

Russian Academy of Sciences, Far Eastern Branch
Botanical Garden-Institute

botanica pacific

A JOURNAL OF PLANT SCIENCE
AND CONSERVATION

VOLUME 9, No. 1 2020

VLADIVOSTOK 2020



Findings to the flora of Russia and adjacent countries: New national and regional vascular plant records, 2

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Manuscript received: 17.03.2020

Review completed: 05.05.2020

Accepted for publication: 12.05.2020

Published online: 14.05.2020

ABSTRACT

With this paper we continue a new annual series, the main purpose of which is to make significant floristic findings from Russia and neighboring countries more visible in Russia and abroad. In total, this paper presents new records for 24 vascular plant species from 4 Eurasian countries, obtained during field explorations, as well as during taxonomic revisions of herbarium materials. For the first time, new locality of *Ageratum conyzoides*, *Salvia hispanica*, *Thymus rasilatus*, *Tulipa mongolica* is recorded for Russia, *Sparganium glomeratum* for North Korea, *Abyssum armenum* for Georgia, *Thymus pseudopannonicus* for Kazakhstan, *Cymbalaria muralis* for the Asian part of Russia, *Anthemis ruthenica* for Siberia, *Capsella orientalis*, *Echinops sphaerocephalus*, *Heracleum sosnowskyi*, *Thymus elegans* for Eastern Siberia, *Persicaria orientalis* for Western Siberia, *Galatella crinitoides* for the Black Soil Region, *Centaurea orientalis* for Zavolzhye, *Silene dichotoma* for the Altai Republic, *Onobrychis arenaria*, *Symphotrichum squamatum*, *Verbesina encelioides* for the Republic of Dagestan, *Geranium dahuricum* for the Republic of Sakha (Yakutia), *Koeleria spryginii* for the Republic of Tatarstan, *Phacelia tanacetifolia* for Sakhalin, *Adonis wolgensis* for Novosibirsk Region. For each species, the general distribution, habitat, and taxonomy, indicating differences from related species and location are presented.

Keywords: floristic findings, taxonomy, Russia, Kazakhstan, Georgia, North Korea, Caucasus

РЕЗЮМЕ

Верховина А.В., Чернышева О.А., Эбель А.А., Эрст А.С., Дорощев Н.В., Дорощев В.И., Гребенюк А.В., Григорьевская А.Я., Гусейнова З.А., Иванова А.В., Хапугин А.А., Корольюк А.Ю., Корзников К.А., Кузьмин И.В., Маллалиев М.М., Мурашко В.В., Муртазалиев Р.А., Попова К.Б., Сафронова И.Н., Саксонов С.В., Сараева А.И., Сенатор С.А., Трошкина В.И., Васюков В.М., Ванг В., Сианг К., Зибзеев Е.Г., Золотов Д.В., Зыкова Е.Ю., Кривенко Д.А. Находки во флоре России и сопредельных стран: новые национальные и региональные локалитеты сосудистых растений, 2. Впервые для России приводятся *Ageratum conyzoides*, *Salvia hispanica*, *Thymus rasilatus*, *Tulipa mongolica*, для Северной Кореи – *Sparganium glomeratum*, для Грузии – *Abyssum armenum*, для Казахстана – *Thymus pseudopannonicus*, для Азиатской части России – *Cymbalaria muralis*, для Сибири – *Anthemis ruthenica*, для Восточной Сибири – *Capsella orientalis*, *Echinops sphaerocephalus*, *Heracleum sosnowskyi*, *Thymus elegans*, для Западной Сибири – *Persicaria orientalis*, для Центрального Черноземья – *Galatella crinitoides*, для Заволжья – *Centaurea orientalis*, для Республики Алтай – *Silene dichotoma*, для Республики Дageстан – *Onobrychis arenaria*, *Symphotrichum squamatum*, *Verbesina encelioides* – для Республики Саха (Якутия) – *Geranium dahuricum*, для Республики Татарстан – *Koeleria spryginii*, для Сахалина – *Phacelia tanacetifolia*, *Adonis wolgensis* – для Новосибирской области. Для каждого вида представлены сведения об общем распространении, занимаемых местообитаниях, таксономии с указанием отаидчий от близких видов и местонахождения. Мы приглашаем авторов участвовать в дальнейшем развитии этого раздела. Пожалуйста присылайте материалы ответственному редактору раздела Алле Васильевне Верховиной (allaverh@list.ru).

Ключевые слова: флористические находки, таксономия, Россия, Казахстан, Грузия, Северная Корея, Кавказ

With this paper we continue a new annual series, the main purpose of which is to make significant floristic findings from Russia and neighboring countries more

visible in Russia and abroad. This paper was prepared by the team united more by scientific cooperation than the taxonomy or geography of the species. In total, this paper

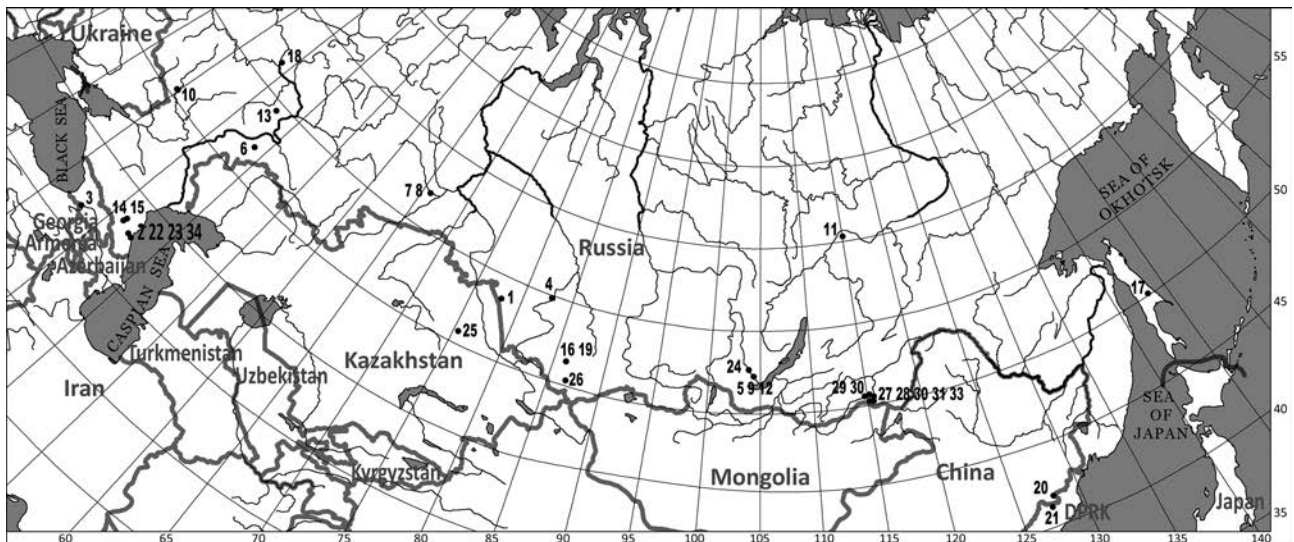


Figure 1 Locations of new findings: 1 – *Adonis wolgensis* Steven ex DC., 2 – *Ageratum conyzoides* L., 3 – *Alyssum armenum* Boiss., 4 – *Anthemis ruthenica* Bieb., 5 – *Capsella orientalis* Klokov, 6 – *Centaurea orientalis* L., 7, 8 – *Cymbalaria muralis* P. Gaertn., B. Mey. & Scherb., 9 – *Echinops sphaerocephalus* L., 10 – *Galatella crinitoides* Novopokr., 11 – *Geranium daburicum* DC., 12 – *Heracleum sosnowskyi* Manden., 13 – *Koeleria spryginii* Tzvelev, 14, 15 – *Onobrychis arenaria* L., 16 – *Persicaria orientalis* (L.) Spach, 17 – *Phacelia tanacetifolia* Benth., 19 – *Silene dichotoma* Ehrh., 20, 21 – *Sparganium glomeratum* (Laest.) Beurl., 22, 23 – *Symphyotrichum squamatum* (Spreng.) G.L. Nesom, 24 – *Thymus elegans* Serg., 25 – *Thymus pseudopannonicus* Klokov, 26 – *Thymus rasitatus* Klokov, 27–33 – *Tulipa mongolica* Y.Z. Zhao, 34 – *Verbesina encelioides* (Cav.) Benth. et Hook f. ex A. Gray

presents new records for 18 vascular plant species from 3 Eurasian countries, obtained during field explorations, as well as during taxonomic revisions of herbarium materials.

