

Botanical Garden-Institute FEB RAS  
Institute of Biology and Soil Science FEB RAS

# botanica pacific

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A JOURNAL OF PLANT SCIENCE  
AND CONSERVATION

VOLUME 3, No. 2 2014

VLADIVOSTOK 2014

# Botanica Pacifica

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ISSN: 2226-4701

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Издание зарегистрировано Федеральной службой по надзору в сфере связи, информационных технологий и массовых коммуникаций Министерства связи и массовых коммуникаций Российской Федерации; свидетельство ПИ № ФС 77–52771

Подписной индекс в каталоге  
Роспечати: 70659

Journal Secretariat:

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## Chromosome Numbers in Vascular Plants from the Russian Far East: Amurskaya Oblast', Khabarovskii Krai, Primorskii Krai

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Manuscript received: 19.08.2014

Review completed: 30.08.2014

Accepted for publication: 10.09.2014

Published online: 30.10.2014

### ABSTRACT

Chromosome counts were made for 40 species of vascular plants (13 families) from the south of the Russian Far East continental part – Amurskaya Oblast', Khabarovskii Krai and Primorskii Krai. First chromosome information for *Elymus zeyensis* Prob. and *Valeriana ajanensis* (Regel et Til.) Kom. is presented. In many species first chromosome data from the Amur River basin were obtained. Among species studied the diploids (2x) prevail.

### Keywords

chromosome numbers, vascular plants, flora, Aceraceae, Apiaceae, Cannabaceae, Chenopodiaceae, Fabaceae, Fumariaceae, Hypericaceae, Lamiaceae, Onagraceae, Poaceae, Rosaceae, Scrophulariaceae, Valerianaceae, Amur River Basin, Russia

### РЕЗЮМЕ

Пробатова Н.С., Рудыка Э.Г., Седедец В.П., Моторыкина Т.Н. Числа хромосом сосудистых растений Дальнего Востока России: Амурская область, Хабаровский край, Приморский край

Приводятся новые определения чисел хромосом для 40 видов сосудистой флоры (13 семейств) из Приамурья, включая Амурскую обл., Хабаровский край, и Приморского края. Впервые исследованы *Elymus zeyensis* Prob. и *Valeriana ajanensis* (Regel et Til.) Kom. По многим видам числа хромосом впервые приводятся для Приамурья, или для его края и области, для некоторых видов – впервые для Приморского края. Среди исследованных видов преобладают диплоиды (2x).

### Ключевые слова

числа хромосом, сосудистые растения, флора, Aceraceae, Apiaceae, Cannabaceae, Chenopodiaceae, Fabaceae, Fumariaceae, Hypericaceae, Lamiaceae, Onagraceae, Poaceae, Rosaceae, Scrophulariaceae, Valerianaceae, бассейн Амура, Россия

Here we present results of chromosome number (CN) study of plant species from Amur Region and Primorskii Krai (Fig. 1). Chromosome countings were made by E.G. Rudyka and A.P. Sokolovskaya (Sokolovskaya, unpublished data), on squashed preparations of root tips fixed with Carnoy's solution. The root tips were taken from living plants in the nature or from seedlings obtained through herbarium specimens, which were collected in the field. Preparations were stained with iron hematoxylin. Voucher specimens are preserved in the Herbarium VLA, Vladivostok. First chromosome data for the species or new CN are indicated by asterisk, first CN counts from Amur region, Primorskii Krai and from the Russian Far East (RFE), are marked with (!). Alien (adventive) species are marked with (+). The number of sample location on the map follows the number of the voucher specimen. The ploidy levels are indicated. The basic CNs ( $x$ ) are given mostly according to Májovsky et al. (1987). Brief information about the distribution of species studied is presented in some cases.

### ACERACEAE

(!) *Acer mono* Maxim.,  $2n = 26$ .

Russia, Amurskaya Oblast', Arkharinskii Raion, the Khinganskii nature reserve, Sep 2007, S. Kudrin 10667: **1**. The species is the most common in forests of Amur region, but it was still poorly studied. First CN count from Amur region, but there were three CN counts for *A. mono* from Primorskii Krai (Probatova 2014). Other species of *Acer* studied in the RFE also have  $2n = 26$  (see Probatova et al. 2007, Probatova 2014).  $2n = 2x$ .

### APIACEAE

(!) *Sium suave* Walt.,  $2n = 12$  (Sokolovskaya).

