Findings to the flora of Russia and adjacent countries: New national and regional vascular plant records, 3

Alla V. Verkhovzina1,2, Roman Yu. Biryukov3, Elena S. Bogdanova3, Victoria V. Bondareva4, Dmitry V. Chernykh5, Nikolay V. Dorofeev6, Vladimir I. Dorofejev7, Alexandr L. Ebel8,9, Petr G. Efimov10, Andrey N. Efremov10, Andrey S. Erst10, Alexander V. Fateryga11, Natalia S. Garnova12,13, Valeri A. Glazunov14, Polina D. Gudkova15,16, Inom J. Juramurodov17,18,19, Olga A. Kapitonova19,20, Alexey A. Keechaykin20, Anatoliy A. Khapugin21,22, Petr A. Kosachev20, Ludmila I. Krupkina23, Mariia A. Kulagina24, Igor V. Kuzmin25,26, Lian Lian27,28, Guzalya F. Suleymanova22, Hang Sun29, Dmitry V. Tarasov30, Kolmiljon Sh. Tojibaev30, Vladimir M. Vysjukov30, Wei Wang31,32, Evgenii G. Zibzeev30, Dmitry V. Zolotov30,32, Elena Yu. Zykova32 and Denis A. Krivenko32

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 38 vascular plant species from 7 Eurasian countries, obtained during field explorations, as well as during taxonomic revisions of herbarium materials.

For the first time, new locality of Rhodolia bourgeai is recorded for Europe and West Kazakhstan Region of Kazakhstan, Arnobilia obovata for China and Kazakhstan, A. olgae for China, Ballota nigra for Kazakhstan and the Asian part of Russia, Potentiala chalchorum, P. tischmanniana and P. doujonneana for Kyrgyzstan, Laptopa heterocantha for Tajikistan, Hydrosym ma taytichi for Uzbekistan, Linaria gymnoberis, Silene ceratophylla for Siberia, Diaonis taurusiss, Genista tinctoria, Verbascum pohomianum for Eastern Siberia, Drosera × obtusa, Pseudodoxaerophorum strictum, Trollius astroschizis for the Altai Republic, Diplotrichum insulare for the Republic of Buryatia, Dactylorhiza ibex, Epipactis condensata for the Republic of Dagestan, Phylodictys orientalis for the Kabardino-Balkarian Republic, Diphasiastrum × sullivani for the Republic of Mordovia, Typha latifolia for the Magadan Region, Seniora viscosia for the Novosibirsk Region, Solanum physaloides for the Omsk Region, Echiophora ovata in the Middle Volga, Lavandula angustifolia for the Saratov Region, Galium-effusum for the Saratov Region, Bidens frondilae, Eutrochium triandra, Echiorbis chingii, Jaturna grandifidanta, Rhinanthis songaricus and Vicia megalanthops for the Tyumen Region, Banias ochroleuroides, Thalictrum ussuriense for the Inner Mongolia Autonomous Region of China, Izotes echinopus for the Yamal-Nenets Autonomous Area, Potentiala × bisthecenensis for Issyk-Kul and Osh Regions of Kyrgyzstan.

Keywords: floristic findings, taxonomy, Russia, Kazakhstan, Mongolia, China, Kyrgyzstan, Tajikistan, Uzbekistan

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**Taxonomic notes.** *A. olgae* belongs to section *Cyananthae* and was described by Popov (1953) and most researchers did not recognize the species independence of this species and combined it with *A. olgae* (Zakirov 1961, Ajabdorina et al. 1986, Chukavina 1984). From *A. olgae* it is distinguished by its lanceolate leaf blade, weakly pubescent with compressed and upward directed hairs, not staining root, smaller eremocarps, 2 mm long and bottle-shaped seeds. We consider it necessary to provide an updated diagnosis of this species.

* A. olgae is perennial plant 15–20 cm high. The root is dark, not staining, woody. Stems weakly pubescent with compressed and upward directed hairs. Leaves basal rosette 60–80 mm long, 10–12 mm wide, lanceolate, not torn into segments, with indistinct lateral outgrowths and a short, straight, sharp apex, on the back without lateral combs, on the ventral side with an obscure keel, profusely tuberculate. Bottle-shaped seeds up to 2.0 mm long.

Revision of indeterminate herbarium collections LE showed that *Arnebia obovata* is new species from the territory of China.

* Arnebia obovata Bunge (Boraginaceae)

**Contributor:** Svetlana V. Ovchinnikova

**Distribution and habitat:** *A. obovata* was described by A.A. Bunge from Sarafchian (Tajikistan) by collection of A. Lehmann. Later it was found in Pamir-Alai and West Tien Shan from the territory of Kyrgyzstan and Uzbekistan (Popov 1953, Abdullaeva et al. 1986), and was not found from the territory of Kazakhstan and China. *A. obovata* grows on the outcrops of variegated rocks in the lower and middle belts of the mountains, at altitude of 1200–2200 m a.s.l.

**Taxonomic notes.** The genus *Arnebia* Forssk. (with *Macranthos* DC. ex Meissn. and *Ulagbekia* Zakirov) comprises 25 species of Russian and regional vascular plant records, 3 (A.V. Verkhozina, ed.). *Botanica Pacifica* 10(1):00–00.

**Examined specimens (new records).** KAZAKHSTAN: South Kazakhstan, Karatau Mountains, [43°N 68'E], 23.05.1962, coll. E. Puchkova, 19 (TASE). CHINA: Kashgar, Eggin near the broken Chinese fortress, [39°41'N 77°37'E], 11.08.1913, coll. O.E. Knorr, 1070 (LE); Xinjiang province, Kashgaria, upper reaches of the river Kizil-Su, above Kashgar, on the rocks on the way from Sim-Khake to Aegina, [39°41'N 77°37'E], 1.07.1929, coll. M.G. Popov, 65 (LE); Xinjiang province, Kashgaria, upper reaches of the river Kizil-Su, above Kashgar, up to Nagra-Galka along the rocks and the channel, [39°41'N 77°37'E], 2.07.1929, coll. M.G. Popov, 37a (LE).

**Arnebia olgae Regel (Boraginaceae)

**Contributor:** Svetlana V. Ovchinnikova

**Distribution and habitat.** *A. olgae* was described by E. Regel from the Alai ridge (Uzbekistan) by collection of O.A. Fedtschenko (type: Uzbekistan. Kokand Khanate, between Karakazyk and Shakhimardan, 11.07.1871, coll. O. Fedtschenko (lectotype LE 01064157, designated by Khalikzhuvev (1970) in Report of the Academy of Sciences of the UzSSR 5: 66, as a "type"). Later it was found in Pamir-Alai and West Tien Shan from the territory of Kyrgyzstan and Tajikistan (Khalikzhuvev 1970, Abdullaeva et al. 1986), and was not found from the territory of China. *A. olgae* grows on gypsum-bearing sandstones in the tau zone, at an altitude of 2000–2200 m a.s.l.

**Taxonomic notes.** *A. olgae* is perennial plant 15–20 cm high. The root is dark, not staining, woody. Stems weakly pubescent with compressed and upward directed hairs. Leaves basal rosette 60–80 mm long, 10–12 mm wide, lanceolate, not torn into segments, with indistinct lateral outgrowths and a short, straight, sharp apex, on the back without lateral combs, on the ventral side with an obscure keel, profusely tuberculate. Bottle-shaped seeds up to 2.0 mm long. We consider it necessary to provide an updated diagnosis of this species.

Revision of indeterminate herbarium collections LE showed that *Arnebia obovata* is new species from the territory of China.

**Examined specimens (new records).** CHINA: Xinjiang Uyghur Autonomous Region, Eastern Tien Shan, Kyzkhintermontane basin, its southern framing with a hilly badland, Reamurian desert, by sara, [42°N 83°E], 1.04.1958, coll. A.A. Yunatov & Yuan Yi-fen, 732 (LE).
B. nigra

**Distribution and habitat.** This species is native to the Mediterranean Region and West Asia (eastwards to Azerbaijan and Iran). B. nigra has a long history of herbal use, though it is also well known because of its unpleasant odor. As an aromatic oil, it has a European temperate distribution. B. nigra is also naturalized in some states of the USA, Argentina, south-east Australia, and New Zealand (GBIF Secretariat, 2019a, POWO 2019). This species is widely distributed in European part of Russia, mainly in the southern regions. In Asia it was reported as alien species from Kyrgyzstan (Lazkov 2003), and very recently was observed in the Chelyabinsk Region of Russia (Ueda 2021a,b). It grows in various anthropogenic habitats, often on disturbed mountain landscapes, near the bushy, on ravines and slopes of mountains and hills. B. nigra was also found in the area of Novosibirsk in 2009 and 2010 and in the city of Barnaul in 2014. Unfortunately, both times it was misidentified as *Cuminum moschatum* (Host) Stace and published under this name (Nobis et al. 2015, Ebel et al. 2015b). Additionally, B. nigra was observed at least twice in Kazakhstan (Almaty), but no herbarium specimens were collected there. Nevertheless, there are photos from this location uploaded to iNaturalist (Ueda 2021c,d) cited below.

**Taxonomic notes.** The genus *Bidens* belongs to tribe *Maranthae* Vis. This genus includes about 30 species distributed eastwards to North Africa (Mediterranean region), with one species (*B. afrcana* (L.) Benth.) being endemic to South Africa and Namibia. The current molecular phylogeny clearly demonstrates that this genus does not represent a monophyletic group as it is currently circumscribed. Most species of *Bidens* form a well-supported clade with genus *Marnhium*, thus confirming a close relationship between these two genera (Scheen et al. 2010). *B. nigra* is the type species of the genus *Bidens*. It is perennial herb like most other species of this genus. Several subspecies are recognized within *B. nigra*, and most of them (except *subsp. nigra*) are located in the Mediterranean Region and adjacent territories (POWO 2019).

**Examined specimens (new records).** RUSSIA: Southern Trans-Ural, Tyumen Region, Tyumen, around the northern pylon of the pedestrian bridge “Most Vlyublonnych”, the northern low bank of the Tura River, 57°09'52.1"N 65°32'24.4"E, alt. 55 m a.s.l., thicket of *Salix triandra* L., 27.08.2013, photos I.V. Kuzmin (Ueda 2021a), 28.08.2018, coll. I.V. Kuzmin & A.A. Khapugin s.n. (Tyumen State University), Tyumen, 60 m south of the intersection of Gogolovaya and Beregovaya streets, low bank of Tura River, 57°09'45.5"N 65°32'20.7"E, alt. 54 m a.s.l., thicket of *Salix triandra*, 26.09.2019, D. (Ueda 2021b), coll. I.V. Kuzmin s.n., 14.10.2019, coll. I.V. Kuzmin s.n. (Ueda 2021g), 26.08.2020, coll. A.A. Khapugin s.n. (Ueda 2021h), (Tyumen State University), 29.09.2020, photos V.A. Glazunov (Ueda 2021i); Tyumen, Molodogvardetsv street, at the house 22, 57°07'59.9"N 65°31'08.9"E, alt. 70 m a.s.l., one small plant in a crack in the asphalt between the sidewalk and an old wooden house, 08.10.2019, coll. I.V. Kuzmin s.n. (Tyumen State University); Tyumen, right bank of the meander (bend) of the Tura River opposite the square “Zarechnyi Park”, 450 m south-west of the Aquaport, low bank of the Tura River, 57°10'49.8"N 65°32'20.8"E, alt. 47 m a.s.l., thicket of *Salix triandra* and *Phalaris arundinacea* L., 02.10.2020, coll. I.V. Kuzmin s.n. (Ueda 2021j) (Tyumen State University).