Adonis wolgensis Steven ex DC. (Ranunculaceae)

Contributors: Andrey S. Erst, Dmitry V. Zolotov, Kunli Xiang & Wei Wang

Distribution and habitat

A. wolgensis is native to the European part of Russia, middle Asia, West Siberia, Caucasus, Hungary and Turkey (Bobrov 1937). According GBIF database (2020) this species is distributed in Azerbaijan, Estonia, Iran, Kazakhstan, Moldova, Romania, Russian Federation (excluding Novosibirsk Region), Serbia and Ukraine. It grows on dry steppes, open spaces in the forest. *Adonis wolgensis* has the earliest flowering stage in comparison to others sympatric species. This species prefers more dry places and south slopes.

Taxonomic notes

A. wolgensis differs from *A. vernalis* by pubescence leaves, straight and slanted to achene persistent stylus (vs. hooked). *A. wolgensis* is characterized by palmately dissected leaves, *A. villosa* has pinnately dissected leaves. Its flowers are paler and smaller in size than *A. vernalis* one's. *Adonis villosa* has smaller flowers in size than *A. wolgensis*.

Examined specimens (new records)

RUSSIA: Novosibirsk Region, Karasuk District, marsh Nadyr, steppe, 53°26'N 77°48'E, 100 m a.s.l., 16.06.1994 Shaulo D., Krasnikov A., Snytko O.) (NS): 1.

Ageratum conyzoides L. (Asteraceae)

Contributors: Maxim M. Mallaliev & Ramazan A. Murtazaliev

Distribution and habitat

The North American species (grows south of the USA), currently widespread, mainly in countries with tropical and subtropical climates. It is cultivated as an ornamental plant, which contributes to its distribution outside the natural

range. Previously, it was not given for the territory of the Russian Federation, but for the Western Transcaucasia (Sukhumi) it was indicated by Grossheim (1949). It usually grows in weedy places, along roads, along abandoned sites.

Taxonomic notes

From *A. houstonianum* Mill., which is widely cultivated, it differs by the obtusely or broadly cuneate leaves, as well as a pale (whitish) corolla. *A. houstonianum* has basally cordate or truncate leaves, corollas are blue.

Examined specimens (new records)

RUSSIA: Republic of Dagestan, in the coastal part of Kaspiysk city, on sandy soil with sparse vegetation, 20.10.2019, coll. M.M. Mallaliev (DAG, LE): 2.

Alyssum armenum Boiss. (Brassicaceae)

Contributor: Vladimir I. Dorofeyev & Denis A. Krivenko

Distribution and habitat

This species was previously known only to the north-eastern part of Turkey. Busch (1939) mentioned it in the "Flora of USSR" in case it might be found in the South-West Transcaucasia. The find mentioned here from the Georgia extends the distribution of this species to the southwest to the Meskheti floristic region. Endemic to the northern part of Southwest Asia.

Mountainous dry slopes and rocky places, alt. 1200–3700 m.

Taxonomic notes

This species is the closest relative of *A. daghestanicum* Rupr. and *A. muelleri* Boiss. & Buhse, but differs from other stellate hairs with a small number of rays that are located on the leaves.

Examined specimens (new records)

GEORGIA: Samtskhe-Javakheti Region, Akhaltsikhe Municipality, right bank of Kura River, on the way from Grel'i village to Sapara monastery, 1290 m a.s.l., 41°36'54"N 43°00'27"E, 23.07.2019, D.A. Krivenko & al. 58210 (IRK), 58211 (LE), 58212 (VLA): 3.

Anthemis ruthenica* Bieb. (Asteraceae)*Contributor:** Elena Yu. Zykova & Aleksandr L. Ebel**Distribution and habitat**

A. ruthenica is native to Central and Eastern Europe, the Caucasus and the Balkan Peninsula (Greuter 2011). Within the natural range, this species grows on riverine sands, dry meadows, steppe slopes, in sparse forests and also in settlements (Tzvelev 1994). It is treated as dangerous invasive species in Europe, even in the Scandinavian countries (CABI 2020). For instance, *A. ruthenica* is abundant in eastern Germany in many cultivated fields (HYPPA 2020). It is also distributed as an alien species in Asia, namely in Kazakhstan, Kyrgyzstan, Uzbekistan and Turkmenistan (Kamelin & Kovalevskaya 1993, Lazkov & Sennikov 2014, Tojibaev et al. 2017). For Kyrgyzstan it is reported as an established alien plant naturalized in human-made and disturbed habitats at the regional scale (Lazkov & Sennikov 2014).

In the European part of Russia, it has been observed since the beginning of the 20th century. It is currently quite common here in the southern regions, but north of the chernozem zone it is still very rare (Ignatov 2006, Mayorov et al. 2012). This species also was reported as casual alien for the Russian Far East (Barkalov 1992) where it was found on the railway in Vladivostok. *A. ruthenica* is recorded by us for the first time for Siberia.

Taxonomic notes

A. ruthenica is a representative of the genus, which includes ca. 160 species distributed in Europe, North and East Africa and West Asia, and as aliens in non-tropical and some tropical countries (Tzvelev 1994, POWO 2020). *A. ruthenica* is the third species of the genus in Siberia. Two other species are also alien here, these are widespread yellow-flowered perennial plant *A. tinctoria* L. (\equiv *Cota tinctoria* (L.) J. Gay) and rare casual alien *A. arvensis* L. having white ray flowers. *A. ruthenica* is an annual or biennial with abundant friable pubescence, which makes the plant appear gray. It has stems branched from the base with pinnately divided oblong leaves and solitary corymbs on elongated thin peduncles; ray flowers white (Tzvelev 1994).

Examined specimens (new record)

RUSSIA: Novosibirsk Region, Novosibirsk City, Sovetskii microdistrict, Akademgorodok, Nikolaeva street, 54°59'N 83°00'E, by the road, 02.06.2017, coll. E.Yu. Zykova. (NS, TK): 4.

Capsella orientalis* Klokov (Brassicaceae)*Contributor:** Alla V. Verkhovzina & Aleksandr L. Ebel**Distribution and habitat**

For a long time, this species was considered endemic to Eastern Europe (Klokov 1926, Vasilchenko 1939, Dorofeev 2002), but now it is also known from the Altai Republic (Zolotukhin 1983), Altai Territory (Ebel 2002), and Chelyabinsk (Kulikov 2005), Kemerovo (Sheremetova et al. 2011), Novosibirsk and Tomsk Regions, the Republics of Khakassia, Tyva, as well as from Kazakhstan and the west of Mongolia (German & Ebel 2009). Moreover, the main part of the natural range of the species is apparently located in the steppe zone of Kazakhstan. Probably, *C. orientalis* can also be found in Northwest China (German & Ebel 2009).

Detailing the distribution of this species is somewhat difficult due to the difficulties of its identification (German & Ebel 2009). We present only the location supported by the herbarium specimen in this publication. Although a number of unpublished, but uploaded to Plantarium and iNaturalist, locations from the Tyumen Region, Krasnoyarsk Territory and Irkutsk Region are known and identification of most of them seems reliable.