Russia, Khabarovskii Krai, Ul'chskii Raion, SE part of the Udyl' Lake, in 8 km of the channel Ukhta, low paludal shore, 25 Jun 1981, N. Probatova, V. Seledets & A. Sokolovskaya 5909: **19**. Common riverside species in the RFE. First CN count from the Khabarovskii Krai. The CN was revealed in Amurskaya Oblast' and in Primorskii Krai ( $2n =$

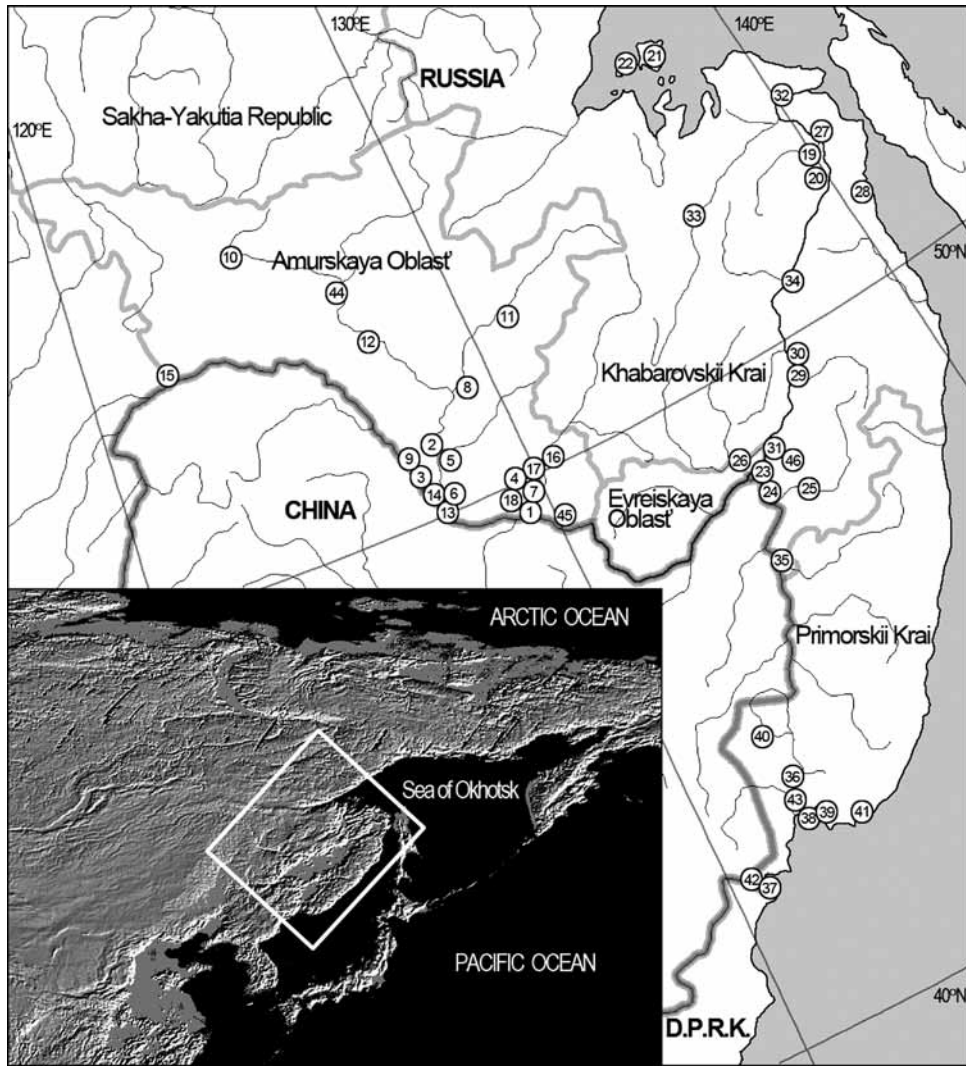


Figure 1 Study area. Circles with numbers from 1 to 46 are the sampling plot locations

12 – Gurzenkov & Gorovoy 1971; Shatokhina & Bolotova 2013).  $2n = 2x$ .

**CANNABACEAE**

(!)+*Humulus lupulus* L.,  $2n = 20$ .

Russia, Khabarovskii Krai, Poliny Ossipenko Raion, the settlement Poliny Ossipenko, near the garden, 17 Aug 2013, V. Lapenko 12447: **33**. Cultivated, almost everywhere, escapes from the culture. First CN count in the RFE.  $2n = 2x$ .