**Bidens frondosa L. (Asteraceae)**

**Distribution and habitat.** *B. frondosa* is a species native to the USA, Argentina, south-east Australia, and New Zealand. It is a species of the genus *Bidens* with a long history of herbal use, though it is also well known because of its unpleasant odor. As an aromatic oil, it has a European temperate distribution. *B. frondosa* is also naturalized in some states of the USA, Argentina, south-east Australia, and New Zealand (GBIF Secretariat, 2019a, POWO 2019). This species is widely distributed in European part of Russia, mainly in the southern regions. In Asia it was reported as alien species from Kyrgyzstan (Lazkov 2003), and very recently was observed in the Chelyabinsk Region of Russia (Ueda 2021a,b). It grows in various anthropogenic habitats, often on disturbed mountain landscapes, near the bushy, on ravines and slopes of mountains and hills. *B. frondosa* was also found in the area of Novosibirsk in 2009 and 2010 and in the city of Barnaul in 2014. Unfortunately, both times it was misidentified as *Cuminum moschatum* (Host) Stace and published under this name (Nobis et al. 2015, Ebel et al. 2015b). Additionally, *B. frondosa* was observed at least twice in Kazakhstan (Almaty), but no herbarium specimens were collected there. Nevertheless, there are photos from this location uploaded to iNaturalist (Ueda 2021c,d) cited below.

**Taxonomic notes.** *B. frondosa* co-occurs with *B. tripartita* L. and *B. radiata* Thwii. The invasive plant reliably differs from the other two species by having leaves with petioles, a large habitus and the ability to grow until the snow cover is complete history of *B. frondosa* observations in the Tyumen Region is present. Photos were uploaded to the site iNaturalist.org.

**Examined specimens (new records).** RUSSIA: Southern Trans-Ural, Tyumen Region, Tyumen, around the northern pylon of the pedestrian bridge “Most Vlyublonnych”, the northern low bank of the Tura River, 57°09'52.1"N 65°32'24.4"E, alt. 55 m a.s.l., thicket of *Salix triandra* L., 27.08.2013, photos I.V. Kuzmin (Ueda 2021a), 28.08.2018, coll. I.V. Kuzmin & A.A. Khapugin s.n. (Tyumen State University), Tyumen, 60 m south of the intersection of Gogolovaya and Beregovaya streets, low bank of Tura River, 57°09'45.5"N 65°32'20.7"E, alt. 54 m a.s.l., thicket of *Salix triandra*, 26.09.2019, D. (Ueda 2021b), coll. I.V. Kuzmin s.n., 14.10.2019, coll. I.V. Kuzmin s.n. (Ueda 2021g), 26.08.2020, coll. A.A. Khapugin s.n. (Ueda 2021h), (Tyumen State University), 29.09.2020, photos V.A. Glazunov (Ueda 2021i); Tyumen, Molodogvardetsv street, at the house 22, 57°07'59.9"N 65°31'08.9"E, alt. 70 m a.s.l., one small plant in a crack in the asphalt between the sidewalk and an old wooden house, 08.10.2019, coll. I.V. Kuzmin s.n. (Tyumen State University); Tyumen, right bank of the meander (bend) of the Tura River opposite the square “Zarechnyi Park”, 450 m south-west of the Aquaport, low bank of the Tura River, 57°10'49.8"N 65°32'20.8"E, alt. 47 m a.s.l., thicket of *Salix triandra* and *Phalaris arundinacea* L., 02.10.2020, coll. I.V. Kuzmin s.n. (Ueda 2021j) (Tyumen State University).

**Bunias cochlearioides Murray (Brassicaceae)**

**Distribution and habitat.** This species was recorded in the flora of China from only 3 provinces (Chou et al. 2001). In the adjacent regions of Russia, it is known from Transbaikalia and Altai. It is also known from the Circum-Caspian area of Russia and Kazakhstan, where it was first described. For Mongolia, it was noted by Vasilchenko (1939). The Kukun-nor Valley is a fairly large geographic formation, between Mongolia, it was noted by Vasilchenko (1939). The Kukun-nor Valley is a fairly large geographic formation, and the Korean Triad of Mongolian states is divided by the Kove-Trans Ural River. The Kube-Ural River served as a berth for ships engaged in both river navigation and cargo transportation. Therefore, we assume that this particular *B. frondosa* population could be the first one appeared in Siberia. The studied population covers a length of 500 m, where *B. frondosa* is represented in high abundance. In August 2019, the construction of the embankment began on this site. As a result, the coastal *Salix* thickets were cut down, and the area was covered in concrete. That is why, only small part of the original *B. frondosa* population remained covering the area of 100 m² at the border of the construction. Besides this, three solitary *B. frondosa* plants were found 2020 2 km northward, upstream of the Tura River. We assume that *B. frondosa* spread to this site by amateur fishermen because they grew at some distance from each other.

**B. frondosa** is a new alien species to the flora of the Tyumen Region and a rare record in the whole of Siberia. This is the first report of the *B. frondosa* presence in the Tyumen Region, based on reliable herbarium specimens, which have citations of herbarium specimen labels of this alien species, and the complete history of *B. frondosa* observations in the Tyumen Region is present. Photos were uploaded to the site iNaturalist.org.
Examine specimens (new records). CHINA: Inner Mongolia, Kufun-bujir-nor Valley, Kerulun River, on clay-sandy soil of meadows, [48°39'00"N 116°49'34"E], 9.06.2017, coll. [G.N. Potanin and [V.K.] Solikov (UBA)].

Dactylorhiza iberica (M. Bieb. ex Willd.) Soó (Orchidaceae)

Contributors: Petr G. Efimov, Ramazan A. Murtazaliev & Alexander V. Fateryga

Distribution and habitat. This species was described from Transcaucasia ("Habitat in Iberia"); it is currently known from Greece, Bulgaria, Russia, Turkey, Cyprus, Syria, Lebanon, Palestine, Iraq, Iran, Georgia, Armenia, and Azerbaijan (Avryanov 1994, Delforge 2016, Eccarius 2016). In Russia, it is distributed in the Crimea and the North Caucasus (Efimov 2020). This is a rare species confined to open wet habitats: stream banks, wet meadows, grasslands along the edges of rivers; it forms locally abundant populations due to its ability to reproduce vegetatively (Vakhrameeva et al. 2008, Fateryga et al. 2019).

This species was not reported from Dagestan until recently despite the fact that high-quality collections of it exist dating from 1961, 1964, and 1987. All those collections were kept in the LE and MHA herbaria among the undescribed material, until we came across them in the course of the “Mapping Orchids of Russia” project (Efimov 2020). Vice versa, in the LENUD herbarium, which generally possesses rather rich collections from Dagestan, there was a portion of species kept under this name, but in fact they represented other taxa, viz. Dactylorhiza saxatilis (Brongn). Soó, D. salina (Turcz. ex Lindl) Soó, Gymnadenia conopsea (L.) R. Br., and possibly Anacamptis laxiflora Lam. (R.M. Bateman, Pridgeon & M.W. Chase s.l. and Dactylorhiza urvilleana (Steud.) H. Baumann & Künkelle). Several severely damaged or incomplete herbarium specimens from LENUD in fact may indeed represent D. iberica, but those determinations need strong verification. In 2013 and 2015, the species was again recorded in two different places, the latter being posted as photos on the Plantarium website (Teymurov 2016) on the basis of which Ivanov (2019) obviously published his record of D. iberica from Dagestan.

In literature, this species is also usually reported from the western part of the Russian Caucasus (Nevski 1935, Avryanov 2006, Ivanov 2005, 2019) which is the most likely explanation of the solitary record from the vicinity of Kvatrosovo Lake near Stebarov (Kolmakov 1928). We did not come across the corresponding herbarium specimens and with high probability consider this to be a case of an incorrect determination. In the view of the recent findings of D. iberica in Dagestan, decline of this species cannot be ascertained, however due to the extreme rarity of this plant it should be included in the Red Data Book of Dagestan in the “Vulnerable” category (D1+2).

Taxonomic notes. D. iberica is a very distinct species in the genus Dactylorhiza Neck, ex Nevski. It and another very distinct species, i.e., D. viridis R.M. Bateman, Pridgeon & M.W. Chase, are basal in relation to all the remaining species of Dactylorhiza (Bateman & Rudall 2018). D. iberica is easily recognizable by several morphological features which are unique in the genus: the presence of stolons, fusiform to nearly fusiform tuberoids, the hood formed by 5 tepals (also shared by D. viridis), and numerous glandular trichomes on the adaxial side of the labellum. It is classified in a special monophyletic section in all of the recent classifications of Dactylorhiza (Avryanov 1990, Delforge 2016, Eccarius 2016, etc.).

Examined specimens (new records). RUSSIA: Republic of Dagestan, Khunzakh District, between Khunzakh and Kharkhish, bogy meadow, [42°36'N 46°36'E], 26.07.1961, coll. N.N. Tzvelev, S.K. Cherpanov, G.N. Nepli & A.Ye. Bohrov, 4154 (LEI039180); Republic of Dagestan, Khunzakh, road to Kharkhish, subalpine meadow, [42°36'N 46°42'E], 11.07.1964, coll. V. Surova (MHA); Republic of Dagestan, Khunzakh District, near Orotu-Sukh (ca. 15 km from Khunzakh), ca. 1600 m a.s.l., wet meadow, [42°36'N 46°36'E], 21.07.1987, coll. V.D. Bochklin, V.A. Sagalayev & M.V. Kostina (MHA); Republic of Dagestan, Khunzakh District (Plateau), vicinity of Gortkole, NE slope, 1800 m a.s.l., in a marsh, [43°34'56.5"N 46°37'55.0"E], 07.07.2013, coll. R.A. M. M. Dariev (DAG; Ueda 2021h); Republic of Dagestan, Khunzakh Plateau, Matlas Natural Landmark, marsh meadow in the subalpine belt, [42°36'N 46°36'E], 15.07.2015, coll. A.A. Teymurov (photo: Teymurov 2016).

Dianthus × courtoisii Rchb. (Caryophyllaceae)

Contributors: Alla V. Verkhozhina & Nikolay V. Dorofeev

Distribution and habitat. D. × courtoisii was described by Reichenbach from Belgium (Reichenbach 1832). It is also known in Ukraine (POWO 2019). Moreover, there are scans of herbarium specimens of D. × courtoisii, which were collected in Germany (Turpel & Walsch 2017), France (MNHN, Chagnoux 2021a), Switzerland (Orrell, Informatics Office 2021), and Finland (Kurtto 2021). In Russia, it was discovered for the first time in the territory of the modern Kostroma Region by Kossinsky in 1912 (Kossinsky 1913). However, the taxon has not been mentioned in the Russian floras. An allozyme analysis proved the hybrid origin of D. × courtoisii collected in Western Siberia in the vicinity of Tomsk (Ebel et al. 2017). There are also photographs available on Plantarium website received from the Perm Territory (Pavlov 2018) and the Kemerevo Region (Noskov 2014). For Eastern Siberia, this species has been recorded for the first time.

It is believed that the reason of a sudden appearance of D. × courtoisii in many places on the territory of Russia at the turn of the 20th and 21st centuries is related to a huge increase in the number of garden plots outside of populated areas which appeared in 1980–1990 in little disturbed natural communities. Starting from this period, there’ve been conditions created for hybridization between the popular garden plant D. superbus and the local species D. courtoisii, an example of the forest zone of European Russia and Siberia (Ebel et al. 2017).