Taxonomic notes

The species is morphologically close to *C. bursa-pastoris* (L.) Medik., whose significant variability covers many parameters specific to *C. orientalis*.

Most clearly *C. orientalis* differs from *C. bursa-pastoris* in a living state especially when growing together. *C. orientalis* has two pale green (almost salad-colored) leaves and its flowers seem greenish or yellowish because the white color of the petals, slightly exceeding the sepals, is masked by the color of the sepals. Due to this, *C. orientalis* specimens contrast with the usually bright green plants of *C. bursa-pastoris*, whose petals are noticeably longer than the sepals, and the flowers always look bright white. In addition, the cauline leaves (at least part of them) in *C. bursa-pastoris* are usually bent arched, and in *C. orientalis* they are straight, upwardly directed. When plants are removed from the ground, the roots and basal leaves of *C. bursa-pastoris* emit a rather strong characteristic odor, while *C. orientalis* does not smell or smells weak. When identifying herbarium specimens, one of the main signs is the presence and depth of the notch on apex of the pod. *C. orientalis* pods have a notch of 0.7–1.2 mm, while in *C. bursa-pastoris*, the notch is absent or does not exceed 0.5 mm. The column in *C. orientalis* on ripe pods does not exceed the notch, and in *C. bursa-pastoris* it exceeds. *C. bursa-pastoris* is commonly slightly pubescent with short trichomes or almost glabrous, whereas *C. orientalis* is usually quite densely pubescent with long simple trichomes (German & Ebel 2009, Revushkin 2014).

Examined specimens (new record)

RUSSIA: Irkutsk Region, Irkutsk City, vicinity of Molo-dezhnyi village, experimental field of A.A. Ezhevsky Irkutsk State Agrarian University, weed on the field, 52°13'33"N, 104°25'06"E, 12.07.2019, coll. A.V. Verkhovzina, 58586 (IRK): 5.

Centaurea orientalis* L. (Asteraceae)*Contributor:** Vladimir M. Vasjukov, Anastasia V. Ivanova & Irina N. Safronova**Distribution and habitat**

C. orientalis (sect. *Orientalis* (Hayek) Tzvelev, subgenus *Lopholoma* (Cass.) Spach) described from the Don River of the European part of Russia: “*In desertis ad Tanaim majorem circa nova Pavloska*” [steppes along the Don River in the vicinity of Pavlovsk, Voronezh Region, Russia] Gerber s.n. in Herb. Linn. No. 1030.33 (Gerner 2010, Altinordu & Ferrer-Gallego 2016).

This species is common in southeastern Central and southern Eastern Europe and the Caucasus (Czerepanov 1994, LEI, MW!); first found in the left bank of the Volga (Saratov Zavolzhye). Grows in steppes, on dry rocky and sandy slopes.

Taxonomic notes

C. orientalis is a perennial plant up to 80–100 cm tall, covered with short papillary hairs, sometimes with an admixture of arachnoid felt, more or less rough, green; stems solitary or few, erect, usually with few lateral branches. Its leaves are pinnatifid or pinnatifidate, on rather long petioles; baskets are single or few at the top of the stem and lateral branches; wrappers are 15–24 mm wide and 17–25 mm long, bare; appendages are thin-skinned, yellowish, with a crest-ciliated margin; yellow flowers (Tzvelev 1963).

Other similar perennial species with yellow flowers from the subgenus *Centaurea* L., native to the Volga region (*C. kasakorum* Iljin, *C. ruthenica* Lam. and *C. talienii* Kleopow) have bracts at the apex without appendages or appendages in the form of a membranous, entire border.

Examined specimens (new records)

RUSSIA: Saratov Region, Pugachev District, northern outskirts of the village of Bolshaya Tavolozhka, steppe

slopes near the route Samara – Saratov, 21.06.2019, coll. A.V. Ivanova & I.N. Safronova (PVB): 6.

***Cymbalaria muralis* P. Gaertn., B. Mey. & Scherb. (Plantaginaceae)**

Contributors: Igor V. Kuzmin

Distribution and habitat

C. muralis is a native to Southern Alps, Croatia, Bosnia and Herzegovina, Montenegro, Central and Southern Italy and Sicily (Webb 1972). It was introduced to Central Europe as an ornamental plant in the 16th century and since that time it reached North Europe, North Africa, East Asia, North and South America, Australia and New Zealand and was widely spread as cultivated and culture receding invasive plant (Szcześniak & Świerkosz 2003, Junghans & Fischer 2008). In Russia there are records in Samara, Tver and Leningrad Regions, Moscow City and Saint-Petersburg City, on the Black Sea shores in Crimea and Caucasus (Ivanina 1981, Mayorov 2014). It grows on the walls of buildings and in foundation cracks. In Tyumen City *C. muralis* is a weed in the greenhouses. In 2009, during the repairing of a University's greenhouse, stones, road metal (crushed stone), pieces of concrete and construction waste were taken out. They were bulked in a long dump along the foundation. The *C. muralis* seeds fell between the stones and, as a result, the plants bloom and fructify annually in 2009–2020. From 5 to 40 individual plants appear every year. Successful colonization of this Mediterranean species to disturbed biotopes in severe Siberian climate is very interesting because winter temperature here goes down as low as -40°C . Probably, this plant is rescued by a thick snow cover formed in this place. In 2020, a flowering plant of this species was discovered in another area of the city. The shoots covered an area of half a square meter. This species also came here with soil from the garden center, no doubt. But it is interesting that only shrubs and perennials grow on this place. Flower beds with annual ornamental plants are not here. The plant could also live here for several seasons. *C. muralis* is a new alien species to the flora of Siberia and for the entire Asiatic part of Russia.

Taxonomical notes

There are three subspecies of *C. muralis* according to the degree of pubescence of the plants (Webb 1972). Plants from Tyumen do not have hairs and belong to a typical subspecies *C. muralis* subsp. *muralis*.

Examined specimens (new records)

RUSSIA: Southern Trans-Urals, Tyumen Region, Tyumen City, 3 Pirogova Str., $56^{\circ}16'54.6''\text{N}$, $44^{\circ}00'32.8''\text{E}$, pieces of stones and road metal taken out from the greenhouse, June–October 2009–2020, obs. I.V. Kuzmin every year (photos) and 31.08.2011 coll. I.V. Kuzmin s.n. (I.E, MW, Tyumen State University); Tyumen Province, Tyumen city, 50B Permyakova Str., $57^{\circ}07'07.9''\text{N}$, $65^{\circ}34'41.1''\text{E}$, sidewalk between the “Solnechny” shopping center and Alexander Logunov St., a small garden with decorative coniferous shrubs and decorative stones, 03.09.2019 coll. I.V. Kuzmin s.n. (Tyumen State University): 7, 8.

***Echinops sphaerocephalus* L. (Asteraceae)**

Contributors: Alla V. Verkhovina, Aleksandr L. Ebel, Nikolay V. Dorofeev & V.V. Murashko

Distribution and habitat

E. sphaerocephalus is widespread across much of Eurasia and was introduced to other continents, including North America, where it is sometimes cultivated and escapes from cultivation, Africa and Australia (Keil 2006, GBIF 2019). In Siberia, this species is probably native only in Western Altai (Ebel 2017), but is known as an alien plant from the Kemerovo Region (Krasnoborov 2001), south of the Krasnoyarsk Territory (Cherepnin 1967), and the Republic of Khakassia (Ebel 2017). It was also recorded for Kurgan, Omsk

and Tyumen Provinces (Zhirova 1997) without location and status (native or alien). However, locations in Kurgan and Tyumen Regions is non confirmed by herbaria materials (Naumenko 2008). On the other hand, the latter author indicated the ability of the species to self-sow outside plantings in Kurgan.