**CHENOPODIACEAE**

(!) *Atriplex gmelinii* C.A. Mey.,  $2n = 36$ .

Russia, Khabarovskii Krai, Tuguro-Chumikanskii Raion, the Shantarskie Islands, Bol'shoi Shantar Island, S coast, near the mouth of the Yakshina River, seashore, 2 Sep 2006, M. Kryukova 10517: **21**. The CN of the species was studied at the south limit of its range of distribution in the RFE. In the south of the RFE its close relative *A. subcordata* Kitag. occurs ( $2n = 36$  – Probatova 2014). First CN count from Khabarovskii Krai.  $2n = 4x$ .

(!) *Corispermum elongatum* Bunge,  $2n = 18$ .

Russia, Khabarovskii Krai, the Bol'shekhokhtsyrskii nature reserve, right riverside of the Ussuri River, sandbank, 31 Aug

1993, N. Probatova & V. Seledets 7204: **23**. The most common species of *Corispermum* in the RFE. This is the first CN count from Khabarovskii Krai. Its CN was studied once from Primorskii Krai (Probatova 2014).  $2n = 2x$ .

**FABACEAE**

(!)+*Medicago lupulina* L.,  $2n = 16$ .

Russia, Khabarovskii Krai, Komsomol'skii Raion, the former settlement Machtovyi, the Machtovaya River (the Amur River basin), on the gravel embankment, 6 Aug 2005, V. Barkalov 11507: **34**. The first CN report for this alien species from Amur region, where *M. lupulina* is rare. In Primorskii Krai the same CN  $2n = 16$  was also revealed (Probatova 2014).  $2n = 2x$ .

*Vicia unijuga* A. Br.,  $2n = 12$ .

Russia, Amurskaya Oblast', Arkharinskii Raion, 60 km SE of the railway station Arkhara, the Khinganskii nature reserve, Lebedinskoe forestry, meadow, 4 Sep 2001, S. Kudrin 8945: **1**. Polymorphic species, rather common in forests of Amurskaya Oblast' and Primorskii Krai. The specimen studied is peculiar by its unusual panicle-like inflorescences (not racemes). In *V. unijuga* two ploidy levels ( $2x$ ,  $4x$ ) were revealed: besides  $2n = 12$ , also  $2n = 24$  occurs, espe-

cially in Primorskii Krai, where the tetraploid CN ( $2n = 24$ ) even prevails (Probatova 2014). From Amurskaya Oblast' there were two CN reports:  $2n = 12$  and  $24$  (Probatova & Rudyka 1981; Probatova et al. 2005). In Khabarovskii Krai this species becomes rare. Further studies are needed.  $2n = 2x, 4x$ .

#### FUMARIACEAE

(!) *Corydalis ochotensis* Turcz.,  $2n = 16$ .

Russia, Khabarovskii Krai, in vicinity of Khor settlement, 2005, I. Enustchenko 10064: **24**. The species is more common in Primorskii Krai, than in Amur region. First CN report from Khabarovskii Krai. There were two CN counts from Primorskii Krai ( $2n = 16$  – Probatova 2014).  $2n = 2x$ .

#### HYPERICACEAE

(!) *Triadenum japonicum* (Blume) Makino,  $2n = 36$ .

Russia, Amurskaya Oblast', Arkharinskii Raion, the Khinganskii nature reserve, Sep 2007, S. Kudrin 10873: **1**. First CN report from Amur region. The species occurs in bogs, moist meadows; more often in Primorskii Krai, than in Amur region. In Primorskii Krai the CN ( $2n = 36$ ) was revealed three times (Probatova 2014).  $2n = 4x$ .

#### LAMIACEAE

(!) *Lycopus uniflorus* Michx.,  $2n = 22$ .

Russia, Khabarovskii Krai, Lazo Raion, the Kiya River near Georgievka Village, Bezmyannoe Lake, on quagmire, 17 Oct 1998, M. Krjukova 7754: **25**. First CN report from Amur region. In Primorskii Krai the CN ( $2n = 22$ ) was revealed in the species four times (Probatova 2014).  $2n = 2x$ .

#### ONAGRACEAE

(!) *Epilobium palustre* L.,  $2n = 36$ .