Taxonomic notes. An allozyme analysis proved the hybrid origin of D. × courtoisii (Ebel et al. 2017). It also showed that the plants of D. × courtoisii collected in Western Siberia in the vicinity of Tomsk are a group of a first-generation hybrids (F1) D. superbus × D. barbatus. However, in the opinion of the authors of the above mentioned publication, establishing equivalence between Russian hybrids and D. × courtoisii requires additional research, since Reichenbach (1832, p. 806) while describing D. × courtoisii indicates some features that do not quite correspond to the appearance of Russian hybrids: “bracts exceed a half of the length of calyx... inflorescence is thick, corymbose-panciculate... [when in] D. barbatus it is looser... [when in] D. superbus, petals are like those of D. barbatus...” (i.e., the plant looks more like D. barbatus than D. superbus). The Tomsk’s plants have petals whose shape, size, and deiscence peculiarities which make them appear closer to D. superbus, their bracts one third of a calyx; its inflorescence consists of 2–8 flowers and is more or less thick, with flowers in congestion by 2–3, sometimes detached. (i.e., that the plants from Russia diverge from D. superbus). Such differences, according to the authors of the publication, may be associated with a generally high polymorphism of the hybrids, but also with the fact that the pair of parental species in Belgium (locus classicus D. × courtoisii) was genetically more or less different from the pair of D. barbatus and D. superbus in Russia (Ebel et al. 2017). As for the Irkutsk plants, the ratio of calyx and bracts varies in a wide range, but the inflorescence is few-flowered.
\(D \times courtoisii\) resembles most to \(D. \) fischi and differs from the latter, first of all, in its long-creeping rhizomes and having a deeper cut of its petals (Ebel et al. 2017). \(D. \) fischi has large-toothed along the edges of the petals, when in \(D \times courtoisii\) they are incised into lanceolate lobules. In addition, in \(D \times courtoisii\) the petioles are narrowed and form a long styloidal tip, while in \(D. \) fischi, they are gradually narrowed to form a lanceolate end. Also, the capsules of \(D \times courtoisii\) arepuny, often empty, because the seeds usually do not develop, while \(D. \) fischi has capsules with plenty of seeds.

\(D \times courtoisii\) differs from \(D. \) barbatius in having quite a loose inflorescence with flowers on more developed pedicels and petals incised into lanceolate lobules along the edges.

\(D. \) superbus differs from all the above-mentioned species in having threadlike linear lobules, into which petals are dissected up to a half or more of the length of the limb.

Examined specimens (new record). RUSSIA: Irkutsk Region, Staryansky District, vicinity of Pereyezd railway stop, 22.06.1980, coll. V.V. Tikhomirov, K. Volychanskiy & A. Devyatov, sub. Lycopodium complanatum L. (MW0280454, Seregin 2021).

**Diathron lirinfolium Turcz. (Thymelaeaceae)**

**Contributor:** Natalia S. Gamova

**Distribution and habitat.** \(D \times lirinfolium\) is a hybridogenous species derived from hybridization of \(D. \) complanatum L. and \(D. \) zeilleri. It is distributed in the forest zone of Eastern Siberia as a whole (Krylov 1931b, Yuzepchuk 1939, Peshkova 1994, Baikov 2012). While \(D. \) zeilleri prefers moss ridges and tussocks, \(D. \) lirinfolium is common in hollows and can be partially immersed in water. \(D \times lirinfolium\) occupies transitional locations.

**Taxonomic notes.** \(D. \) lirinfolium is an annual herb. It was described as the first species in genus Diathron. Since then several species have been added to this genus, though recent research consider them to belong to \(Stellariastrum\) and \(Dendrothecium\) (Krylov 1931b, Yuzepchuk 1939, Baikov 2012). No other related species are distributed in nearby regions of Eastern Siberia.

Examined specimens (new records). RUSSIA: Republic of Buryatia, Mukhorshibir District, vicinity of Podlopatki village, 50°56'17.9"N 107°03'42.2"E, 555 m a.s.l., foot of rocky shrubby steppe slope near the former river-bed of Khilok River, 23.08.2018, coll. N.S. Gamova (MW).

**Diphasiastrum × zeilleri (Rouy) Holub ㋡ Lycopodium × zeilleri (Rouy) Greuter & Burdet (Lycopodiaceae)**

**Contributors:** Vladimir M. Vasiljuk, Tatyana B. Silaeva & Lyubov A. Novikova

**Distribution and habitat.** \(D. \) zeilleri was described from France (Rouy 1913). It is distributed in the forest zone of North-Western (Fennoscandia), Central and Eastern Europe, Western Siberia and Eastern part North America (Ivanenko & Tzvelev 2004). Previously, this taxon was not noted in the Republic of Moldova. It inhabits thinned pine (Pinus sylvestris L.) forests on sandy soils.

**Taxonomic notes.** \(D. \) zeilleri is a hybridogenous species derived from hybridization of \(D. \) complanatum L. Holub and \(D. \) triscaphyllum (Pursh) Holub (Tzvelev 2000, 2005, Ivanenko & Tzvelev 2004). Its rhizome-like plagiotropic shoots are predominantly the underground type. However, they often emerge partially to the ground surface and where they are green. The underground part of the orthotropic shoot is vertical, pale-yellow, usually 3–12 cm long, with spatulate phyllodia and filmy along the edges. Lateral branches of the orthotropic shoots are noticeably flattened, 1.5–2.5 mm wide. The branches can be found from loosely grouped forming inverse-conical bundles to fan-shape prostrated. The free plates of lateral phyllodia are from sickle-curved toward the branch axis to narrow-trianglar. The descending bases of the ventral phyllodia are less pronounced than those of the dorsal phyllodia. The base length of the free plates of the ventral phyllodia is about 1/4 of the branch width, taking into account the free parts of the lateral phyllodia. The peduncles with strobili are formed on both lateral fertile branches and main axis of the orthotropic shoot. Strobili are arranged on the 2–6 long peduncles.

Examined specimens (new records). RUSSIA: Mordovian ASSR, Bolshe Berezniki District, 7 km south of the Simkino village, pine forest on the old dunes, 54°11'0.87"N 46°08'37.2"E, 22.06.1980, coll. V. Tikhomirov, K. Volchanskiy & A. Devyatov, sub. Lycopodium complanatum L. (MW0280454, Seregin 2021).

**Drosera × obovata Mert. & W.D.J. Koch (Droseraceae)**

**Contributors:** Dmitry V. Zolotov, Dmitry V. Chernykh, Roman Yu. Biryukov & Maria A. Kulagina

**Distribution and habitat.** \(D \times obovata\) has the northern Holartic areal that extends to the Circumboreal Region. The vast majority of findings are located in Northern and Central Europe, including the European part of Russia, and North America (Canada and the northern part of the USA) (GBIF Secretariat 2019b). The species is much less common in Siberia, especially in the south (Krylov 1931b, Yuzepchuk 1939, Peshkova 1994, Baikov 2012). Some findings were made in the Far East of Russia (Sakhalin and Kunashir Islands), in North Korea and Japan (GBIF Secretariat 2019b). Everywhere the species is confined to peat bogs (mainly sphagnum bogs). Since \(D \times obovata\) is a hybridogenous species, it is more often found in areas where habitats of both parental species \(D. \) anglica Huds. and \(D. \) rotundifolia L. occur. The latter is also observed in the localities cited by us, where the species was first found for the Republic of Altai (Khmeleva 2012) and the Altai Mountains as a whole (Krylov 1931b, Yuzepchuk 1939, Peshkova 1994, Baikov 2012, Ebel 2012). While \(D. \) rotundifolia prefers moss ridges and tussocks, \(D. \) anglica is common in hollows and can be partially immersed in water. \(D \times obovata\) occupies transitional locations.

**Taxonomic notes.** \(D \times obovata\) is a hybrid of \(D. \) anglica by having shorter and wider (obovate) leaves that rapidly turn to the petiole as well as by having underdeveloped seed capsule with often sterile seeds, \(D. \) anglica has longer leaves which have linear-wedge-shaped blade that gradually turns into a petiole, and the seed capsule is well developed. In contrast to \(D. \) rotundifolia with recumbent leaves, while \(D. \) anglica and \(D \times obovata\) have upright (erect) leaves (Krylov 1931b, Yuzepchuk 1939, Peshkova 1994).

Examined specimens (new record). RUSSIA: Altay Republic, Turochaksky District, Lake Teletskoye, village Artybash surroundings, upper reaches the Kuatang river, low ridge-hollow transitional (mesotrophic) sphagnum peat bog, point No. 14, 51°48′50.22″N 87°19′6.20″E, 637 m a.s.l., 22.06.1980, coll. V.Tikhomirov, K.Volychanskiy & A.Devyatov, sub. Drosera rotundifolia L. (KUZ)– Altay Republic, Turochaksky District, Lake Teletskoye, upper reaches of the Karasu river, southeastern shore of Lake Plandukel, sedg-sphagnum bog, point No. 14, 51°40′12.3″N 87°32′00.2″E, 23.07.2000, coll. D.V. Zolotov, D.V. Chernykh & R.Yu. Biryukov (KUZ).

**Echinops exaltatus Schrad. (Asteraceae)**

**Contributors:** Sergey V. Saksunov, Vladimir M. Vasiljuk & Stepan A. Senator

**Distribution and habitat.** \(E. \) exaltatus was described from specimens grown in the Göttingen botanical garden; the place of their origin is mistakenly indicated as Siberia (“in Siberia”) (Bobrov 1962, Tschernyev 1994). Its native range is Central and Southern Europe. It is alien in the flora of Northern and Eastern Europe (except the Ciscaurals), North America (POWO 2019). This alien species is reported here first time for the flora of the Samara Region and the Middle Volga Region.

**Taxonomic notes.** \(E. \) exaltatus belongs to the section *Turnea* Encl. The stems are 50–150 cm long, furrow-nibbed, loose at the bottom, densely whitish-tomentose at the top; leaves are 20–30 mm long, up to 15 cm wide, pinnately parted, sparsely and shingly above, abaxial surface is white tomentose sometimes grayish, without glands, stem leaves are amplexicaul, with well-defined auricles; 16–18 anthodium
leaves are arranged in 3–4 rows, without glandular pubescence on the back, the inner leaves in the lower part are slightly fused with each other; tuft is cup-shaped, split on top; head shaped common inflorescences are 4–6 cm in diameter.

Examined specimens (new records). RUSSIA: Samara Region, Tolyatti, Arboretum of the Institute of Ecology of the Volga River Basin of the RAS, [53°28′3.15″N 49°21′2.75″E], 28.07.2020, coll. S.V. Saksonov & V.M. Vasyluk (LE, MW, PVB).

Eleotrichis klingei Schkuhr (Elatinaceae)

Contributor: Olga A. Kapitonova

Distribution and habitat. *E. klingei* is a Holarctic boreo-temperate species. The natural range of the species covers Western and Eastern Europe, the Mediterranean, Middle Asia, Western Siberia, the south of Eastern Siberia, the Far East, and Southeast Asia; it was introduced in North and South America, Africa, Australia (Razifard et al. 2016). The species is very rare in Western Siberia. It is known from the Kemerovo Region (the middle flow of the Tom’ River) (Vlasova 1996, Grebenyuk 2012), the Altai Republic (Northern Altai) (Krasnoborov 2012), the Khanty-Mansi Autonomous Area – Yugra (Malaya Sosva Nature Reserve and the floodplain of the Oby River in the vicinity of the Polnovat village) (Vasina 2012, Glazunov & Nikolaenko 2018). We recorded this species for the first time for the territory of the Tyumen Region.

*E. klingei* grows in stagnant and slowly flowing water bodies to a depth of 1–1.5 m with a predominantly sandy bottom, on wet coastal sands, on silt and sandy alluvium (Grebenyuk 2012).

In the cited locality, the water in the waterbody was transparent to the bottom. The bottom of the reservoir is sandy with a small amount of silt. *E. klingei* grew in the *Callitriche hermosa-phylloidea* L. community which included a small population of *Potamogeton trichoides* Cham. et Schlecht. The projective cover of *E. klingei* did not exceed 1–2%.

Taxonomic notes. *E. klingei* belongs to the section *Crypta* (Nutt.) Seub. These are small herbaceous annuals submerged in water. *E. klingei* has prostrate stems 2–18 cm long, usually branched, rooting at the nodes. Leaves are opposite, light green to green, blades are linear, broadly linear or oblong, (3)5–10(15) mm long, 1–2(3.5) mm wide, obtuse or acute at the apex; petioles very short, 0–3 mm long. Stipules are triangular or ovate-lanceolate, 0.7–1 mm long, margins are denticulate. Flowers are solitary, axillary, sessile; sepals usually 3, petals 3, white or reddish, ovoid or elliptical, stamens 3, styles 3. Capsules are compressed-globose, 1.2–1.7 mm in diameter. Seeds are oblong, 10–25 per locule, 0.5 mm long, slightly curved, brown, with a cellular surface (Vlasova 1996, Razifard et al. 2016).

