2016. Karyological investigations in some species of *Vicia* (Fabaceae) from Iran. *Iranian Journal of Botany* 22(2):160–166.

Prancl J., J. Fehrer, P. Caklova, V. Bambasova, M. Lucanova & Z. Kaplan 2020. Intricate evolutionary history of *Callitriche* (Plantaginaceae) taxa elucidated by a combination of DNA sequencing and genome size. *Taxon* 69(5):1016–1041.

Probatova, N.S. 2014. *Chromosome numbers in vascular plants of the Primorskii Krai (Russian Far East)*. Dal'nauka, Vladivostok, 342 pp. (in Russian). [Пробатова Н.С. 2014. Хромосомные числа сосудистых растений Приморского края (Дальний Восток России). Владивосток: Дальнаука. 343 с.].

Probatova, N.S., S.G. Kazanovsky, V.Yu. Barkalov, E.G. Rudyka & A.V. Shatokhina 2015. IAPT/IOPB chromosome data 20 (K. Marhold, ed.). *Taxon* 64(6):1348–1349.

Probatova, N.S., V.Yu. Barkalov & E.G. Rudyka 2007. *Caryology of the flora of Sakhalin and the Kurile Islands. Chromosome numbers, taxonomic and phytogeographical comments*. Dal'nauka, Vladivostok, 392 p. (in Russian) [Пробатова Н.С., Баркалов В.Ю., Рудыка Э.Г. 2007. Кариология флоры Сахалина и Курильских островов. Числа хромосом, таксономические и фитогеографические комментарии. Владивосток: Дальнаука. 392 с.].

Probatova, N.S., E.G. Rudyka, N.S. Pavlova, V.P. Verkholat & V.A. Nechaev 2006. Chromosome numbers of plants of the Primorsky Territory, the Amur River basin and Magadan region. *Botanicheskii Zurnal* 91(3):491–509 (in Russian). [Пробатова Н.С., Рудыка Э.Г., Павлова Н.С., Верхолат В.П., Нечаев В.А. Числа хромосом видов растений из Приморского края, Приамурья и Магаданской области // Ботанический журнал. Т. 91, № 3. С. 491–509].

Rice, A., L. Glick, S. Abadi, M. Einhorn, N. Kopelman, A. Salman-Minkov, J. Mayzel, O. Chay & I. Mayrose 2015. The Chromosome Counts Database (CCDB) – a community resource of plant chromosome numbers. *New Phytologist* 206(1):19–25.

Sokolovskaya, A.P. 1966. Geographical distribution of polyploid plant species (study on the flora of Primorskii Krai). *Vestnik Leningradskogo universiteta. Seria 3: Biologia* 1:92–106 (in Russian). [Соколовская А.П. 1966. Географическое распространение полиплоидных видов растений (исследование флоры Приморского края) // Вестник Ленингр. ун-та. Сер. 3: Биол. Вып. 1. С. 92–106].

Tzvelev, N.N. & N.S. Probatova 2019. *Grasses of Russia*. KMK Scientific Press, Moscow, 646 pp. (in Russian). [Цвелёв Н.Н., Пробатова Н.С. Злаки России. М.: Товво науч. изд. КМК. 646 с.].

Tzvelev, N.N. & P.G. Zhukova 1986. Karyosystematic investigation of *Taraxacum* (Asteraceae) from North-West of Asia. *Botanicheskii Zurnal* 71(12):1621–1628 (in Russian). [Цвелев Н.Н., Жукова П.Г. 1986. Кариосистематическое исследование *Taraxacum* (Asteraceae) Северо-Восточной Азии // Ботанический журнал. Т. 71, № 12. С. 1621–1628].

Tzvelev, N.N. 1976. *Zlaki SSSR*. Nauka, Leningrad, 788 pp. (in Russian). [Цвелёв Н.Н. 1976. Злаки СССР. Л.: Наука, 788 с.].

Tzvelev, N.N. 1992. *Taraxacum* Wigg. In: *Vascular Plants of the Soviet Far East, vol. 6* (S.S. Kharkevich, ed.), pp. 356–409, Nauka, Saint Peterburg (in Russian). [Цвелев Н.Н. 1992. *Taraxacum* Wigg. // Сосудистые растения советского Дальнего Востока / отв. ред. С.С. Харкевич. СПб: Наука. Т. 6. С. 356–409].

Vinogradova, Y.S. & N.K. Konotop. 2020. The numbers of chromosomes of hygrophilous plant species. In: *Materials of the International scientific conference dedicated to the 130th anniversary of Prof. B.M. Kozo-Polyansky, the 80th anniversary of Prof. K.F. Khmelev, IX Scientific meeting "Flora of Central Russia"*, pp. 91–94, Tsyfrovaya poligrafia, Voronezh (in Russian). [Виноградова Ю.С., Конотоп Н.К. 2020. Числа хромосом гигрофильных видов растений // Матер. Междунар. науч. конф., посвященной 130-летию со дня рождения проф. Б.М. Козо-Полянского, 80-летию со дня рождения проф. К.Ф. Хмелёва, IX Науч. совещ. «Флора Средней России» (Воронеж, 3–7 февраля 2020 г.). Воронеж: Цифровая полиграфия. С. 91–94].