Russia, Khabarovskii Krai, left riverside of the Amur River opposite Khabarovsk city, Pokrovskii post, 1996, M. Kryukova 7792: **26**. First CN report from Amur region. This species was studied in the RFE from Sakhalin and from Magadanskaya Oblast' ( $2n = 36$  – Probatova et al. 2007; Probatova, Barkalov et al. 2012).  $2n = 6x$ .

#### POACEAE

(!)+*Alopecurus pratensis* L.,  $2n = 28$ .

Russia, Amurskaya Oblast', Arkharinskii Raion, near Arkhara town, roadside, 10 Jul 2011, S. Kudrin 12335: **7**. Alien species, more naturalized in Primorskii Krai than in Amur region. First CN report from Amur region.  $2n = 4x$ .

*Beckmannia syzigachne* (Steud.) Fernald,  $2n = 14$ .

Russia, Amurskaya Oblast', Arkharinskii Raion, 30 km W of Arkhara town, meadow, 13 Aug 2001, V. Kapustina 8767: **7**. Very common species in Amur region and Primorskii Krai. Moist meadows. Its CN was studied there many times.  $2n = 2x$ .

*Calamagrostis angustifolia* Kom.,  $2n = 28$  (Sokolovskaya).

Russia, Khabarovskii Krai, Ul'chskii Raion, SE part of the Udył' Lake, in 25 km of the channel Ukhta, Bol'shaya Bay, rubbly shore, 27 Jun 1981, N. Probatova, V. Seledets & A. Sokolovskaya 5923: **20**. Common species in Amur

region and Primorskii Krai, with many CN counts. Bogs, moist meadows. This species of *Calamagrostis* is peculiar by its constant CN  $2n = 28$ .  $2n = 4x$ .

*C. brachytricha* Steud.,  $2n = 56$  (Sokolovskaya).

Russia, Amurskaya Oblast', Mazanovskii Raion, N outskirts of the settlement Novokievskii Uval, the slope of a hill, among shrubs, 26 Aug 1976, N. Probatova & V. Seledets 4445: **8**. Common species, with many CN counts in Amur region and Primorskii Krai. In both territories three ploidy levels were revealed within *C. brachytricha*:  $2n = 42, 49, 56$ . Very polymorphic species. In Primorskii Krai the most known CN for *C. brachytricha* is  $2n = 42$  (Probatova 2014).  $2n = 6x, 7x, 8x$ .

*C. langsdorffii* (Link) Trin.,  $2n = 56$  (Sokolovskaya).

Russia, Khabarovskii Krai, Ul'chskii Raion, right riverside of the Amur River, 5 km upstream of Bogorodskoe, forest edge, 2 Jul 1981, N. Probatova, V. Seledets & A. Sokolovskaya 5965: **27**. The most common and extremely polymorphic species of *Calamagrostis* in Amur region and Primorskii Krai. However, it was poorly studied as to its CN. This is the second CN report from Amur region ( $2n = 56$  – Probatova & Seledets 2008). No CN counts were made until now from Primorskii Krai. The species is better studied in Kamchatka (Probatova 2007).  $2n = 4x, 6x, 8x, 10x$ .

(+) *Deschampsia cespitosa* (L.) P. Beauv.,  $2n = 26$ .

Russia, Khabarovskii Krai, Ul'chskii Raion, De-Castri settlement, grass site at the roadside, 3 Aug 2005, V. Barkalov 9895: **28**. Alien species, which expands mostly in Sakhalin and in the lower part of the Amur River basin. This is the second CN report from Khabarovskii Krai.  $2n = 2x$ .

(!) *D. glauca* Hartm.,  $2n = 26$ .

Russia, Khabarovskii Krai, Tuguro-Chumikanskii Raion, the Shantarskie Islands, Feklistova Island, N coast, Lissya Bay, Lissje Lake, at the rivulet, 20 Aug 2010, V. Bogatov 12326: **22**. First CN report from Khabarovskii Krai, where this species was found near its south limit of distribution. *D. glauca* was studied in Chukotka and Wrangel Isl.:  $2n = 26, 48, c. 52$  (Probatova 2007).  $2n = 2x, 4x$  and aneuploids.

(!) *D. sukaczewii* (Popl.) Roshev.,  $2n = 26$ .