Examined specimens (new records). RUSSIA: Tyumen Region, Tobolsk District, 4.5 km NE from the railway station “Tobolsk”, 58°18′48″N 68°21′47″E, watered sand quarry, 3 August 2020; coll. O.A. Kapitonova (IBIW, LE, Herbarium of the Tobolsk complex scientific station UB RAS).

Eleocharis klingei (Meinsh.) B. Fedtsch. (Cyperaceae)

Contributor: Olga A. Kapitonova

Distribution and habitat. *E. klingei* is a Eurasian steppe species. It is distributed in Eastern Europe (Ukraine), Middle (Kazakhstan, Kyrgyzstan) and Central (Northern Mongolia) Asia (Egorova 2001). In Russia, the species was recorded in the south of the European part – on the Lower Volga and Lower Don (Egorova 1976, Alekseyev 2006), in the Orenburg (Ryabinina & Knyazev 2009) and Chelyabinsk (Kulikov 2010) Regions, in the south of Middle and Eastern Siberia (Bubnova 1990) and the Russian Far East (Ovchinnikova 2012). Our find is the first report of the species in Western Siberia and the most northern point of the known distribution the species in Siberia (Bubnova 1990). *E. klingei* grows in damp and marshy saline meadows, on the shores and shallow wa-

ners of water bodies. We found plants on the swampy shore of a floodplain lake with secondary soil salinity. The salinity of water in temporary reservoirs on the shore of the lake was 0.7%. In the cited locality, in addition to *E. klingei*, we recorded a number of halophytes: *Suaeda fruticosa* Willd., *Sparganium J. et C. Presl.*, *Tripolium pan-nonicum* (Jacq.) Dobrocz., *Puccinellia distans* (Jacq.) Pârl., P. hauptiana (V.I. Kreutz). Kitag., *Suada sp.*

Taxonomic notes. *E. klingei* belongs to the *Eleocharis* section (Egorova 2001). Plants have stems 20–40 cm in height with reddish-brown leafy sheaths in the lower part. One sterile scales are developed at the base of the spikelet. It covers the base of the spikelet entirely or by 2/3. The fruits are obovate, then surface is finely meshed. *E. klingei* differs from the closely related species *E. uniglumis* (Link) Schult. in a number of characters: a larger conical stylodium 0.5–0.9 cm in length, a larger multiflowered spikelet 1–2.5 cm in length, light-brown covering scales 4.5–5 mm in length with a wide white membranous margin, thickened stems of 1.5–2.5 mm in diameter.

Examined specimens (new records). RUSSIA: Tyumen Region, Tobolsk District, in 1.6 km W-SW from the village Saina, shore of Lake Ere (oxbow of the Irtysh river), near a preserved well of mineral water, swampy coast, 58°12′02″N 68°10′42″E, 02.07.2020; coll. O.A. Kapitonova (IBIW, LE, Herbarium of the Tobolsk complex scientific station UB RAS).

Epipactis condensata Boiss. ex D.P. Young (Orchidaceae)

Contributors: Alexander V. Fateryga, Ramazan A. Murtazaliev & Petr G. Efimov

Distribution and habitat. This species is known from Greece (Samos Island), Russia, Turkey (the type locality is “Bournabachi. Smyrna” in Izmir Province), Cyprus, Syria, Lebanon, Georgia, and Azerbaijan (Delforge 2016, Fateryga & Fateryga 2018). The only Russian region where the records of *E. condensata* were previously documented from is the Krasnodar Territory (Fateryga & Fateryga 2018, Popovich et al. 2020). Although Efimov (2020) did not mention this species among the taxa restricted in their distribution to a single region. *E. condensata* is confined to various types of forest communities. In Russia, it is known to occur in pine, oak, hornbeam, and mixed forests and shrub communities (Popovich et al. 2020). The present report is the first publication of records of *E. condensata* from Dagestan.

Taxonomic notes. Three species in the genus *Epipactis* Zinn were previously reported from Dagestan by Murtazaliev (2009): *E. utrophorum* (Hoffm.) Besser, *E. belleborine* (L.) Crantz, and *E. palustris* (L.) Crantz; Fateryga & Fateryga (2018) added *E. pseudas* (Sooc) H. B. Kewly et al. (2009) which was previously reported by a mistake since it was absent from the Caucausus as a whole (Fateryga & Fateryga 2018, Efimov 2020). Thus, four species of *Epipactis* are currently known from Dagestan: *E. condensata*, *E. belleborine*, *E. palustris*, and *E. pseudas*. Further records of other species in this genus (e.g., *E. leptochila* (Godfrey) Godfrey) are still expected.

Although *E. condensata* was not included to the recent molecular phylogenetic study of the genus *Epipactis* (Sramkó et al. 2019), we suppose that it is a bona fide species (terminology by Sramkó et al. 2019) due to a distinctive morphology: *E. condensata* can be recognized among the species in the genus *Epipactis* occurring in Russia by the leaves which are approximately equal in length to the internodes, the ovaries which are pubescent as well as the rachis of the inflorescence, two separate bosses at the base of the epichile, and the viscidium which is present but inefficient (Fateryga & Fateryga 2018).

Plants with violet or purple leaf and stem suffusion occurring in shady habitats (so called *E. condensata var. kunkelebana* (Akhalk., H. Baumann, R. Lorenz & Mosul) Popovich) are often treated as a separate species, i.e., *E. kunkelebana* (Akhalk., H. Baumann, R. Lorenz & Mosul) P. Delforge, endemic to the Caucasus, as opposed to *E. condensata* s. str. distributed in Asia Minor and Cyprus (Delforge 2016). We decided that *E. condensata* and *E. kunkelebana* were just two habitat-dependent forms and synonymized them (Fateryga & Fateryga 2018). *E. cartiliana* Kreutz & Van Domm., des-
Examined specimens (new records). RUSSIA: Republic of Dagestan, Buvnalsk District, Manasaul, forest, [42°45'N 47°02'E], 27.06.1968, coll. A. Radzhi (LENUD); Republic of Dagestan, Derbert District, Dzhalaghan Mount (above the fortress), N slope, 450 m a.s.l., oak forest, 42°02'57.6"N 48°15'55.1"E, 10.06.2010, coll. R.A. Murtazaliev (DMG, Ueda 2021l); Republic of Dagestan, Buvnalsk District, vicinity of Termenlik Ski Base, above Manasaul, N slope, 1100 m a.s.l., oak-hornbeam forest, 42°44'58.9"N 46°59'55.7"E, 1.07.2018, coll. R.A. Murtazaliev (DMG, Ueda 2021 m).

Galium affrum (Klokov) Ostapk o ≡ Asperula affrum Klokov (Rubiaceae)

Contributors: Vladimir M. Vasjukov, Guzyalya F. Suleymanova, Elena S. Bogdanova & Viktor N. Nesterov

Distribution and habitat. G. affrum (sectio Brezinhaulka Ostapk o, series Affrena Ostapk o) was described from Ukraine (Klokov 1961). Its distribution is not well studied, the taxon is known reliably in the South of Ukraine (Nikolaev Region) and of Donbass Territory (Donets Peoples Republic, Lugansk Peoples Republic) (Klokov 1961, Ostapk o 2005). For the first time the species is reported for the Saratov Region and probably for Russia. It grows on steep slopes and crenate outcrops.

Taxonomic notes. G. affrum is a hybridogenic taxon derived from hybridization of G. ocaturnum (Klokov) Pobed. s.l. and G. ruthenicum Willd. (Klokov 1961). The nothospecies is sometimes unreasonably combined with G. ruthenicum (Czerepanov 1995) or Asperula romelic Boiss. (POWO 2019). The perennial plant has several hairy, almost erect stems 50–85 cm tall. The lower and middle stem leaves are collected in whorls of 8–10, linear-bristle with curled edges, 3–40 mm in length and 0.5–0.8 mm in width, glabrous above, short-pilose below. Inflorescence is paniculate, multiflorous, rather dense; pedicels are 0.2–1 mm long, glabrous; the corolla is pale lemon yellow or whitish, short-cone, 1.6–1.8 mm long and 2–2.5 mm in diameter, with a tube 2–2.3 times shorter than the laminae; ovaries and fruits are densely-piloses.

Examined specimens (new records). RUSSIA: Saratov Region, near the city of Khvalynsk, Belenkaya mountain, crenate outcrops, [52°09'36"N 48°05'38"E], 23.06.2020, coll. V.M. Vasjukov, G.F. Suleymanova, E.S. Bogdanova & V.N. Nesterov (LE, MW).

Genista tinctoria L. (Fabaceae)

Contributor: Alla V. Verkhochkina & A.L. Ebel

Distribution and habitat. The native range of G. tinctoria covers Europe, including the European part of Russia, and Asia: Afghanistan, Azerbaijan, Iran, Kazakhstan, Lebanon-Syria, the Caucasus, Transcaucasia, Ural (Chelyabinsk and Sverdlovsk Regions) and Transural (the Kurgan Region) (Jakovlov et al. 1996, Roskov et al. 2006, POWO 2019). The eastern border of the natural distribution of the species is in Transurals. The species has been introduced into Argentina, Iraq, Canada, United States, Australia (Roskov et al. 2006, POWO 2019). There are also recent Naturalist observations available reported from Siberia, namely: from Novosibirsk (Shaulo 2000, Zykova 2009, Ueda 2021n), Omsk (Ueda 2021q), and Tomsk Regions (Ueda 2021p). For Eastern Siberia, the species has been recorded for the first time as an adventive species that has probably escaped from cultivation. However, the Komarov Botanical Institute RAS has a specimen reported from the Ledebour's herbarium that was collected in the city of Irkutsk.

Taxonomic notes. G. tinctoria belongs to the Genista section (Gibbs 1966, Pardo et al. 2004). The species is highly variable. The synonymy shows multiple attempts to distinguish individual forms as separated species (Shishkin 1945, Gibbs 1966, Jakovlov et al. 1996). So, for the Siberia (the Kurgan Region) species G. tinctoria was mentioned as a separate species, that comprises bare or slightly pubescent plants with more narrow leaves (0.3–0.8(1) cm) and broader 3.5–5 mm beans (Kurbatskiy 1994). According to the diagnosis, G. sibirica resembles G. tinctoria, but it has bare, hardly striped, non-channeled or angled culms and more narrow and barer leaves (Linné 1771). However, in the typification of Linnéan specific and varietal names in the Leguminosae, P.F. Gibbs synonymised G. sibirica and G. tinctoria (Turland & Jarvis 1997).

Hedysarum talassicum E. Nikit. & B. Sultanova (Fabaceae)

Contributors: Komiljon Sh. Tojibaev, Inom J. Juramurodov, & Hang Sun

Distribution and habitat. H. talassicum was described for the Talas Ala-Too (Kyrgyzstan) (Sultanova 1973). The species was reported in Kyrgyzstan (Sultanova 1973, Lazkov & Sultanova 2014). In “Flora of the USSR” (Fedchenko 1948), “Flora of the Kirghiz SSR” (Nikitina 1957) and “Flora of Kazakhstan” (Baytenov 1961), these plants from the Talas Ala-Too were falsely referred to H. aphalohus, and the plant is presented schematically in Table 58 and Figure 2 in “Flora in Kazakhstan” (1961), so that it is difficult to refer to it or this or that species (Kovalevskaya 1981). According to the information provided by S.S. Kovalevskaya (1981), the distribution area of H. talassicum is located in the Talas Ala-Too, Susamir-tau, Kovak-tau, and Fergana ranges of the Tian Shan mountains.