Taxonomical notes

E. sphaerocephalus differs from other Siberian *Echinops* L. species in larger sizes up to 1.5–2.0 m in height in combination with white or blue-gray pseudocephalia and white to pale blue corolla. *E. sphaerocephalus* is one of two species of the section *Echinops* grown in Siberia. The second species, *E. latifolius* Tausch, has a blue pseudocephalia and corolla. The outer involucre bracts of *E. sphaerocephalus* is glandular, *E. latifolius* is not glandular.

Examined specimens (new record)

RUSSIA: Irkutsk Region, Irkutsk City, vicinity of Pivovarikha village, wasteland, and by the road for 700 m, $52^{\circ}16'38''\text{N}$, $104^{\circ}26'25''\text{E}$, 12.07.2019, coll. A.V. Verkhovina & N.V. Dorofeev, 58587–58591 (IRK): 9.

***Galatella crinitoides* Novopokr. (Asteraceae)**

Contributor: Vladimir M. Vasjukov, Stepan A. Senator & Anna Ya. Grigorjevskaja

Distribution and habitat

G. crinitoides was described from Karkaralinsk (Kazakhstan). This taxon is quite rare common in the South-East of the European part of Russia (Middle and Lower Volga, Southern Urals), the South of Western Siberia and the North of Kazakhstan (Tzvelev 1959, 1994, LE!, MW!, PVB!), and was not known from the South of Central Russia. It grows on steppe slopes, limestone and chalk outcrops.

Taxonomic notes

G. crinitoides is a hybridogenic species that comes from hybridization *G. angustissima* (Tausch) Novopokr. \times *G. villosa* (L.) Rchb.f.

G. crinitoides is grayish from fairly abundant pubescence perennial plant 15–40 cm high with upright leafy stems and alternate oblong-linear entire leaves 2.5–4 mm wide; heads with 10–20 flowers, among which there are usually 2–5 poorly developed pale blue lingular flowers.

Distinctive features of genitive species: *G. angustissima* is glabrous or almost glabrous plant, baskets always have 5–10 (15) blue or blue-violet lingular flowers, leaves narrowly linear 1–2 mm wide (except early dying off lower linear-lanceolate leaves); *G. villosa* is grayish-felt plant, with heads without lingular flowers and the oblong-linear or oblong leaves (3)4–10 mm wide.

G. crinitoides is habitually similar to *G. tatarica* (Less.) Novopokr., which is almost a glabrous plant (it has a very thin felt that disappears by the beginning of flowering) with heads containing 5–8 (10) tubular flowers (lingular flowers are absent).

Examined specimens (new records)

RUSSIA: Voronezh Region, Podgorenskiy District, vicinity of Kirpichi Khutor, Belogor'e stow, chalk slope, 21.06.2009, coll. O.V. Prokhorova (VORG): 10.

***Geranium daburicum* DC. (Geraniaceae)**

Contributor: Victoria I. Troshkina

Distribution and habitat

G. daburicum has a Mongol-Daurian distribution. It occurs in the forest margins, meadows and steppes (Peshkova 1996, Tsyrenova 2007). A new location of *G. daburicum* was discovered during work on the Herbarium of Komarov Botanical Institute RAS (LE). It is a new species for the Republic of Sakha (Yakutia).

Taxonomic notes

G. daburicum is a perennial plant. Rhizome short about 1 cm long with spindle-shaped thickened roots 4.5–5 cm long. The stems are 15–20 (30) cm tall, single, erect, thin, branched forked forks at the top. The stems are covered with short down deflected trichomes. Basal leaves most often perish by the flowering time. Stem leaves are opposite petiolate. Leaf blades almost to the base dissected into 5–7 narrow lobes. Stipules loose, sometimes fused, membranous, brown. Peduncles solitary, axillary, 2-flowered, with fruits almost do not elongate and deviate laterally. Pedicels elongate at fruiting and arcuate deflected downwards. Flowers 1–1.5 cm in diameter. Sepals 1.5 times shorter than the petals, with 3 veins, acuminate at apex. Petals are pale-lilac or pinkish, rarely white, the veins are darker colored, pubescent with weak matted hairs from below. Anther filaments are gradually narrowed, short ciliated along margin. The leaves of the fruit are smooth with small pressed simple and longer glandular trichomes.

Bobrov (1949) referred *G. daburicum* to the section *Sanguinea* Knuth. Novosselova (1999) considered the species as part of the section *Palustria* Knuth. D.Yu. Tsyrenova (2007) based on a number of features distinguishes the species into an independent section of *Daburica* Tzyren. *G. daburicum* characterized by long, uniformly thickened roots, one circle of conducting bundles in the internodes.

Examined specimens (new records)

RUSSIA: The Republic of Sakha (Yakutia), Lensky District, forest corridor for a telephone line on the left bank of the Lena River to the Murya village, 11 km from the Mukhtuya village [Lensk], among shrubs, No. 18/1, 5.07.1953, V.B. Kuvaev (LE): 11.

Heracleum sosnowskyi Manden. (Apiaceae)

Contributors: Alla V. Verkhovzina, Aleksandr L. Ebel & Nikolay V. Dorofeev

Distribution and habitat

H. sosnowskyi is native to the Central and Eastern Caucasus, Transcaucasia, and northeast of Turkey. Its secondary range includes the countries of the Baltic Region (Denmark, Poland, Estonia, Lithuania, Latvia), Belarus, Ukraine, Russia. *H. sosnowskyi* had been cultivated for biomass and silage production in the former USSR in the second half of the twentieth century. Since 1948 there are first reports on the plant escaping from cultivation and since 1970s the process has become expanded (Vinogradova et al. 2010). To date, the species is widely spread in the European part of Russia. It is also found in the Urals, the south of Western Siberia and the Far East (Zykova 2016, Vinogradova et al. 2020).

In Siberia, trials of the species as a silage plant began in the 1960s (Sokolov et al. 1965). The first findings of *H. sosnowskyi* outside agrocenoses were recorded in the Altai Territory and the Altai Republic in 2005 (Silantieva et al. 2005), where it continues to spread (Shaulo & Zykova 2013, Zykova 2015). *H. sosnowskyi* was also found in the Kurgan (Naumenko 2008), Tyumen (Kuzmin 2008), Novosibirsk (Shaulo & Zykova 2013) and Tomsk Regions (Ebel et al. 2018). Additionally, data on the findings of this species in the Kemerovo Region and in the environs of Krasnoyarsk (Dalke et al. 2020) are available, but we are not sure what their reliability concerns (Ebel et al. 2018).

Taxonomic notes

Together with *H. mantegazzianum* Sommier & Levier and some other species of this genus, *H. sosnowskyi* is a part of the group of so-called “giant hogweed” (taxonomically, representatives of the section *Pubescentia* Manden.), named for stem height (usually more than 2 m) and large leaves (Nielsen et al. 2005). It should be noted that neither in the protologue nor in the description in “Flora of the USSR”

(Mandenova 1944, 1951) there are no indications of its gigantism. There are still many ambiguities in the taxonomy of species of the genus *Heracleum* (including the group “giant hogweed”), and different authors do not equally understand both the volume of species and their ranges (Jahodová 2007, Pimenov & Ostroumova 2012). Obviously, the using of the name *H. sosnowskyi* for introduced and wild “giant hogweed” is quite conditional.

The ability of hogweed to interspecific hybridization is well known, which makes the identification of species complicated (Kabuce & Priede 2010). Probably the information on the locations of *H. sosnowskyi* in the Asian part of Russia is partly related to other species of giant hogweed, in particular, to *H. mantegazzianum*. In Siberia, the hybridization of the invasive species *H. sosnowskyi* and native species *H. dissectum* Ledeb. and *H. sibiricum* L. is also possible.