Russia, Amurskaya Oblast', outskirts of Blagoveschensk city, in vicinity of Verkhniı Blagoveschensk Village, 500 m far from the shore of the Amur River, 10 Jul 2004, E. Ivanykina 9632: **9**; Russia, Amurskaya Oblast', Dzhehtulakskii (Tyndinskii) Raion, near Tyndinskii settlement, left riverside of the Tynda River, pebbly bank, 7 Jun 1975, N. Probatova & E. Rudyka 4015 (Sokolovskaya): **10**; Russia, Amurskaya Oblast', Seledmdzhinskii Raion, right riverside of Seledmdzha River, in 122 km above the mouth, near Dagmara, on pebbles, 31 Aug 1976, N. Probatova & V. Seledets 4458 (Sokolovskaya): **11**; Russia, Amurskaya Oblast', Skovorodinskii Raion, the riverside of the Amur River near Vyatkinskii Utes, 30 km above the Village Ignashino, slightly silted site with grasses, *Limosella*, *Callitriche*, *Rorippa*, *Batrachyum* etc., 8 Aug 2004, V. Starchenko, G. Darman & I. Borissova 10875: **15**. This species mainly occurs in forests and riversides of the Amur River basin, however it is studied from Amur region obviously for the

first time. Many CN reports for “*D. sukaczewii*” from northern regions of the RFE do not belong to this species, so their voucher specimens need to be revised.  $2n = 2x$ .

***Digitaria asiatica* (Ohwi) Tzvelev,  $2n = 18$ .**

Russia, Amurskaya Oblast', outskirts of Blagoveschensk city, in vicinity of the Village Novinka, forest edge, at the fence, 7 Sep 2003, E. Ivanykina 9108: **2**; Russia, Amurskaya Oblast', Blagoveschensk city, as a weed in the Chaikovskogo Street, abundant, 5 Oct 2007, N. Probatova & V. Seledets 10782: **3**. This diploid species is the only one native representative of the genus *Digitaria* in the RFE and it is the most common here. Often is found as a weed. Its CN was studied many times in Amur region and Primorskii Krai (Probatova 2014).  $2n = 2x$ .

**(!) \**Elymus zejensis* Prob.,  $2n = 28$ .**

Russia, Amurskaya Oblast', Zeya town, on the quay of Zeya River, 16 Jul 2013, S. Dudov 12450: **44**. First CN information for this very rare species. It was described from Zeya River basin and still it is known only from there. The species position within the genus *Elymus* (sect. *Goulardia*) is unclear.  $2n = 4x$ .

**(!)+ *Lolium multiflorum* Lam.,  $2n = 14$ .**

Russia, Amurskaya Oblast', Blagoveschensk city, Aug. 2013, V. Starchenko 12451: **3**. Alien species, occurs rarely (probably, escaped from the cultivated grasslands). Its CN was counted in the RFE only from Sakhalin (Probatova et al. 2007). First CN report from Amur region.  $2n = 2x$ .

**(!) *Neomolinia fauriei* (Hack.) Honda,  $2n = 38$ .**

Russia, Amurskaya Oblast', Bureyskii Raion, the Bureya River near Domikan Village, the Pr'amoï Island, 5 Aug 2013, V. Starchenko & G. Darman 12461: **18**. The species was found first in Amur region recently, in 2013. This is the first CN count from Amur region. *N. fauriei* was studied earlier in Primorskii Krai ( $2n = 38$  – Probatova 2014). The CN is constant within this genus.  $2n = 2x$ .

***Poa botryoides* (Trin. ex Griseb.) Kom.,  $2n = 28$ .**

Russia, Khabarovskii Krai, Tuguro-Chumikanskii Raion, Shantarskie Islands, Feklistova Island, seacoast near Arka rock, 18 Aug 2010, V. Bogatov 12325: **22**. *P. botryoides* is occurring on dry stony places covered with steppe vegetation, and on rocks. It was somewhat peculiar to find *P. botryoides* in the Shantarskie Islands. Perhaps the insular populations are relict, as well as populations in Central Kamchatka (Probatova & Sokolovskaya 1984). Polymorphic species. The CNs of the species were counted many times in continental part of the RFE:  $2n = 28, 35, 42$  (Probatova 2007).  $2n = 4x, 6x$  and aneuploids.