The herbarium specimens from the National Herbarium of Uzbekistan, Taskeent, (TASH), the Institute of Biology’s Herbarium, Bishkek, Kyrgyzstan (FRU), the Herbarium of the Komarov Botanical Institute, St. Petersburg, Russia (LE), the Herbarium of the Moscow State University (MW) were reviewed. As the result of our survey, no herbarium samples collected at the Susamir-tau, Kovak-tau, Fergana ranges were found. On the contrary, the herbarium specimens collected at the Santalash ridge (Kyrgyzstan, Ala-Buka district (12.08.1961, Ubukeva (FRU)) were present.

During field researches in 2019 in the mountainous regions of the South-West Tien Shan populations of H. talassicum were found on the slopes of Pokem ridges at the altitude of 2800–3100 m in the Barkak river, which is one of the left inflows of the Ogiqaing river. It is the first record for the flora in Uzbekistan. Thus, we can conclude that the distribution area of the H. talassicum is at the Talas Ala-Too, Santalash and Pokem ridges. The species grow on small, sandy, rocky, and gravel slopes in the lower, middle and upper part of the mountains.

The geographical distribution of the species by favorable climatic and environmental conditions has been modelled using the MaxEnt v. 3.4.1 Software (Phillips et al. 2006, Phillips & Dudik 2008). The geographical model of favourable growth areas for H. talassicum in the current climatic conditions has been compiled. Six main bioclimatic factors (mean annual temperature (BIO1); isothermality (BIO1/BIO7) * 100 (BIO3); temperature seasonality (BIO4); mean temperature in the wettest period (BIO8); precipitation in the wettest period (BIO16); precipitation at the driest period (BIO17) were used to create a potential habitat areas of the species. In the resulting model (Fig. 1), favourable climatic conditions for species growth were set from 0 to 1 with 0 as the lowest probability, and 1 as the highest one. The percentage for randomised analysis was set to 25 and the results were cross-validated through 500 replications. The assessment of the resulting model showed that the AUC (Area Under Curve) study method was 0.71, which means that the test result was 0.996. The two resulting AUC values exceed 0.9, which is consistent with the model's predictive capability (Scheldeman & van Zonneveld 2010).

Taxonomic notes. Hedysarum L. is one of the major genera of Fabaceae Lindl. There are more than 160 species globally, most of them grow in Eurasia, Central and Southwest Asia, North Africa and North America (Liu et al. 2017a, 2017b). More than half of the species of the genus Hedysarum grow in Middle Asia. Conspectus Florae Asiae Mediae points out 72
spe\(c\)ies (Kovalevskaya 1981). According to our estimations, at least 79 species of \(Hedysarum\) are known in Middle Asia, 47 of which are endemics of the Tien Shan and Pamir Alay mountains. 19 species of \(Hedysarum\) were recorded in the first edition of "Flora in Uzbekistan" (Korotkova 1955). In recent years, new findings have increased the number of records of the species up to 26 (Tojibaev et al. 2014, unpublished data). Many of them are local endemics from the Tien Shan and Pamir Alay mountains. Some authors consider \(Hedysarum\) as one of the polymorphic groups in local mountain flora of Uzbekistan (Sennikov et al. 2016).

One of the species that resembles to \(H.\) talassicum, is \(H.\) minjanense Rech. \(f\), the main difference is in the color of the bracteole (\(H.\) minjanense has a gray-brown bracteole). It differs from \(H.\) minjanense because of its ovate-oblong blades, half-horizontal pilose or densely pilose calyx, through a smaller size of corolla (the corolla of \(H.\) minjanense reaches 16 mm long), and a sparsely pilose peduncle.

\(H.\) talassicum by many characteristics is closer to \(H.\) narynense E. Nikit. than \(H.\) minjanense bracteole is 4–8 mm long, for \(H.\) narynense it is 2.5–3.5 mm long, wings are about half as long or half shorter than the keel (the wings of \(H.\) narynense are more than half of the keel).

The data comparison for morphological features obtained in a new record (for \(H.\) minjanense and \(H.\) narynense) are presented. The morphological characteristics of \(H.\) talassicum and \(H.\) narynense are described based on the herbarium specimens from the TASH and the description of each species type (Nikitina 1957, Sultanova 1973).

Examined specimens (new records). UZBEKISTAN: Western Tien Shan, Pskem ridge, the middle course of the river Oygaing, between Koks-su and Tundyk gorges, \(\left[42^\circ7'16.95''N\;70^\circ53'6.90''E\right]\), 16.08.1954, coll. Pavlov 216 (MW); Oygaing river valley, the upper reaches of gorge Barktras, 3400 m a.s.l., \(\left[42^\circ10'19.25''N\;70^\circ58'17.50''E\right]\), 21.08.1958, coll. Pavlov 88 (MW); Oygaing river valley, the upper reaches of gorge Barktras, 3100 m a.s.l., \(\left[42^\circ10'24.91''N\;70^\circ57'23.58''E\right]\), 11.08.2019, coll. K.Sh. Tojibaev & I.J. Juramurodov 1108116–1108118, 1108149 (TASH) (Fig. 2).

\textit{Isoëtes echinospora} Durieu (\textit{Isoëtaceae})

Contributors: Valerii A. Glazunov, Svetlana A. Nikolaenko & Stepan A. Senator

Distribution and habitat. \textit{I. echinospora} is a boreal Euro-Siberian species, the main part of its range is located in Central and Eastern Europe, it is found in the Middle and Southern Urals, in Western and Eastern Siberia. It is included in the Red Book of the Russian Federation as \textit{I. setacea} Durieu.

About the nomenclature confusion and priority in the name
of the species is written in W. Greuter & A. Troia (2015). Several localities are known in Khanty-Mansi Autonomous Area – Yugra (Glaguzov & Nikolaevo 2019) and one is in the Tyumen Region (Glaguzov 2018). In 2019, it was first found in the Yamal-Nenets Autonomous Area (Popova & Donetskov 2019).

**Taxonomic notes.** It is a perennial rooting aquatic hetero sporangate plant 5–15 cm long. The stem is spherical, 0.5–1 cm in diameter. The sessile leaves are arranged spirally, often arcuate curved, narrow, with an extended base, light green, translucent in the light. At the base of fertile leaves on the inner side there are mega- and microsporangia. Megaspores are ovate, 4–5 mm long and 3–4 mm wide. Megaspores are whitish, about 0.3 mm in diameter, with a surface covered with thin brittle spines. It is found in oligotrophic lakes with clear fresh water on a sandy, less often muddy bottom, usually at a depth of 0.3 to 1.0 m.

**Examined specimens (new records).** RUSSIA: Yamal-Nenets Autonomous Area, Nadym District, 1 km South of the Novyi Urengoi town, 66°03′23.2″N 76°36′44.0″E, lake without a name, grows sparsely at a depth of 0.4–1.0 m, 07.08.2020, coll. V.A. Glazunov, S.A. Nikolaenko & S.A. Senator (PVB, TMN); Nadym District, right bank of the Bol’shoi Yarudei River, 6 km North of the Non village, by the North Ural Pipeline, 65°23′29.9″N 77°25′30.7″E, lake without a name, grows sparsely at a depth of 0.2–0.3 m, 09.08.2020, coll. V.A. Glazunov, S.A. Nikolaenko & S.A. Senator (TMN); Nadym District, left bank of the Levaya Khetta River, Verykort stow, 27 km North-East of the Pirozveny village, 64°22′53.5″N 73°18′53.4″E, lake without a name, grows solely at a depth of 0.4–0.5 m, 10.08.2020, coll. V.A. Glazunov, S.A. Nikolaenko & S.A. Senator (TMN); Pur District, left bank of the Pur River, 11 km North-East of the Ngarka-Yambo lake, 65°29′20.1″N 77°48′58.2″E, lake without a name, grows sparsely at a depth of 0.3–0.9 m, 11.08.2020; coll. V.A. Glazunov, S.A. Nikolaenko & S.A. Senator (PVB, TMN).

**Jacobeae grandidentata (Ledeb.) Vasjukov (Asteraceae)**

**Contributor:** Igor V. Kuzmin

**Distribution and habitat.** *J. grandidentata* is a species native to South-East and East Europe to Western Siberia and Caucasus. According to the POWO database (2019) this species is distributed in Bulgaria, Central, South and East European Russia, Kazakhstan, Crimea, North Caucasus, Romania, Transcaucasia, Turkey, Ukraine, Western Siberia. Actually, in Western Siberia, this species occurs in its extreme southwest only. There were 12 locations of *J. grandidentata* in the Kurgan Region (Naumenko 2012), of which northernmost populations are situated about the city of Kurgan (55°32′N). In the Kurgan Region, this plant inhabits steppe plains of the Pur River, dome-shaped dunes with sand dunes and steppe vegetation. From 2016 to 2019, this species was found in 500-m radius around the mother plant. This was a solitary plant. It was very large, well developed, 1 m in height and 1 m wide with a large number of stems.

In 2019, the plant was actively flowering and fruiting, having more than 200 inflorescences. The flowers were actively pollinating by dipterans. The monitoring of this location in 2020 demonstrated the same results. Despite the active fruiting in 2019 and 2020, no one young plant was found in 500-m radius around the mother plant. This indicates unfavorable conditions of the Tyumen Region for seed reproduction of *J. grandidentata*.

**Lappula heteracantha (Ledeb.) Gürke (Boraginaceae)**

**Contributor:** Svetlana V. Ovchinnikova

**Distribution and habitat.** *L. heteracantha* was described by C.F. Ledebour from Astakhran (Volga Region) by own collection and are found from the territory of Russia: Europe part, Western Siberia; Western Europe: Czechoslovakia, France, Hungary, Romania; Eastern Europe: Podolia, Crimea; South-West Asia: Caucasus, Turkey, Iran, Afghanistan; Central Asia: Mongolia, China (Popov 1953, hlavacek 1958, Zhu Ge-ling et al. 1995, Ovchinnikova 1997, 2009, 2019, Gubanov 1999, Ovchinnikova et al. 2004). In Middle Asia species is known only from Northern Caspian and the Alai Valley of Kyrgyzstan (Goloskrokov 1964, Kuprianov & Ovchinnikova 2017, Ovchinnikova & Ganybaeva 2019). *L. heteracantha* grows on sandy places and rocky outcrops in steppe, semi-deserts and on mountain slopes. Revision of herbarium collections TASH showed that *L. heteracantha* is a new species from the territory of Tajikistan.

**Taxonomic notes.** The genus *Lappula* Moench comprises over 70 species of hispid small to medium-sized annual or perennial herbs with distribution in the northern Hemisphere and has several representatives in Africa and Australasia (Ovchinnikova 2005). *L. heteracantha* belongs to series *Lappula* of section *Lappula* with subulate gynobase, ovate glochidiate nutlets with 1–3 rows of spinules. Erecomarcs in cebonium of the species *L. heteracantha* are heteromorphic, of two types. In the upper part of the fertile twigs, 2 eremocarps have an inner row of long protruding spines that are not fused together and an outer incomplete row of short anchor spines; the other two eremocarps have a wide raised cupped wing at the edge of the disc; an incomplete row of short spines is located under the wing. Spiny eremocarps without wing are characted for related species *L. consanguinea* (Fisch. et C.A. Mey.) Gürke with homomorphic nutlets (Ovchinnikova 2005, Ovchinnikova 2009).

**Examined specimens (new records).** TAJKISTAN: [Sughd Region, northern slopes of the Pur River ridge, 39°02′28″N 86°22′06″E], basin of the river Zeravshan, on the shores of Lake Iskanderkul, 15.06.1915, coll. M.G. Popov 1100 (TASH).
Lavandula angustifolia Mill. = L. spica L., nom. rej. (Lamiaceae)

Contributor: Victoria V. Bondareva

Distribution and habitat. The native range of L. angustifolia is South-Western Europe: North-Eastern Spain, South France and Italy (POWO 2019). It is rarely cultivated as an essential oil, honey and ornamental plant in the South of the Middle Volga region (Saksonov & Senator 2012, Rakov et al. 2014, Vasjukov & Saksonov 2020). This species is first listed for the flora of the Samara Region as a wild colophonyle plant (self – seeding and wintering in the open ground).