Three species of giant hogweed *H. sosnowskyi*, *H. lehmannianum* Bunge and *H. pubescens* (Hoffm.) M. Bieb. were tested in the same trial in the experimental fields of the Irkutsk State Agrarian University in 1974–1976. The cultivation of *H. pubescens* was most successful and the percentage of plant survival over winter was about 67%. *H. sosnowskyi* and *H. lehmannianum* showed low winterhardiness in the environmental conditions of the Irkutsk Region. The percentage of plant survival over winter of 1974–1975 was 3–5% (Terskih 1977), but according to our data, the trials of giant hogweeds were continued and completely stopped only in the late 1980s.

The close species *H. mantegazzianum* is distinguished by protruding pubescent rays of umbels and secondary umbels and acute leaf lobes (Mandenova 1951), while *H. sosnowskyi* has only short hairs of umbels and secondary umbels and obtuse leaf lobe. Our specimens have short pubescence, relatively acute leaf lobes, and significantly larger mericarps than indicated for *H. sosnowskyi*.

Examined specimens (new records)

RUSSIA: Irkutsk Region, Irkutsk City, vicinity of Molo-dezhnyi village, edge of a birch forest, 052°13'33.76"N 104°25'27.57"E, 12.07.2019, coll. A.V. Verkhovzina & N.V. Dorofeev, 58592–58595 (IRK), 18.08.2019, coll. A.V. Verkhovzina, N.V. Dorofeev, 58596–58599 (IRK): 12.

Koeleria spryginii Tzvelev (Poaceae)

Contributor: Vladimir M. Vasjukov, Stepan A. Senator, Sergey V. Saksonov, Andrey Yu. Korolyuk & Evgenii G. Zibzeev

Distribution and habitat

K. spryginii is endemic of European Russia, which has been described from the Republic of Mordovia, vicinity of Novaya Uda village (Tzvelev 2010). The main area of this species is located in the Middle Volga River Basin: Republic of Mordovia (East), Nizhniy Novgorod (South), Penza (North), Orenburg (North-West), Samara (pre-Volga areas and Vysokoe Zavolzh'e), Saratov (pre-Volga areas), and Ulyanovsk (northern and pre-Volga areas) Regions (LE!, MW!, PKM!, PVB!). In 2019, the species was first found in the Republic of Tatarstan. It grows on chalk, marl and cretaceous outcrops.

Taxonomic notes

K. spryginii is the result of introgressive hybridization *K. sclerophylla* P.A. Smirn. × *K. cristata* (L.) Pers. (Tzvelev 2010).

It is densely or loosely caespitose plant 25–60 cm tall. The stems under the panicle are 1–2.5 cm pubescent. The sheaths of the lower stem leaves are short-pubescent or almost glabrous; the leaf blades 0.4–1.5 mm wide, they are rolled along often, rigid, gray-green, scabrous on top, sparsely pilose or partly glabrous on bottom. The panicles 3–8 cm long, rather loose. The spikelets 3.7–5 mm long, glabrous.

Examined specimens (new records)

RUSSIA: Republic of Tatarstan, Drozhzhanovsky District, south-eastern vicinity of Novoe Chekurskoe village, natural monument “Novo-Chekurskaya lesostep’ (Keremet)”, stony steppe, 09.06.2019, coll. V.M. Vasjukov, S.A. Senator, A.Yu. Korolyuk & E.G. Zibzeev (MW, PVB): 13.

***Onobrychis arenaria* L. (Fabaceae)**

Contributors: Ramazan A. Murtazaliev & Ziyarat A. Guseinova

Distribution and habitat

It occurs from Central Europe to Mongolia and Northwest China (Jakovlev 1996, Menitsky 2001). In the North Caucasus, the species grows in lowlands and lower foothills along steppe and sandy places, as well as in shrubs and dry meadows (Grossheim 1952). The species is first recorded for the flora of Dagestan. The specimens of this species were stored in the herbarium of the Dagestan University (LENUD). They were collected in the middle of the 20th century during the certification of pastures of Dagestan under the direction of E.V. Schiffers and were identified by L.N. Chilikina as *O. tanaitica* Spreng. The nearest location of the species is in the vicinity of the Herzel village (Chechen Republic), which at that time was part of Dagestan.

Taxonomic notes

O. arenaria is a very polymorphic species, which in different parts of the area was considered as different species. So, in the “Flora of the USSR” (Grossheim 1948), 4 species were distinguished (*O. arenaria*, *O. tanaitica*, *O. sibirica* Turcz. ex Besser and *O. ferganica* Sirj.) Grossh.) which are now considered synonyms of the type subspecies *O. arenaria* subsp. *arenaria*.

Examined specimens (new records)

RUSSIA: [Republic of Dagestan, Khasavyurtovsky District], between shrubs in 3 km south of Khasavyurt, 05.06.1951, coll. Mikhailov (LENUD); Republic of Dagestan, Shuragatsky district, in the thickets of *Paliurus spina-christi*, on the way from Gerzel village to the Alleroi village, 22.05.1955, coll. L.N. Chilikina & N. Yarulina (LENUD): 14, 15.

***Persicaria orientalis* (L.) Spach (Polygonaceae)**

Contributor: Aleksandr L. Ebel & Elena Yu. Zykova

Distribution and habitat

P. orientalis is native to SE Asia and mostly northern Australia, where it grows on riverine sands and pebbles, as well as in disturbed habitats (Tzvelev 1996, Mayorov et al. 2012). It is often cultivated in Europe as an ornamental plant, and as alien plant is found in many countries in populated areas and along roadsides. In the European part of Russia, several locations of this species outside of culture were recorded in the Moscow, Kursk and Voronezh Provinces (Mayorov et al. 2012, Poluyanov & Sklyar 2015). In Siberia, it was recently noted as alien plant in Irkutsk (Verkhovina et al. 2019).

Taxonomical notes

P. orientalis (\equiv *Polygonum orientale* L., *Amblygonum orientale* (L.) Nakai ex T. Mori) is a representative of the genus numbering about 150 species distributed in moderately warm and tropical regions of the northern hemisphere, as well as in South America (Tzvelev 1996). About 10 species of the genus are known in Siberia (Baikov 2012). *P. orientalis* belongs to the section *Amblygonon* (Meisn.) Tzvelev (Tzvelev 1989), which contain 2 species (*P. orientalis* and *P. pilosa* (Roxb.) Kitag.). This is a tall annual (up to 2 m) with large bright crimson-pink spike-shaped inflorescences. Both species of this section are characterized by stems and peduncles densely covered with simple hairs, tubular ocreas with usually green leaflike bent out wing, as well as two stigmas in flowers.

However, *P. orientalis* usually have less abundant downiness of stem and leaf (with more pressed trichomes) than *P. pilosa*.

Examined specimens (new record)

RUSSIA: Altay Republic, Gorno-Altaysk City, Protichnaya str., 51°58'N 85°55'E, wasteland, 18.08.2017, coll. E.Y. Zykova (NS, TK): 16.

***Phacelia tanacetifolia* Benth. (Boraginaceae)**

Contributors: Kirill A. Korznikov & Ksenia B. Popova

Distribution and habitat

The native distribution of *P. tanacetifolia* includes the Southwestern United States (Arizona, California, Nevada) and Northwest Mexico (Baja California) at sandy to gravelly slopes and open areas (Wiggins 1980, Hickman 1993). It was introduced in several regions of USA and Canada, Europe, Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan), Australia and New Zealand (Hassler 2020). In Russia *P. tanacetifolia* occurs in the European part of the country, Caucasus, Ural, Southern Siberia (Gorshkova 1953). In the Russian Far East this species was recorded in the Amur River basin, Primorsky Region (Kozhevnikov & Kozhevnikova 2007), and Central Kamchatka (Ueda 2020). *P. tanacetifolia* is cultivated for a honey production, soil improvement or for ornamental purposes. It is considered as a naturalized or invasive species. We recorded this species at the post-mining area on a rock dump surface, in the upper part of the Langeri River, central part of Sakhalin Island. The propagules of *P. tanacetifolia* were carried there accidentally with a seed grass mixture for vegetation restoration.