***Setaria pumila* (Poir.) Roem. & Schult.,  $2n = 36$ .**

Russia, Amurskaya Oblast', Arkharinskii Raion, Leninskoe Village, the collective farm “Fakel”, nearby the abandoned building, 24 Jul 2005, I. Enustchenko 10088: **45**. Very common weed in both Amur region and Primorskii Krai. The species is known also as “*S. glauca*”. The specimen studied is peculiar by the presence of long hairs on leaf sheaths. Though this species is characterized everywhere by tetraploid CN  $2n = 36$ , in the Amurskaya Oblast' (the

Khinganskii nature reserve) the diploid CN  $2n = 18$  was found once (Probatova, Verkhozina, Rudyka et al. 2013).  $2n = 2x, 4x$ .

**ROSACEAE**

***Fragaria mandshurica* Staudt,  $2n = 14$ .**

Russia, Amurskaya Oblast', Arkharinskii Raion, the Khinganskii nature reserve, Sep 2007, N. Probatova & V. Seledets 10746: **1**. This diploid species occurs only in Amur region, where its CN was counted several times (Probatova et al. 2005; Probatova, Seledets & Rudyka 2008; Probatova et al. 2009).  $2n = 2x$ .

***Potentilla anemonifolia* Lehm. (*P. kleiniana* Wight et Arn.),  $2n = 14$  (Sokolovskaya).**

Russia, Primorskii Krai, Khassanskii Raion, the Cherukhe River, along the coast of Possiet Bay, on sands, 13 Jun 1962, A. Sokolovskaya, P. Gorovoi 277: **37** (Sokolovskaya 1966 – as “*P. kleiniana*”). This is the only one CN count from the RFE, but in the first publication the voucher (now – in VLA) was not mentioned. However, from Japan there were CN reports of  $2n = 28$  for “*P. kleiniana*” (Nishikawa 2008). Further studies are needed in the RFE.  $2n = 2x$ .

**(+) *P. approximata* Bunge,  $2n = 14$ .**

Russia, Primorskii Krai, Muravëv-Anurskii Peninsula (Vladivostok), Akademgorodok, as a weed on the slope at the building of the Institute of Biology & Soil Science FEB RAS, 16 Nov 2004, N. Probatova 9622: **38**. Alien species, rare in Amur region and in Primorskii Krai. Earlier this specimen was misidentified as “*P. omissa* Soják” (in Probatova, Kazanovsky et al. 2012). Up to now there is no chromosome information for *P. omissa*. As to *P. approximata*, we obtained from Amur region (Khabarovskii Krai)  $2n = 28$  (the same reference). Probably, this species has variable ploidy.  $2n = 2x, 4x$ . Further studies on CN are needed.

**(+) *P. argentea* L.,  $2n = 28$ .**

Russia, Evreyskaya Avtonomnaya Oblast', the railway station Obluchye, along the railroad embankment, 18 Jun 2007, D. Tzyrenova 10630: **16**; Russia, Primorskii Krai, Shkotovskii Raion, 1 km of Shkotovo settlement, disturbed area, dry meadow, 2 Jul 2006, V. Nechaev 10303: **39**. Alien species, with variable ploidy. It is very active in Amur region and Primorskii Krai. In the RFE the tetraploid CN  $2n = 28$  seems to occur more often, than hexaploid one (Probatova 2014).  $2n = 4x, 6x$ .

***P. centigrana* Maxim.,  $2n = 14$ .**

Russia, Primorskii Krai, 12 km NW of Vladivostok, on the slope, in the light oak forest, 5 Jun 1962, A. Sokolovskaya 45: **38**; Russia, Primorskii Krai, 19 km NW of Vladivostok, near the Botanical Garden, along the rivulet, 9 Jun 1959, A. Sokolovskaya 453: **38**. These voucher specimens (now – in VLA) were not mentioned before. Common species along the forest rivulets in Primorskii Krai, but it is rare in Amur region. The CN was counted many times, it is constant (Probatova 2014).  $2n = 2x$ .

***P. fragarioides* L.,  $2n = 14$ .**

Russia, Primorskii Krai, W coast of the Khanka Lake, the nature reserve “Khankaiskii”, part Sosnovyi, Kazachii

Bay, grass meadow with various herbs, 2 Jul 2005, V. Barkalov 9826: **40**. Very common species, in Primorskii Krai as well as in Amur region. Many CN counts from the south of RFE (Probatova 2014). The CN is constant.  $2n = 2x$ .