Taxonomic notes. In the genus Lavandula about 25 species distributed in the Canary Islands to India (Gladkova 1978). For the territory of European Russia (Crimea), only one species of L. angustifolia is listed as a cultivated plant. It is a subshrublet 20–100 cm high, with numerous branched shoots and linear-lanceolate leaves 2–6 cm long and 2–6 mm wide, the flowers are collected in false whorls of 6–10 at the end of the stems, forming an intermittent spike-shaped inflorescence, corolla are purple, about 1 cm long (Shishkin 1954, Gladkova 1978).

Examined specimens (new records). RUSSIA: Samara Region, Syzran District, Ohratzovto village, 53°13’46.6”N 49°11’53.3”E, 13.09.2020, coll. V.V. Bondareva (PVB).

Linaria grjunerae Kniaz. (Plantaginaceae)

Contributors: Petr A. Kosachev & Polina D. Gudkova

Distribution and habitat. L. grjunerae from the Middle Urals was described by Kniazev (2003). He distinguished two varieties within the species: 1. L. grjunerae var. grjunerae. the Sverdlovsk Region, the Tagil River, on the right bank of rock “Mount Plyhashhatia” between the villages of Tagil and Morshinino. 07.30.2000, M.S. Kniazev (type LE, isotype SVER); 2. L. grjunerae var. tovarkulispermae Kniaz.: the Sverdlovsk Region, the Iset River, on the right bank of limestone rocks between the villages of Beklenischevo and Smolino. 05.08.2000, M.S. Kniazev (type LE, isotype SVER). Additionally, the author gives the information about the distribution L. grjunerae var. grjunerae in the east macroslope of the Southern Urals, without mentioning a specific location. At the same time Kniazev notices that there are the herbarium specimens from the eastern part of Bashkirta, which probably belongs to the described type in the LE and the Institute of Biology of Ufa Scientific Center Academy of Sciences (Ufa) (Kniazev 2003). This species has not been recorded from Siberia (Polozhii 2003) and the Republic of Tyva (Knyazev-Korobov 2007). During taxonomic revision of Siberian Linaria at the Herbarium of the Central Siberian Botanical Garden (NS) a specimen of L. grjunerae collected in the Tyva Republic was found. This collection was previously misidentified as L. acutiloba Fisch. L. grjunerae is a mountain species inhabiting the talc-chlorite (the first location) and the limestone (the second location) slopes in the zone of the southern taiga. At a new location in the Republic of Tyva the plants were collected at an altitude of 1400 m on the chlorite schist rocks, which is similar to habitat on “Mountain Plyashhatia”.

Taxonomic notes. In Tuva, six species of Linaria section from two subsections grow: 1. Subsectio Linaria. Linaria tubratica Turcz. ex Ledeb., L. melampyroides Kuprian., L. vulgaris Mill., L. acutiloba Fisch.; 2. Subsectio Laevos. L. altaica Fisch. ex Kuprian., L. delilii Kuprian. in the area of growing L. melampyroides the most extensive areas inhabit L. vulgaris, L. acutiloba, L. altaica, L. delilii (Knyazev-Korobov 2007). Kniazev assumes the hybrid origin of L. grjunerae considering parental species L. vulgaris and L. delilii. Habitat, acute clays of “pepples”, leaf shape ‘analoga’ hybrid species, which are similar to L. vulgaris, however, another complex of features, namely, smooth seeds, blue veins on the corolla tube, densely pubescent calyx and narrow glaucous of leaves indicates a kinship with L. delilii. New location is much more distant from the main Herbarium from two known habitats of the species. This disjunction in the distribution of the species may also indicate that the hybridization processes took place a long time ago, probably at the beginning of the Holocene, when L. delilii spread far north (Knyazev 2003), and to the east, followed by isolation of relict populations and their active involvement into introgression process with widespread L. vulgaris.

Examined specimens (new records). RUSSIA: Tyva Republic, Western Sayan Mountains, the upper Kuzhe River (basin of the Khemchik River), 1400 m a.s.l., chlorite schist rock on the southern slope, [51°42′50.40″N 90°41′17.88″E], 10.08.1977, coll. I.M. Krasnoborov & V. Rozhitzina (sub nomine L. acutiloba) (NS).

Platyclusus orientalis (L.) Franco (= Thuja orientalis L., and many other homo- and heterotypic synonyms, see for example WCVP (2021)) (Cupressaceae)

Contributor: Denis A. Krivenko

Distribution and habitat. The natural (indigenous) range of P. orientalis is located in China and Korea. This is possibly the most widely introduced Cupressaceae conifer in Asia. In many areas inside and outside natural range it has escaped from cultivation and established spontaneous populations, including of Caucasian (Imkhanitskaya 2003, Farjon 2010). P. orientalis a species of open woodland and deciduous (oak, oak-birch, and oak-pine) forests. With its natural range it is now almost invariably found in secondary vegetation or, nearest to its original habitat, in more or less degraded woodland and forest. As a pioneer species which is relatively longlived, it can dominate certain slopes for a long time if further disturbances remain absent (Farjon 2010).

Previously, this species was not known wild in Kabardino-Balkarian Republic (Shkhapsogoiv 2015, Shkhapsogoiv et al. 2018) although P. orientalis was indicated for neighboring Karachay-Cherkess Republic (Zemtsev et al. 2015) and other regions of Caucasus (Imkhanitskaya 2003).

Taxonomic notes. P. orientalis is representative of a monotypic genus, closely related to the species of Thuja L. (Thu. koi­ranis Nakai, Th. occidentalis L., Th. plicata Donn ex D. Don, Th. standishii (Gordon) Carrière and) and Microbiota decussata Kom. (Morgan 1999, Farjon 2010). All Thuja species have strongly aromatic foliage when crushed, winged seeds, leaves pale green or markedly white underneath. The foliage of P. orientalis, when crushed, is odorless, its seeds are wingless, and both sides of its foliage sprays are indistinguishable from each other in colour and texture. Finally, the cones of the Thuja species being somewhat similar in size and shape but those of P. orientalis almost three times larger with conspicuous recurved dorsal “horns” (the bract tips) on each fleshy swollen seed scale (Morgan 1999).

Examined specimens (new records). RUSSIA: Kabardino-Balkarian Republic, Chereksky District, Skalistyi ridge is the third forward ridge of the northern slope of Greater Caucasian ridge, Cherekskoe ravine, right bank of the Cherek Balkarski River, near the Chirlik-Kol Lake, 43°14′01″N 43°32′25″E, 830 m a.s.l., mossy damp sheer cliffs, 07.08.2019, coll. D.A. Krivenko 58901 (IRK).

Potentilla × bishekakensis Sojak (Rosaceae)

Contributors: Alexey A. Kechaykin, Georgy A. Lazkov & Gulamalya A. Koychubekova

Distribution and habitat. The species was described based on a single collection from the northern part of the Kyrgyz Range in the Ala-Archa River valley (Sojak 2003). This area belongs to the Chui Region, Kyrgyzstan. No other localities are currently known for P. × bishekakensis. The species grows on pebble and floodplain terraces of mountain rivers and meadow-steppe slopes of different exposure.

Taxonomic notes. According to Sojak (2003), P. × bishekakensis is a rare hybrid species that resulted from crosses between P. agri­monioides M. Bieb. and P. multifida L. In its habits, this species is similar to P. multifida and differs in leaflets sparsely pubescent beneath with visible small glands
and in numerous large yellowish glands on the sepalis. *P. multifida* has hairs and shows no glands.

**Examined specimens (new records).** KYRGYZSTAN: Jeti-Oguz Region, syry, “Akshirak”, Dzhangarta River valley, the right tributary of the Akshirak River, opposite the confluence of the Sauk-Tur brook, meadow terrace, alpine feather grass steppe, [41°46'54.4"N 78°57'11"E], 14.06.1935, coll. S. Savic & G. Sabardina (FRU); Chon-Alai District, Alai Ridge: western slope of the Kashta-Suu tract, [39°54'32.7"N 72°43'47"E], 03.08.1948, coll. Kasšekenbo (FRU).

*Potentilla chalchorum* Sojak (Rosaceae)

**Contributors:** Alexey A. Kechaykin, Georgy A. Lazkov & Guljamila A. Koychubekova

**Distribution and habitat.** The species was described based on numerous collections from the south of Central Siberia, Dauria and Northern Mongolia (Sojak 1970). Later, *P. chalchorum* distributed from the Krasnoyarsk Territory to the Amur region in Russia (Sojak 2007), from the Mongolian Altai to the northeast in Mongolia (Urgamal et al. 2014), and in the Gansu (GBIF Secretariat 2019e) and Hebei (Sojak 2007) provinces in China. The species grows in different places from wet valley meadows to steppes and woodlands (typically larch and pine), sometimes forming numerous populations. *P. chalchorum* can also be found around tourist sites, near settlements, and it often occupies disturbed habitats.

**Taxonomic notes.** In some of the studies, Sojak (2004, 2007, 2009) suggested that *P. chalchorum* is a hybrid that resulted from crosses between *P. longifolia* D.F.K. Schltdl. and *P. tergestina* Sojak. The author attempted to experimentally prove the hybrid nature of this species to confirm this hypothesis. He artificially crossed the putative parental species and hybridized *P. longifolia* and *P. tergestina* to obtain the species similar to the natural species *P. chalchorum* (Sojak 2012). The hybrids obtained by J. Sojak were found to be identical to the species *P. chalchorum* from natural populations collected by him in Northern Kyrgyzstan and Mongolia. *P. tergestina* grows in Kyrgyzstan (Adylov 1976), but *P. longifolia* has not yet been found there. However, the latter species grows in Kazakhstan on the ridges of the Zailiyskiy Alatau, Kungey Alatau and Tersaiky Alatau that border Kyrgyzstan (Adylov 1976). *P. chalchorum* exhibits the traits of both parents, but it is closer in appearance to *P. conferta* Bunge, a widespread taxon in the flora of Kyrgyzstan (Lazkov & Sultanova 2011). These species differ in the following morphological characters. Leaf petioles of *P. chalchorum* are covered with 0.8–2 mm hairs, petals are distinctly longer than the calyx, achenes smooth, and several small glands can be found in sepal pubescence. Leaf petioles of *P. conferta* are covered with 2–3.5 mm hairs, petals do not exceed the calyx, achenes are glandular, numerous large glands, typically yellowish, can be found on the entire plant. It should be noted that the length of the *P. chalchorum* stems varies depending on environmental conditions (similar to many other *Potentilla* species), but the morphology of its leaf blades and the pubescence of the entire plant are constant characters.

**Examined specimens (new records).** KYRGYZSTAN: Naryn Region, At-Bashinsky District, At-Bashi, Tash-Rabat, [40°49'30.1"N 75°17'18.8"E], 10.08.1986, coll. R. Aydarova & N. V. Gorbunova (FRU); Cental District, At-Bashinsky District, At-Bashi, Tash-Rabat, [41°25'57.7"N 76°06'03.2"E], 26.06.1965, coll. R. Aydarova & N.V. Gorbunova (FRU).

*Potentilla doubyjonnae* Cambess. (Rosaceae)

**Contributors:** Alexey A. Kechaykin, Georgy A. Lazkov & Guljamila A. Koychubekova

**Distribution and habitat.** The species was described from garden specimens, probably, originating from the Volga Region, it is distributed in the forest-steppe and steppe zones of Central Asia, it is typically found in the areas 3000–4500 m a.s.l. and in numerous large yellowish glands on the sepalis. *P. doubyjonnae* was collected in Kyrgyzstan 14 times, but the author and other botanists never cited its specific localities for this region. In addition, we did not find herbarium specimens identified as *P. doubyjonnae* and marked by J. Sojak or other botanists in LE and FRU herbaria.