Taxonomic notes

Phacelia Juss. (Hydrophylloideae) is the largest genus in Boraginaceae family. It includes about 200 species which are mostly distributed in the western parts of North and South America. The center of species diversity is California where 93 taxa occur, 39 are endemic among them (Gilbert et al. 2005). *Phacelia* contains three subgenera: *Phacelia* (with 8 sections), *Microgenetes* (A. DC.) A. Gray (with 3 sections), and *Pulchellae* (Rydb.) Waiden & R. Patt (the number of sections is not determined so far). *P. tanacetifolia* and the other 30 taxa belongs to subgenus *Phacelia*, section *Ramosissimae* (Rydb.) Waiden & R. Patt. (Walden & Patterson 2012).

Examined specimens (new records)

RUSSIA: Sakhalin Region, Sakhalin Island, Smirnikhovsky District, Langeri River upper stream, 50°05'50"N 143°18'42"E, 280 m a.s.l., post-mining landscape, rock dump surface, 18.08.2018, coll. K.B. Popova & K.A. Korznikov 82688, 82687, 82686 (VBGI): 17.

***Silene dichotoma* Ehrh. (Caryophyllaceae)**

Contributors: Aleksandr L. Ebel & Elena Yu. Zykova

Distribution and habitat

This species is native to Eastern and South Europe and Western Asia, and as alien plant it can also be found in West and North Europe, North Africa, Kazakhstan, Japan, North America, New Zealand and Australia (Hulten & Fries 1986, Morton 2005, Marhold 2011, Kupriyanov et al. 2015, GBIF 2019). In the secondary area it is found in crops, on deposits, near roads and housing. The species belongs to the number of common weeds that clog crops of cereals, clover, lecerne and other crops. The first in Siberia location was discovered near the city of Tobolsk (Krylov 1931). To date, the species has been recorded in the Omsk Region (Zuev 1993), Altai Territory (Silantjeva et al. 2003), Tyumen and Kurgan Regions (Naumenko 2008), Kemerovo Region (Ebel 2013), and the Republic of Khakassia (Ebel et al. 2017). For the Republic of Altai this species is recorded for the first time.

Taxonomic notes

Annual or biennial with stout puberulent to hispid erect stems up to 1 m high, branched dichotomously (usually 2-branched) at the summit; leaves spatulate to lanceolate, the lower with long petioles; cauline leaves lanceolate, white-villous with long septate hairs. Flowers almost stalkless, (half-)nodding in same direction, fragrant. Inflorescence a quite abundantly-flowered raceme. Calyx up to 15 mm long, with sharp teeth approx. 3 mm, covered with harsh hairs. Petals 1.5 times longer than the sepals, white, bifid, with a small crow (Gubanov et al. 2003, Morton 2005). It differs well from other Siberian species of *Silene* L. in a deeply forked inflorescence with almost sessile (stalkless) flowers, pubescence of the calyx with long harsh hairs, as well as a short life cycle (annual or biennial).

Examined specimens (new records)

RUSSIA: Altay Republic, Gorno-Altaysk City, "Rodnik" bus stop, 51°58'N, 85°55'E, Maima riverbank, 15.07.2019, coll. E.Yu. Zykova (NS, TK): 19.

***Sparganium glomeratum* (Laest.) Beurl. (Typhaceae)**

Contributor: Alexey V. Grebenjuk

Distribution and habitat

S. glomeratum is a cool-temperate circumboreal species widely (but disjunctively and sporadically) distributed in extra-tropical Eurasia: from Scandinavia and north Europe to Tibet and Kamchatka. *S. glomeratum* essentially grows in shallow mesotrophic neutral water of pools, small ponds, temporary streams and ditches that have varying water levels and can occasionally dry out. This species has only terrestrial form and occurs in swamp deciduous forests (on wet meadows covered by sedges *S. glomeratum* is often collected with *S. natans* L.), herbaceous margins of swamps, bogs, lakes and slow-moving rivers (Ohwi 1965, Cook & Nicholls 1986, Tzvelev 1996, Kaul 2000, Kun & Simpson 2010).

In Asian Pacific Region this species was documented by many reports for the Russian Far East, Japan, all of the three provinces of Northeast China (Heilongjiang, Jilin, Liaoning), Nei Mongol and Yunnan (Cook & Nicholls 1986, Tzvelev 1996, Kun & Simpson 2010). However, until very recently, *S. glomeratum* was not registered to inhabit the Korean Peninsula and the Korea in general (Anonym. Flora Coreana 1976, T.B. Lee 1980, Y.N. Lee 1996, Kim & Choi 2007, Kun & Simpson et al. 2010). This species was provisionally indicated by C.D.K. Cook & M.S. Nicholls (1986) for North Korea, but no herbarium material on *S. glomeratum* was known for a long time. Although some information on the oldest reliable specimen of the *S. glomeratum* from North Korea was mentioned in a short report (Grebenjuk 2012: 1412, in adnot.), the very recent first record of this species for South Korea (Gangwon-do Province) also claimed to be the first record for the Korea in general (Gil et al. 2019) and the previous note from North Korea was neglected. In most recent checklists of the Korea (C.-S. Chang et al. 2014, K.S. Chang et al. 2017) this species is absent.

In 2018, in addition to the V.L. Komarov's herbarium specimen originated from the Korean bank of the Yalu River, the specimen stored under the name *Sparganium* sp. at the Herbarium of the Komarov Botanical Institute RAS (LE) was identified by the author of this report as *S. glomeratum*. Thus, in addition to South Korea, the distribution of *S. glomeratum* is confirmed for North Korea.

Taxonomic notes

S. glomeratum was described from the vicinities of Hernösand, Sweden ("Vid Hernösand anmärktes denna varietet år 1843 i kall-källdrag"). Lectotype is designated by C.D.K. Cook & M.S. Nicholls (1986: 242): herb. № S-G-5719 "*S. simplex* γ. *glomeratum* Laest. Hernösand 1843" (S). *S. glomeratum* differs

from similar species with nonbranched inflorescence *S. japonicum* Rothert, *S. fallax* Graebn. and *S. emersum* Rehm. by less number of male heads (2–3(4)), near absence of gap between male and female heads with fast-drying axis in male part, the small anthers (0.6–0.8 mm long), and the shortest among morphologically similar species in the group stigmas (0.4–0.6 mm long). The species is rather constant in taxonomic characters throughout its range (Cook & Nicholls 1986, Tzvelev 1996, Kaul 2000, Kun & Simpson 2010, etc.). On the territory of Transbaikal Siberia, South Yakutia, and in Japan plants with more narrow leaves are often found, but these specimens known as *S. glomeratum* var. *angustifolium* Graebn. [1900, in Engl., Pflanzenz. IV, 10: 20] are not variable in characters of inflorescences, morphology of male or female heads. Larger and more vigorous specimens with more numerous female heads and occasionally with branched inflorescences from Sakhalin Island, South Kuril Islands, South Primorye (Russia), Japan and Heilongjiang (China), which were described as *S. glebnii* Meinsh. [1893, Bull. Acad. Imp. Sci. Petersb., N.S. 4, 36: 34] and *S. manshuricum* D.Yu [1992, Bull. Bot. Res., Harbin 12: 255], probably represents a local variants of *S. glomeratum* rather than distinct taxa. This species is not a true water form.