***P. fragiformis* Willd. ex Schlecht.,  $2n = 28$ .**

Russia, Khabarovskii Krai, Tuguro-Chumikanskii Raion, Shantarskie Islands, Bol'shoi Shantar Island, S coast, near the mouth of the Yakshina River, on rocks, 2 Sep 2006, M. Krjukova 10420: **21**. Very polymorphic species, with variable ploidy. Recently the CN  $2n = 28$  was revealed for the first time in *P. fragiformis*, from the Malyi Shantar Isl. (Probatova, Motorykina et al. 2013). In the north of the RFE, *P. fragiformis* is presented by cytotypes with  $2n = 42$  and  $56$  (many reports). As to the close relative *P. megalantha* Takeda, we consider it to be a separate species, with constant CN  $2n = 70$  (Probatova et al. 2007).  $2n = 4x$  ( $6x, 8x$ ).

***P. freyniana* Bornm.,  $2n = 14$ .**

Russia, Primorskii Krai, Khassanskii Raion, 5 km N of Khassan town, second growth oak forest, stony slope with grasses and *Lespedeza* spp., 22 Aug 2010, V. Nechaev 11665: **42**. The species occurs mainly in the south of Primorskii Krai, but it is rare in Amur region. The CN is constant.  $2n = 2x$ .

**(!) (+) *P. multifida* L.,  $2n = 28$ .**

Russia, Primorskii Krai, Mikhailovskii Raion, W outskirts of Novoshakhtinskii town, at the roadside of the earth road, 19 Jul 2008, V. Lapenko 11255: **36**. Alien species, extending to Amur region and Primorskii Krai. Polymorphic species, with variable ploidy: most reports give CN  $2n = 28$  and  $42$ . However, in the RFE only  $2n = 28$  was known before now. First CN count from Primorskii Krai.  $2n = 4x, 6x$ .

***P. norvegica* L.,  $2n = 56$ .**

Russia, Primorskii Krai, W coast of the Khanka Lake, the nature reserve "Khankaiskii", part Sosnovyi, Przheval'skogo Peninsula, sandy spit, shrubs and herbs community, 21 Jun 2002, V. Barkalov 8941: **40**; Russia, Primorskii Krai, Nadezhdinskii Raion, in vicinity of Taëzhnoe settlement, roadside by the lake, 11 Jul 1998, N. Probatova & V. Seledets 7820: **43**. Common species in the RFE. We consider it to be native here (not alien), though it certainly is an anthropophyte. Many CN counts in the study area as well as from various regions of the RFE. *P. norvegica* is known throughout the world by its variable ploidy ( $2n = 42, 56, c. 63, c. 70, 70$ ), but no diploid cytotype is found: that could testify to its hybrid origin. Nevertheless, in the RFE only the cytotype with  $2n = 56$  ( $8x$ ) is found up to now.

***P. pacifica* Howell,  $2n = 28$ .**

Russia, Khabarovskii Krai, Tuguro-Chumikanskii Raion, Shantarskie Islands, Bol'shoi Shantar Island, S coast, near the mouth of the Yakshina River, sea shore, 2 Sep 2006, M. Krjukova 10421: **21**. Sea coastal halophytic species, with North Pacific distribution. Few CN counts were made from Khabarovskii Krai and Primorskii Krai (Probatova, Motorykina et al. 2013, Probatova 2014). The CN is not constant.  $2n = 4x, 6x$ .

***Potentilla paradoxa* Nutt. ex Torr. & A. Gray,  $2n = 28$ .**

Russia, Amurskaya Oblast', Tambovskii Raion, 52 km E of Blagoveshchensk city, the Muravëvskii nature park,

trampled site near the office, 4 Oct 2007, N. Probatova & V. Seledets 10754: **6**; Russia, Amurskaya Oblast', 40 km N of Blagoveshchensk city, the nature park Mukhinka, tourist center "Mukhinskaya", lakeside, 29 Sep 2007, N. Probatova & V. Seledets 11266: **5**; Russia, Khabarovskii Krai, Nanaiskii Raion, the Amur River, Bandaren Island, 1999, M. Kryukova 8963: **30**; Russia, Khabarovskii Krai, Khabarovsk city, microdistrict Severnyi-2, as a weed on the waste ground, 20 Jul 1999, N. Probatova & V. Seledets 8013: **46**.