**Taxonomic notes.** Among all *Potentilla* species growing in Central Asia, *P. doubyjonnae* is closest to *P. gelida* C.A. Mey., *P. tephroleuca* Th. Wolf, and *P. turgayana* Stschegl. All these species belong to the section *Aurea* (Lehm.) Juz., and the last three species also grow in Kyrgyzstan (Lazkov & Sultanova 2011, Kechaykin et al. 2020). One of the main features that distinguish *P. gelida* from *P. doubyjonnae*, *P. tephroleuca*, and *P. turgayana* is the arrangement of leaves on the caudex. *P. gelida* has two-ranked leaf arrangement, while other species exhibit multi-ranked spiral arrangement. *P. doubyjonnae* differs from *P. turgayana* in larger petals (6–9 mm long rather than 4–5.5 mm) and anthers (0.7–0.8 mm long rather than 0.3–0.5 mm). *P. doubyjonnae* and *P. tephroleuca* differ from each other in leaflet pubescence. In *P. tephroleuca*, the leaflets (all or only in basal leaves) are covered with dense short hairs between veins. In *P. doubyjonnae*, the leaflets are glabrous, with sporadic or sparse hairs between veins.

**Examined specimens (new records).** KYRGYZSTAN: [northern slope of Talas Ridge], Kalba River basin, Tere Meadow, slope, [42°16'37.1"N 72°30'36.8"E], 12.08.1954, coll. A. Moldybayar (FRU).

*Potentilla tschimganica* Sojak (Rosaceae)

**Contributors:** Alexey A. Kechaykin, Georgy A. Lazkov & Guljamila A. Koychubekova

**Distribution and habitat.** The species was described based on collections from the slopes of the Bolskii Chimgan Mountain (Sojak 1987), no other localities are currently known. The mountain range located in the northeastern part of Uzbekistan in the Tashkent Region near the border with Kyrgyzstan belongs to the Charkil Ridge System. A possible locality of *P. tschimganica* was indicated earlier for the flora of Kyrgyzstan (Kechaykin et al. 2020). This species grows among shrubs, on meadow and steppe slopes of western and southern exposures, sometimes along roads. The altitude limit indicated for *P. tschimganica* habitats varies from 1500 to 2800 m a.s.l.

**Taxonomic notes.** According to the original source, *P. tschimganica* was considered a stabilized hybrid species that resulted from crosses between *P. faltschenkouana* Siegr. ex Th. Wolf and *P. pedata* Hornem. (Sojak 1987). Both species are found in the flora of Kyrgyzstan (Lazkov & Sultanova 2011). We agree with J. Sojak’s opinion that *P. faltschenkouana* and *P. pedata* can be parental species of *P. tschimganica*. Their populations often grow in close proximity in the western Tien Shan. The pubescence of *P. tschimganica* is intermediate between *P. faltschenkouana* and *P. pedata*. However, the appearance of *P. tschimganica* is closer to *P. indistincta* Vill., which grows in the central and western part of Kyrgyzstan (Lazkov & Sultanova 2011, Kechaykin et al. 2020). *P. tschimganica* differs from this species in the presence of numerous small glands on leaf petioles, relatively large leaflets (up to 9 cm long) with 7–9 teeth on both sides. In *P. indistincta*, glands are absent, and leaflets are typically 5–6-toothed and 3–5 cm long. In addition, the basal and lower stem palmately compound leaf blades of *P. tschimganica* typically have 7 leaflets (less often in combination with 5 leaflets). In *P. indistincta*, leaf blades typically have 5–6 leaflets (leaves with 7 leaflets are less common).

**Examined specimens (new records).** KYRGYZSTAN: Pskem Ridge, Kata-Korun River ravine, 2500 m a.s.l., [41°46'50"N 78°53'36"E], 22.06.2006, coll. G.A. Lazkov (FRU).

*Pseudopodospermum strictum* (Hornem.) Zaika, Sukhor. & N. Kilian = *Sophora stricta* Hornem. (Asteraeaceae)

**Contributors:** Stepan A. Senator, Evgenii G. Zibzeev & Vladimir M. Vasjukov

**Distribution and habitat.** *P. strictum* described from garden specimens, probably, originating from the Volga Region, it is distributed in the forest-steppe and steppe zones of Central Asia.
and Eastern Europe, the pre-Caucasus, southern Western Siberia and north-western Central Asia (Tzvelev 1989, Baikov 2012). P. strictum was not previously known for the Altai Republic (Lomonosova 1997, Krasnoborov 2012). It grows in steppes and steppes meadow.

**Taxonomic notes.** *P. strictum* is a more or less pubescent greenish plant with an upright single stem 20–50 cm long, at the top of the below branching, leafy along the entire length. Shoots at the base are covered with a cover from the sheaths of dead leaves, more or less destructive, but not split into filamentous fibers, with a tap root up to 2.5 cm in diameter; linear leaves 2–5 (7) mm wide; 3–10 heads on long peduncles; the flowers are yellow, the marginal ones are much longer than the pubescent anthers; achenes are naked, sometimes with single hairs at the top, 9–14 mm long, at the base without a hollow pedicel.

**Examined specimens (new records).** RUSSIA: Altai Republic, Kosh-Agach District, left bank of the Chagan-Uzun River, 2.5 km south of the Chagan-Uzun village, 1734 m a.s.l., [50°09′50.4″ N 88°21′34.1″ E], 10.06.2016, coll. S.A. Senator, E.G. Zibzeev, N.I. Makunina, E.A. Basargin, N.V. Igai & I.Yu. Selyutina (PVB).

*Rhinanthus songaricus* (Sterneck) B. Fedtsch. (Orobanchaceae)

**Contributor:** Olga A. Kapitonova

**Distribution and habitat.** *R. songaricus* is a Ciscaucasian-Western Siberian-Middle Asian desert-steppe species. It grows in the south of the European part of Russia (Lower Volga) (Ivanina 1981a), in the southern Urals (Plaksina 2001), in the Chechensk Region (Kulikov 2010), in Altai (Baranov botanical-floras region) (Polozhii et al. 2003), in the northern and eastern Kazakhstan (Baitulin & Kotuhov 2011). We indicate this species for the first time for the territory of the Tyumen Region. This species grows in saline meadows and salt marshes, in the valleys of rivers and lakes (Ivanina 1981a). In the cited locality, *R. songaricus* grew in a sedge-horsetail rich fen with sparse willow and birch layer. Its abundance was low.

**Taxonomic notes.** *R. songaricus* is described from Middle Asia (“Songaria”). The species belongs to the section *Cleistodontus* Chal. It is an herbaceous annual semi-parasitic plant. It differs from other species of the section by its numerous leaves and branches that are pressed or obliquely upwards directed. In addition, it is characterized by triangular-lanceolate, long-pointed bracts with sharp long teeth in the lower part, which are 1.5–2 times longer than the calyx. Corolla is 17–18 mm long, yellow, with a slightly curved tube (Ivanina 1981a).

**Examined specimens (new records).** RUSSIA: Tyumen Region, Vagaisky District, in 25.5 km SSE from the village Vershinskaya, 57°08′51.0″ N 70°17′11.7″ E, low-lying sedge-horsetail rich fen with birch and willows, 21.07.2020, coll. O.A. Kapitonova (LPF, Herbarium of the Tobolsk complex scientific station UB RAS).

*Rochelia bungei* Trautv. (Boraginaceae)

**Contributor:** Svetlana V. Ovchinnikova

**Distribution and habitat.** *R. bungei* was described by R.E. Trautvetter from Kopetdag mountain, Kisil-Aravat (Turkmenistan) by collection of A.C. Becker. The species occupies a vast area, its distribution is in Iran, Afghanistan, Pakistan, Kashmir, China, Mongolia, in Republics of Middle Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan (Pavlov & Popov 1953, Riedl 1967, Kazmi 1971, Abdullaeva et al. 1986, Zhu Ge-ling et al. 1995, Khasanov 2002). From related species *R. karavanii* is now isolated by stellate-hairy surface of eremocarp, just as eremocarps of species *R. leonardii* are smooth or wrinkled, shiny, without bumps on the surface. The closely related species *R. karavanii* Popov and *R. microalytina* Bornm. are endemic to Turkey have a similar surface to eremocarps (Pavlov & Popov 1953).

Revision of herbarium collections LE showed that *Rochelia bungei* new species from the territory of Europe and border line Caspian botanical-geographical region of Kazakhstan.

**Examined specimens (new records).** RUSSIA: Volgograd Region, on the border with the Caspian region of Kazakhstan, lake Elton, in a spoon near the lake, about 4 km from the station Elton, [49°08′N 46°42′E], 21.05.1925, coll. M.M. Il’yn & Yu.S. Grigorev (66 LE). KAZAKHSTAN: Ust Provine. lake Charskii (Sharkal) at the foot of Ak-Kalak mountain, a large number, [50°33′N 51°41′E], 18.05.1925, coll. S. Verushkin et al. 23 (LE).

*Senecio viscosus* L. (Asteraceae)

**Contributors:** Aleksandr L. Ebel & Elena Yu. Zykov

**Distribution and habitat.** Native area of *S. viscosus* covers Western and Central Europe, and the Caucasus; original habitats of the species are apparently sand hills and coastal dunes (Shishkin 1961, Meusel & Jager 1992). In the European part of Russia, this species within the natural range is found only in the Northwest (Tzvelev 2000). Resettlement of the species over Russia began in the XIX century (Vinogradova et al. 2010). To date, *S. viscosus* has been recorded in most of European Russia, except in the very south of the territory (Konechnaya 1984, Tzvelev 2000). In Asia the species has been recorded from Kazakhstan, where it was observed in two locations of Kokshetau Upland (Epiktetov 2020, Evodikov 2019). The species was introduced to the Russian Far East (Barkley 2006). *S. viscosus* is a heliophilous plant growing in dry habitats on relatively poor soils, and it does not tolerate salinization. In the secondary area it grows mainly on railway embankments, near roads, less often near housing (Vinogradova et al. 2010).

In Siberia, the location of the species has been recorded since the 1980s. The first finds in the regions were noted in Altai (Ignatov Igtatova 1982) and Krasnoyarsk Territories (Stepanov 1990), the Irkutsk Region and Buryatia (Zarubin et al. 1993, Ivanova & Azovsky 1998, Sutkin 2010, Chepinoga et al. 2018), Kurgan (Naumenko 2008), Tyumen (Vibe 1997), Kemerovo (Krasnoborov et al. 2002) regions, Khakassia (Skvortsov 2002). From related species *S. viscosus* is a heliophilous plant growing in dry habitats on relatively poor soils, and it does not tolerate salinization. In the secondary area it grows mainly on railway embankments, near roads, less often near housing (Vinogradova et al. 2010).

**Taxonomic notes.** *S. viscosus* is an annual 10–40 (50) cm high. Like some others species in sect. *Seneio* it has corymb with ray flowers that are short, barely longer than phyllaries, with a flat or turned outward bend. In contrary to other representatives of this section, *S. viscosus* has sticky glandular pubescence. Achenes are 3–5 mm long, with thin longitudinal ribs. For European populations of *S. viscosus*, naked achenes are indicated (Stace 1997, Hodalova
et al. 2004). However, plants with clearly pubescent achenes are rarely found in the European part of Russia. As a hypothesis requiring evidence, this can be explained by introgressive hybridization with local species of the sect. *Solanum*: *vulgare* L. or *S. syriacum* L. (Vinogradova et al. 2010). In both cases with *S. vulgaris* L. (*S. × nigrifolium Schelle*) are mostly sterile (Stace 1997).

**Examined specimens (new record).** RUSSIA: Novosibirsk Region, Novosibirsk, Soviet microdistrict, surroundings of the “Seyatel” station, 54°51′54.89′′N 83°04′41.81′′E, in the yards, outside the flower beds. 30.08.2019, coll. E.Yu. Zykova (NS).