It is important to note that the traditional use of the name *S. glomeratum* is in conflict with the priority of *S. fluitans* (Fr.) Fr. Moreover, the legitimacy of the name *S. glomeratum* is doubtful, since in its publishing, both at the rank of the species and the variety, the nomenclatural type of *S. fluitans* was not clearly excluded. The taxonomic meaning of *S. fluitans* is also ambiguous. It was first published at the rank of variety with a brief diagnosis (Fries 1817: 139 – "*pusillum, foliis decumbentibus natantibus, sequentis multo latioribus & brevioribus, basi 3-quetris*") which assumes its broad interpretation. No original material of *S. simplex* β *fluitans* Fr. was found (Cook & Nicholls 1986). However, when publishing the name *S. fluitans*, E.M. Fries (1849: 559) cited a direct and complete reference to *S. simplex* β *fluitans* Fr. (hence adopted the name of the variety as the basionym for combination) and presented a new detailed description, from which it is clear that the taxon now known as *S. glomeratum* was meant. Cook & Nicholls (1986) considered the name *S. fluitans* semantically unsuitable and recommended the use of *S. glomeratum* in future. Though, according to the current ICN (Turland et al. 2018), the formal procedure of conservation/rejection of the names has not yet been carried out.

Examined specimens (new records)

NORTH KOREA (DPRK): Hab. Korea, Mount Paektusan, Samjiyon [Ryanggang-do Province], 20.07.1958, coll. Sang Tok U. № 218 (LE01044013); Flumen Amnok-gan, Korea Septentrionalis, Provincia Pen-nian, distr. Samsu, [near village Sang-su-u], 4 VII 1897, coll. V.L. Komarov, s.n. (LE01001037): 20, 21.

***Symphotrichum squamatum* (Spreng.) G.L. Nesom (Asteraceae)**

Contributors: Ramazan A. Murtazaliev & Maxim M. Mallaliev

Distribution and habitat

The natural range of the species covers South America. In Europe and in other countries it is an alien species and is now found almost everywhere. In 2019, the species is given for Crimea (Ryff 2019). In the Caucasus, the species was indicated (Tamamshyan 1959) for the countries of the Transcaucasus (Azerbaijan, Georgia). For the Russian part, it was not given (Tzvelev 2008), but in recent years it has been collected from the Western Transcaucasia: Krasnodar Territory, Sochi, under the trees in the park, 28.08.2008, G. Konechnaya (LE). It grows in weedy places, along roads, in parks and in other ruderal places.



Figure 2 A specimen of *Sparganium glomeratum* (Laest.) Beurl. from North Korea collected near mt. Paektusan (LE01044013)

Taxonomic notes

According to Ryff (2019), the species was mistaken for *S. graminifolium* (Spreng.) G.L. Nesom due to imperfect diagnostic key in the Flora of USSR (Tamamshyan 1959).

Examined specimens (new records)

RUSSIA: Republic of Dagestan, Kaspiysk city, along the road on the outskirts of the city, 6.08.2019, coll. M.M. Malaliev (DAG, LE); Republic of Dagestan, Makhachkala City, ter. of the Dagestan Federal Research Center of the RAS (M. Yaragskogo Str. 75), 18.08.2019, coll. R.A. Murtazaliev (DAG, LE): **22, 23.**

***Thymus elegans* Serg. (Lamiaceae)**

Contributors: Vladimir M. Vasjukov & Denis A. Krivenko

Distribution and habitat

Th. elegans was described from the Russian Altai, neighborhood of Chemal village (Sergievskaya 1956). Previously, this species is known in the southeast of Western Siberia and the south of Middle Siberia (Doronkin 1997), but in the south of Eastern Siberia it was not known. It grows on steppe slopes.

Taxonomic notes

Th. elegans belongs to the section *Serpyllum* (Mill.) Benth. It differs from a close endemic Altai species *Th. asiaticus* Serg., belongs to the same section, by strongly separated internodes, spaced inflorescences, green calyces, and more high generative shoots.

Examined specimens (new records)

RUSSIA: Irkutsk Region, Angarsk City, left bank of Kitoi River, 455 m a.s.l., 52°33'13"N, 103°51'46"E, sandy riverbank, 16.07.2018, coll. D.A. Krivenko & al. 50781 (IRK), s.n. (PVB): **24.**

***Thymus pseudopannonicus* Klokov (Lamiaceae)**

Contributors: Vladimir M. Vasjukov & Denis A. Krivenko

Distribution and habitat

Th. pseudopannonicus was described from the Southern Urals: Bashkiria, Irendyk ridge, Ulugur-Tau mountains (Klokov 1973). The species is distributed in European Russia: High Transvolga, Southern Urals, and Central Russian Upland (Klokov 1973, MW!, PVB!, SVER!). *Th. pseudopannonicus* was not previously found in Kazakhstan. It grows on stony steppes.

Taxonomic notes

Th. pseudopannonicus has shortened or short ligneous stems (boles), ending in ascending generative shoots. Vegetative (5–10 cm long) and generative (5–15 cm long) shoots almost to the base are densely pubescent with protruding hairs. Leaves sessile, oblong-elliptic, 8–17 mm long, 1.5–6 mm wide, on both sides rather densely pubescent with protruding long hairs. Inflorescences 1.5–6 cm long, interrupted with 2–4 spaced false whorls, calyces during flowering 2.5–3.5 mm long, during fruiting sometimes up to 4 mm long, corollas about 4 mm long, pink-lilac, pale.

Th. pseudopannonicus belongs to the independent race of the section *Verticillati* Klokov, series *Marschalliani* Klokov & Des.-Shost. and does not detect noticeable fluctuations in its morphological characters. It is always clear differs from *Th. marschallianus* Willd. even when they grow together. In taxonomic biodiversity databases such as “Euro+Med” (2006–), “The PlantList” (2013), “POWO” (2019), “WCVP” (2020), East European-West Asian *Th. marschallianus* n *Th. pseudopannonicus*, as well as *Th. stepposus* Klokov & Des.-Shost., unreasonably considered as synonyms of the Central European *Th. pannonicus* All. (≡ *Th. pulegioides* L. subsp. *pannonicus* (All.) Kerguelen). All species listed here are not conspecific, and, in our opinion, their association under the name of *Th. pannonicus* is mistakenly.

Examined specimens (new records)

KAZAKHSTAN: Pavlodar Region, Bayanaulsky District, Bayanaul National Park, near of Birzhankol lake, 50°49'03.83"N 75°20'27.98"E, stony steppe, 27.06.2013, coll. D.A. Krivenko 48343 (MW), 51381, 51382 (IRK): **25.**

***Thymus rasitatus* Klokov (Labiatae)**

Contributors: Vladimir M. Vasjukov & Denis Krivenko

Distribution and habitat

Th. rasitatus was described from the Kazakhstan, Bektau-Ata Mount (LE! – Klokov 1954a) and has been considered so far endemic to East Kazakhstan (Klokov 1954a, b, 1973, Gamayunova & Dmitrieva 1964). Here, for the first time, the species gives the locality for Russia from Altai. *Th. rasitatus* grows on stony steppe slopes and granite talus.

Taxonomic notes

Th. rasitatus belongs to the section *Kotschyani* (Klokov & Des.-Shost.) Klokov, which includes shrubs with highly lignified and heavily branched stems (boles) topped with generative shoots.

In Altai, there is another species from the same section *Th. roseus* Schipcz., the area of which is located in the south-east of Western Siberia, in Eastern Kazakhstan and Western Mongolia (?).

For *Th. rasitatus*, unlike *Th. roseus*, generative shoots are 3–8 cm long rather than 1–2.5 cm, mid-stem leaves are narrowly oblong-elliptic (4–10 mm long, 1–2 mm wide) rather than obovate or oblong-ovate, spatulate (4–9 mm long, 1.75–3.5 mm wide), petioles of lower stem leaves are equal to leaf blades rather than shorter than half of leaf blades, inflorescences are loose rather than dense, pedicels are 1.5–4 mm long rather than short (up to 1.5 mm long), and corollas are pinkish-lilac, not bright rather than lilac-pinkish or whitish, pale.