**—  $2n = 42$ .**

Russia, Khabarovskii Krai, Nikolaevskii Raion, Amur River basin, the Chlya Lake, floodplain, 5 Sep 1984, S. Shlotgauer 6452: **32**. In the RFE this polymorphic species was known until now under the name «*P. supina*». Recently we recognized that plants from the RFE belong to the separate species, close relative *P. paradoxa*, but *P. supina* s. str. does not occur here at all. So, all indications of *P. supina* L. for the RFE must be referred to *P. paradoxa*. Many CN counts from Amur region and Primorskii Krai gave  $2n = 28$  (also from the Baikal Siberia and China), and only two, both from Amur region –  $2n = 42$  (Probatova & Sokolovskaya 1981, Probatova 2014). Further CN studies are needed in the Amur River basin.  $2n = 4x, 6x$ .

***P. tranzschelii* Juz. (*P. rugulosa* auct.),  $2n = 14$ .**

Russia, Primorskii Krai, Partizanskii Raion, Alekseyevskii Ridge, Ol'khovaya Mt., on the rocks, 10 Sep 2010, V. Barkalov 11657: **41**. This species is a close relative of *P. fragarioides* L. It occurs only in Primorskii Krai, where it was considered at first as a synonym of *P. rugulosa* Kitag. Polymorphous species. Its CN was studied several times in Primorskii Krai ( $2n = 14$  – Probatova 2014).  $2n = 2x$ .

## SCROPHULARIACEAE

***Siphonostegia chinensis* Benth.,  $2n = 20$ .**

Russia, Khabarovskii Krai, Bikinskii Raion, the valley of the Ussuri River in its lower course, near Lonchakovo settlement, Il'inskaya Mt., SE slope, oak forest with shrubs and various herbs, 29 Aug 2011, M. Krjukova, T. Motorykina et al. 12218: **35**. This is the second CN count from Amurskaya Oblast' ( $2n = 20$  – Shatokhina 2008), as well as from the RFE. The species is rather rare in Amur region.  $2n = 2x$  (?).

## VALERIANACEAE

**(!)(\*) *Valeriana ajanensis* (Regel et Til.) Kom.,  $2n = 14$ .**

Russia, Khabarovskii Krai, Tuguro-Chumikanskii Raion, Shantarskie Islands, Bol'shoi Shantar Island, S coast, the Yakshina Bay, Topaznyi Cap, on limestone, 4 Sep 2006, M. Krjukova 11562: **21**. Okhotian endemic, calciphyle. It occurs in the north part of the Amurskaya Oblast' and Khabarovskii Krai, on rocks and screes. First CN information for the species. In the relative species *V. fasciculata* Worosch. et Gorovoi also the diploid CN  $2n = 14$  was known (Gurzenkov 1973).  $2n = 2x$ .

The species presented in this study are mostly diploids (21 spp., 52,5%), but also there are 13 species with variable ploidy (sometimes – expected). Further CN studies, especially in Amur region, are needed.

## ACKNOWLEDGEMENTS

This study was supported by Russian Foundation for Basic Research (RFBR): grants 04-04-49750, 07-04-00610, 11-04-00240 to N.S. Probatova and grant 12-04-01586 to A.V. Verkhozina. The authors are grateful to V. Barkalov, M. Kryukova, S. Kudrin, V. Starchenko, V. Kapustina, V. Nechaev, for providing plant material for our study.

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#### BOOK

**Probatova, N.S. 2014 Chromosome numbers in vascular plants of the Primorskii Krai (the Russian Far East). Dal'nauka, Vladivostok, 343 pp. (in Russian, with English summary)**

This book presents the first generalization of the chromosome number data on vascular flora of the Primorskii Krai, for the period of time of chromosome studies (from 1966 up to now). Since 1966, chromosome numbers in 1318 vascular plant species from 604 genera and 128 families were revealed in Primorskii Krai. The chromosome number were the most extensively studied in families Asteraceae – 207 species of 91 genera and in Poaceae – 166 species of 60 genera. Adventive (alien) species in the flora of the Primorskii Krai were marked. References and brief information on the origin of specimens studied were given. The analysis of chromosome number data as a source of information on the flora was given on examples of caryotaxonomic situation in some families and genera. Caryological studies on vascular plants permit to consider these data in the context of special features of the forming of the flora in the south of the Russian Far East, including human impact.

The book is available from the author:

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#### BOOK SERIES

**Kozhevnikov A.E. (ed.) 2014 V.L. Komarov Memorial Lectures: Issue 62. Dalnauka, Vladivostok, 316 pp. ISSN 1997-1869 (in Russian, with English summary)**

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