**Silene cseseri Baung.** (Caryophyllaceae)

**Contributor:** Aleksandr L. Ebel

**Distribution and habitat.** The species is widespread in Southeastern Europe, Asia Minor and the Caucasus (Marhold 2011, Lazkov 2012). It was recorded as an alien plant in Finland (Marhold 2011) and other European countries (POWO 2019), in some places in European Russia (Tvzelev 2004) and in the Ural Mountains (Chelyabinsk Region), where it occurs on greyish dumps of gravel and also on disturbed stony slopes (Kulikov 2010). The species is also recorded in alien plant in many states of the USA and provinces of Canada (Morton 2005). Recently it has been found as alien plant in two locations in Kazakhstan (Ebel et al. 2015a). *S. cseseri* is an alien species new for the flora of Siberia. It grows in anthropogenic habitats on disturbed soils.

**Taxonomic notes.** This species of the genus *Silene* L. is an annual to biennial or rare short-lived perennial monocarpic belonging to section *Behenantha* Orth or subgenus *Behen* (Moench) Bunge which some authors are treating as a separate genus *Obverna* Adans. This group containing 20 to 25 species distributed in temperate and partly in cold and subarctic regions of Eurasia and North Africa (Tvzelev 2004). According to Tvzelev (2004), area of *Silene cseseri* Baung. s. str. (*≡ Obverna cseseri* (Baung.) Ikonnn.,) is located only in Transylvania, whereas close related species *Obverna schobitana* (Schur) Tvzev. (*≡ Silene schobitana* Schur) has more widespread distribution. On the other hand, the name *Silene schobitana* is considered to be a synonym of *Silene vulgaris* (Moench) Garcke (*≡ Obverna behen* (L.) Ikonnn.). The latter species is a perennial widely distributed in Eurasia. It has prominent reticulate veins on its rather large calyx, and the latter inflate while fruiting. *S. cseseri* may be easily separated from *S. vulgaris* by the long, racemose primary branches of its inflorescence, the elliptic smaller calyx constricted at both ends, not inflated and tightly enclosing the capsule and lacking obvious venation, and the purple filaments.

**Examined specimens (new records).** RUSSIA: Republic of Khakassia, Ust-Abakan District, ca. 7 km NNE from the vil. Balakovsky. 54°51′24.22′′N 73°14′40.00′′E, 27.09.2020, coll. Â. Efremov & N. Plikina (MW): 1.

**Hthalictrum ussurianum Luferov** (Ranunculaceae)

**Contributor:** Alexander N. Luferov

**Distribution and habitat.** *Th. ussurianum* Luferov is not listed in the reports on the flora of Inner Mongolia Province of China (Fu & Zhu 2001). This species was considered to grow only in the Russian Far East – Amur Region, Jewish Autonomous Region, Khabarovsk Territory, Primorye Territory; as well as in Northeastern China and the Korean Peninsula (Luferov 1989, 1995, 2016). It grows in upland and floodplain meadows, forest edges and along roadsides (Luferov 1995). The study of herbarium collections stored at the V.L. Komarov Botanical Institute (St. Petersburg) and other institutions (LE) made it possible to identify the samples of *Th. ussurianum* for the first time in Inner Mongolia province (China).

**Taxonomic notes.** The samples of *Th. ussurianum* were identified as *Th. simplex* L. p. p. (Komarov 1903, Nevsky 1937, Voroshilov 1985), *Th. strictum* non Ledeb, aut. (Voroshilov 1966), *Th. simplex* subsp. *strictum* (Ledeb.) Worosch. comb. invalid. (Voroshilov 1982). Currently, the taxonomic distinction of *Th. ussurianum* is confirmed by its morphological, anatomical, ecological-geographical, phenological and biochemical features (Ponomarchuk & Ulanova 1972, Luferov 1989, 1995, 2004, Gavrilenko & Voroshilov 2013). *Th. ussurianum* is distinguished from the closely related *Th. simplex* by the following features: aerial shoots up to 150–250 (300) cm tall (in *Th. simplex* the height of the shoots is 40–60 (80) cm); horizontal rhizomes, up to 150 cm long (in *Th. simplex* the rhizomes can be horizontal, ascending or vertical, 5–30 cm, sometimes up to 50 cm long), gray roots (in *Th. simplex* the roots are lemon-yellow), highly branched stems (the stems of *Th. simplex* are either not branched at all or with a few branches in the upper part), broad triangular leaves, triterinate or triradiate, deflected from the stem; the leaflets are oblanceolate or orbicular-reniform, matte, 2-6 cm long, 1–5 cm wide (in *Th. simplex* the leaves are narrowly triangular, usually
binate or bipinnate, rarely tripinnate, compact; the leaflets are lanceolate, narrow obovate, with glossy upper side, 1.5–3, rarely up to 4 cm long, 0.5–2 cm wide); the inflorescence is a broad pyramidal branching panicle (the inflorescence of *T. simplex* is a narrow pyramidal panicle with compressed branches), the stigma is ovate (in *T. simplex* the stigma is sagitate or triangular).

**Examined specimens (new records).** CNINA: [Inner Mongolia Province], “in planitics circa Kuku-hoton, [40°50′35″N 111°44′56″E], 1884, coll. G.N. Potanin” (LE); [Inner Mongolia Province], “in planitics circa Kuku-hoton, Tschao-dshium-fun [prope] Kuku-hoton, [40°50′35″N 111°44′56″E], 18.07.1884, coll. G.N. Potanin” (LE).

**Trollius austrosubiricus** Erst & Luferov (Ranunculaceae)

**Contributors:** Andrey S. Erst, Lian Lian & Wei Wang

**Distribution and habitat.** *T. austrosubiricus* is endemic to mountainous areas of the southern part of Western and Central Siberia: Tuva Republic, Kemerovo Region, Krasnoyarsk Territory, Khakassia Republic. This species grows in subalpine and forest zones, in moist valleys at 3500–2600 m a.s.l. It occurs in forest glades and fringes, in mixed-grass and mixed-grass-cereal dry and swampy meadows, along the banks of rivers, streams and small ponds with fresh water (Erst et al. 2019).

**Taxonomic notes.** *T. austrosubiricus* is morphologically close to *T. chinensis* Bunge. It is well distinguished by simple rhizomes (rather than by the multi-headed basal part of the plant, as in *T. chinensis*), shorter aerial shoots, smaller flowers and shorter persistent styles. *T. chinensis* is an East Asian species occurring in Russia (Primorye and Khabarovsk Territories, Sakhalin Region), in the north and northeast of China and on the Korean peninsula (Sipilvinsky 1972, Voroshilov 1982, Luferov 2004). The indication of the distribution of *T. chinensis* in western Mongolia (Uv Province, Harbiria), Siberia (Krasnoyarsk Territory, Buryatia Republic) is based on an incorrect identification of specimens, some of which belong to *T. austrosubiricus* (Serebryanyi 2019). *T. austrosubiricus* is distinguished from *T. asiaticus* L. by having a smaller number of sepals, longer persistent styles and petals longer than sepals. *T. asiaticus* grows mainly in extra-tropical Asia (Western and Eastern Siberia, Mongolia, northeast Kazakhstan and China), as well as in the northeast of European Russia (Schijnpitszkyi 1937, Sipilvinsky 1972, Doraczevska 1974, Borodina-Grabovskaya 2001, Friess 2003).

**Examined specimens (new record).** RUSSIA: Altai Krai, Kosh-Agachsky District, Upper Boguty Lake, 49°42′52.8″N 89°29′48.3″E, mountain steppe, 2475 m a.s.l., 08.08.2020, coll. A.S. Erst & T. Erst (NS).

**Tylphia latifolia L. (Tylphiaceae)**

**Contributor:** Olga A. Mochalova

**Distribution and habitat.** *T. latifolia* is widespread semi-aquatic species. It is found as a native species in Eurasia, North and South America, Africa, and an introduced and invasive species in Australia, New Zealand (GBIF Secretariat 2021). In Russia, it is found in the European part, Siberia and the Far East. In the northern part of the Russian Far East *T. latifolia* has been found in Central (Milkovo, Shchapino, Lazo, Esso in basin of Kamchatka River) and South Kamchatka (Paratunka) (Yakubov & Chernyagina 2004). In Yakutia (Eastern Siberia), broadenleaf cattail has been found from Ugolnoye to Lower Lena valley (MAG, IBIW). In India it is widely found, and is a common species in Asia (Wang 1970, Hong et al. 1998, Doronkin 2012, Mayorov 2014, Kosachev 2017, POWO 2019). The species was introduced in the Baltic States, the Netherlands, Belgium, Denmark, France, the United Kingdom and the USA (GBIF Secretariat 2019e, Nesom 2019, POWO 2019, CABI 2021). We are the first to provide it for Eastern Siberia as adventive species that probably have escaped cultivation.

**Taxonomic notes.** *V. phoeniceum* belongs to the section *Lychnitis* Grisch., uniting species with the same red-fleshed anthers of all stamens, attached to the filament by their middle, with a capitulate stigma, or less often spathulate, with five stamens per flower (Ivanova 1981b). In addition to *V. phoeniceum*, 3 more species of this section are found in Siberia: *V. fimbriata* L., *V. polychroma* L. and *V. morchelli* Ivanova et Tsvetkov (Doronkin 2012). *V. phoeniceum* differs from other Siberian species of the genus in flowers located on the axis of the inflorescence singly in combination with a purple, sometimes pink or white, corolla color (Kosachev 2010). The color of the corolla of the *Irkutsk* specimens is pink, without a yellow tinge.

**Examined specimens (new record).** RUSSIA: Irkutsk Region, Irkutsk District, old age, ruderal deposit, 52°2′28.09″N 104°10′26.90″E, 01.06.2020, coll. D.V. Tarasov, 58855–58856 (IRK).
**Vicia megalotropis** Ledeb. (Fabaceae)

**Contributor:** Olga A. Kapitonova

**Distribution and habitat.** *V. megalotropis* is distributed in Central Asia; its area covers the south of Western and Eastern Siberia, Kazakhstan, Mongolia, Northern and Southern China (Bojtan & Turland 2010). The species is introduced in the Magadan region (Sinel’nikova 2010).

This species is not given for the territory of the Tyumen Region (Glazunov et al. 2017). Within Western Siberia, its growth is known in the Tobolok floristic region (Nikiforova 1994). These data are based on the work of Krylov (1933), who pointed to the growth of the species in the Tobolok Region, but at present these districts are administratively part of the Omsk Region. The species is listed as rarely found in the Altai Territory (Krasnoborov et al. 2003); its growth is known in the south of the Tomsk Region (Vyltsan 1994), in the Novosibirsk Region (Korolyova et al. 1973), and the Altai Republic (Pyak 2012). It is not listed for the Kurgan Region (Nauumenko 2008). *V. megalotropis* grows on rocky and sandy slopes in meadow steppes, sparse dry birch forests and their edges, fallow lands, river banks (Krylov 1933, Bojtan & Turland 2010, Pyak 2012). The plants were found by us in the cited location in an area disturbed by wild animals, along the edge of the animal path. The plants grew in small thickets on an area of 2–3 m².

**Taxonomic notes.** The taxon belongs to the section *Cassia*–*Raphanaceae* Radzhi (Nikiforova 2012). It differs from the species with its section by numerous low stems 40–70 (90) cm tall, lancelolate or lanceolate-linear leaflets gradually narrowed towards the apex with thin, inconspicuous veins running at an angle of 30° to the leaf apex, covered with soft hairs; peduncles, densely pubescent at the base and approximately equal to the length of the leaf, from the axil of which they emerge or slightly longer than it; purple-red flowers that turn brown when dried; an oblong flag, the plate of which is not bent from the boat and is equal to its length (Krylov 1933, Nikiforova 1994, Bojtan & Turland 2010).

Examined specimens (new records). RUSSIA; Tyumen Region, Kazari District, 3 km SE from the village of Mal’ye Yarki, 55°36’622”N 69°22’219”E, the edge of the slope of the right indigenous coast of the Ishim River, the edge of a birch forest, on the animal pathway, 10.06.2016; coll. О.А. Капитонова (LE, Herbarium of the Tobolok complex scientific station UB RAS)

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