Examined specimens (new records)

RUSSIA: Altai Republic, Ongudaisky District, valley of Bolshoi Yaloman River, 6 km above of Yaloman village, 1500 m a.s.l., [50°28'20.85"N 86°19'48.19"E], southern stony slope, 15.07.1972, coll. V. Makarov & N. Alyanskaya 58293 (IRK): **26.**

***Tulipa mongolica* Y.Z. Zhao (Liliaceae)**

Contributors: Alexey V. Grebenjuk, Olga A. Chernysheva & Lyudmila I. Sarajeva

Distribution and habitat

To date *T. mongolica* has been considered as endemic to Inner Mongolia (China), with only locality in the Xilingol Aimag/League (Xilin Gol or Shilin Gol) along the sandy fault of the volcanic cone. Currently, the species has apparently disappeared in a typical locality due to strong grazing (Zhao 2003).

In 2008, Grebenjuk (2008) assumed that Daurian tulips (*uniflora*-like) do not belong to any of two similar species known to Russia (*T. uniflora* (L.) Besser ex Baker and *T. heteropetala* Ledeb.) and probably are *T. mongolica* which had been recently described by Y.Z. Zhao (2003) from China. Shortly after the publication Grebenjuk obtained digital images of original material of *T. mongolica* (holo-, iso- and paratypes – HIMC) for comparison with few specimens collected in the Transbaikal Territory and previously identified as *T. uniflora* (Vlassova 1987). In 2010, these old herbarium specimens stored under the name *T. uniflora* in the Herbarium of the Komarov Botanical Institute RAS (LE), the Krylov Herbarium of the Tomsk State University (TK) and the Popov Herbarium of the Central Siberian Botanical Garden SB RAS (NSK), was revised as *T. mongolica* (LE, TK, NSK) by Grebenjuk. Therefore, this species was first collected by Radde in the territory of modern Russia in 1856 on the northern vicinities of Torey Nor Lake near the Kulusutay military base (Fig. 3).

New localities of *T. mongolica* were recorded for the first time for Russia in the Transbaikalian Territory. This species grows in grass steppe communities on the mountain slopes, on gravelly places, among petrophytic vegetation on rocky slopes, and in herbaceous cover of *Armeniaca sibirica* (L.) Lam. open shrublands. Most likely it also occurs in Mongolian part of the Torey lacustrine depression. Specimens from Mongolia are not known, but the occurrence of this species in the north-east of this country is highly probable.

Taxonomic notes

T. mongolica belongs to the separate subgenus *Orithyia* (D. Don) Baker. There are only few species in the subgenus *Orithyia* and they are mainly distributed in Altai (*T. uniflora* and *T. heteropetala*), Siberia, Mongolia (*T. uniflora*), northwestern China (*T. sinkiangensis* Z.M. Mao and *T. uniflora*), and North Tian Shan (*T. heterophylla* (Regel) Baker). After general revision of genus, M.J.M. Christenhusz et al. (2013) concluded that *T. mongolica* is synonymous to *T. uniflora*. However, the original material of *T. mongolica* has not been investigated by these authors. We do not agree with this position since these two species are clearly distinguishable in nature and among our and available herbarium material. Morphological characters of *T. mongolica* are closest to those of *T. heteropetala* and *T. uniflora*. A common feature of these three species is the ovoid bulb, the membranes of which are hairy on the inside of the apex. Vegetative characters of *T. mongolica* and *T. uniflora* are similar: opposite or densely alternate leaf arrangement. Generative characters of *T. mongolica* and *T. heteropetala* are similar: stamen filaments in the middle wide; inner tepals have a lanceolate shape (the difference between length and width is 2–2.5 times). In contrast to morphologically close species, *T. mongolica* has the following characteristics: stigmas usually are elevated above stamens; the length of the anthers is 2.5–3(5) times less than the filaments; the length of the first leaf exceeds the length of the pedicel by 2–3 times.

Examined specimens (new records)

RUSSIA: [Zabaykalsky Territory], Mongolia Ross., Desertum Gobi inter fl. Onon et Argun, [prope] Kulus [sutay], 13.05.1856, coll. G. Radde s.n. (LE01044754, LE01044755); [Zabaykalsky Territory] Chita Region, Borzinsky District, vicinity of Zun Torey Lake, feathered poor grass steppe, 09.05.1948, coll. N.F. Tereshchenko, s.n. (TK004149); [Zabaykalsky Territory] Chita Region, Aginsky District, left bank of the Onon River, Malyi Bator mount, among the open shrublands of the siberian apricot, 06.05.1959, coll. E.I. Pavlov s.n. (TK004148, TK004150); [Zabaykalsky Territory] Chita Province, Onon District, Gydyrgun mount, 20.05.1969, coll. A. Leontiyev s.n. (NSK0070095); [Zabaykalsky Territory] Chita Province, Onon District, Torey Depression, near Gydyrgun mount, 16.06.1969, coll. A. Leontiyev s.n. (NSK0070096); Zabaykalsky Territory, Aginsky Buryat Okrug, Aginsky District, the right bank of the Onon River, 4 km WNW of the village of Nizhny Tsasuchey village, Maly Bator tract, steppe slope, 50°31'14.00"N 115°01'32.00"E, 29.04.2019, coll. O.A. Chernysheva, L.I. Sarajeva, A.S. Erst, E.R. Khadeeva, D.A. Krivenko 53652, 53654 (IRK); Zabaykalsky Territory, Onon District, the vicinity of Gydyrgun mount near Zun-Torey Lake, rocky steppe, 50°6'17.7"N 115°30'36.6"E, 21.05.2019, coll. L.I. Sarajeva s. n. (Herbarium of the Daurian State Nature Biosphere Reserve): 27–33.

Verbesina encelioides (Cav.) Benth. et Hook f. ex A. Gray (Asteraceae)

Contributors: Maxim Mallaliev & Ramazan A. Murtazaliev

Distribution and habitat

The natural area of the species covers Central and South America. It is sometimes cultivated as an ornamental plant, which contributes to its distribution and settlement in new

places. For the Russian part of the Caucasus, the species is presented for the first time, however, the Plantarium (2007–2020) is provided data for the north of the Krasnodar Territory. It grows on weedy places, on sandy areas, in settlements along the roads.

Taxonomic notes

Belongs to the tribe *Heliantheae*, most of whose genera are characteristic to the America. The genus *Verbesina* L. has about 350 species. In the Caucasus from this genus only this species is widely found.

Examined specimens (new records)

RUSSIA: Republic of Dagestan, Kaspiysk City, open meadow wet plot, 25.09.2019, M.M. Mallaliev (DAG, LE): 34.

ACKNOWLEDGEMENTS

The reported study was funded by RFBR according to the research projects №№ 17-44-388084, 19-04-00658, 19-29-05205, 18-34-00090, 18-34-00551, 20-54-53008 GFEN_a, RFBR and Government of Irkutsk Region – grant 17-44-388084, Institutional research project of the Komarov Botanical Institute, Russian Academy of Sciences, “Vascular Plants of Eurasia” (№ AAAA-A19-119031290052-1), Tomsk State University competitiveness improvement program, IWEP SB RAS No. 0383-2019-0004 and RFBR grant No. 19-05-50055-Microworld and the National Natural Science Foundation of China (3191101584). We thank Jennifer Poore, University of California Davis Center for Plant Diversity, for linguistic editing.

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Figure 3 Oldest specimen defined by A.V. Grebenjuk as *Tulipa mongolica* Y.Z. Zhao collected by G. Radde in 13 May 1856 near Kulusutay (LE)

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