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Contribution to the flora of Asian and European countries: new national and regional vascular plant records, 3

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Soci t  botanique de France

Contribution to the flora of Asian and European countries: new national and regional vascular plant records, 3

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Abstract: The paper presents new records for 18 vascular plant species from six Eurasian countries. Three taxa (*Lepidium densiflorum*, *Stipa czerepanovii*, *Xanthium albinum*) are reported from Kazakhstan, one (*Ranunculus schmakovii*) from Mongolia, three (*Dianthus campestris*, *Ranunculus kauffmannii*, *Viola suavis*) from Poland, five (*Eragrostis amurensis*, *Linum catharticum*, *Ludwigia peploides* subsp. *stipulacea*, *Pyrethrum mikeschii*, *Solidago canadensis*) from Tajikistan, five (*Clinopodium menthifolium*, *Juncus effusus*, *Mollugo cerviana*, *Poa sphondylodes*, *Vulpia myuros*) from Russia, and one (*Orobanche alba* subsp. *xanthostigma*) from Georgia. Ten of the taxa presented (*Clinopodium menthifolium*, *Dianthus campestris*, *Eragrostis amurensis*, *Juncus effusus*, *Lepidium densiflorum*, *Mollugo cerviana*, *Solidago canadensis*, *Viola suavis*, *Vulpia myuros* and *Xanthium albinum*) are regarded as alien to the studied areas, whereas the remaining eight are native elements to the flora of the countries. For each species, synonyms, general distribution, habitat preferences, taxonomy with remarks on recognition and differentiation of the species from the most similar occurring in a given country, as well as a list of localities recorded (often far from the previously known areas), are presented.

Keywords: alien species; Asia; chorology; native species; Europe; taxonomy

Introduction

This article is a continuation of previous works dedicated to new national and regional vascular plant records (Nobis, Ebel et al. 2014; Nobis, Nowak et al. 2014). Although it might seem that good knowledge on the general distribution of vascular plants has been attained for the Eurasian flora, there are still many regions where new plant species are discovered. During field explorations across the vast area of 10 European and Asian countries, as well as during taxonomic revisions of herbarium material of different groups of vascular plants, the authors found some species that were new to the floras of particular countries or their significant regions (provinces or republics). The purpose of this paper is to report new records for 18 vascular plant species from six Eurasian countries, namely Georgia, Kazakhstan, Mongolia, Poland, Russia and Tajikistan. These records are significant in terms of the phytogeography of vascular plants. Ten of the taxa presented are regarded as alien to the studied areas, whereas the other eight are native elements to the flora

of the countries. The taxa are presented alphabetically in two groups, in Asian and in European countries.

New records for Asian countries

Clinopodium menthifolium (Host) Stace (Lamiaceae)

Calamintha menthifolia Host, *Calamintha sylvatica* Bromf., *Calamintha menthifolia* subsp. *sylvatica* (Bromf.) Menitsky

Contributors – Marina M. Silantyeva, Aleksandr L. Ebel

Distribution and habitat

Clinopodium menthifolium is widely distributed in most European countries (Ball and Getliffe 1972), in Caucasus, and in some countries of western Asia: Turkey, Lebanon and North Iran (Davis and Leblebici 1982). Within natural range, it grows in forests and in gullies, in low elevation (up to 2000 m above sea level). The species is used as an ornamental, aromatic and

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medicinal plant, and for these purposes is cultivated in some regions.

Clinopodium menthifolium is a new, alien species for Asian part of Russia. The first contributor has observed its spreading in Barnaul city since 2003. Firstly the species was noted in flower beds by one house on Molodezhnaya Street, where it was dominating and forming a dense patch. In the following years the area occupied by the species increased. In 2014, the species was observed in several quarters of Barnaul (e.g. Socialisticheskii Avenue, Krasnoarmeyskii Avenue) where it grows in yards, flower beds and bushes. We observed the formation of ripe seeds in these places, so at the new localities this rhizomatous perennial herb seems to reproduce both vegetatively and generatively.

Taxonomic notes

In the *Flora Europaea*, *Calamintha menthifolia* and *Calamintha sylvatica* are treated as separate species (Ball and Getliffe 1972), whereas in the flora of the European part of the former USSR, the latter taxon is treated in a subspecies rank, as *Calamintha menthifolia* subsp. *sylvatica* (Menitsky 1978). The discussion on taxonomic independence of *Calamintha sylvatica* and *Calamintha menthifolia* is associated also with the name priority to *Calamintha menthifolia* (Ball and Getliffe 1972; Menitsky 1978; Stace 1989). Additionally, the generic name *Calamintha* Mill. was reduced to a synonym of *Clinopodium* L. (e.g. Stace 1989), therefore the discussed taxon is named as *Clinopodium menthifolium* (Host) Stace or *Clinopodium nepeta* (L.) Kuntze subsp. *sylvaticum* (Bromf.) Peruzzi & F. Conti. In modern electronic nomenclature databases (e.g. WCSP 2014) the name *Clinopodium menthifolium* (Host) Stace is considered as an accepted name for the discussed taxon.

Examined specimens (new record)

RUSSIA: Altai Territory, Barnaul, Molodezhnaya Street, in yards as weed, 21 August 2014, *M. Silantjeva* & *A. Ebel* (ALTB; TK).

***Eragrostis amurensis* Probatova (Poaceae)**

Eragrostis voronensis Scholz

Contributors – Marcin Nobis, Arkadiusz Nowak, Agnieszka Nobis

Distribution and habitat

Eragrostis amurensis is a species native to northern Eurasia influenced by a continental climate. Its occurrence was recorded mainly in Russia, Mongolia, Kazakhstan, Ukraine and Belarus (Probatova 1985; Scholz and Ristow 2005; Seregin 2012). *Eragrostis amurensis* naturally grows on riverside sands of larger

watercourses; however, it was also noted on inland sands, sparse steppes, semi-deserts, and rock crevices. As an anthropophyte it grows on railway areas, roadsides, pavements and city lawns. During field studies conducted in Tajikistan, the species was found in western Pamir, in natural habitat on stony banks of Shakh dara River. *Eragrostis amurensis* is another new, alien species found recently in the country (Nobis, Ebel et al. 2014; Nobis, Nowak et al. 2014).

Taxonomic notes

The genus *Eragrostis* Wolf is represented in the flora of Tajikistan by three species: *Eragrostis minor* Host., *Eragrostis pilosa* (L.) P. Beauv. and *Eragrostis megastachya* (Koel.) Link (Ovchinnikov 1957). *Eragrostis amurensis* is the most similar to *E. pilosa*; however, it distinctly differs from *E. pilosa* by the presence of glands (minute round or elongate depressions) mainly on the sheaths keel. In *E. pilosa* sheaths are glabrous, without glands.

Closely related to *Eragrostis amurensis* is *E. voronensis* Scholz, recently described from Central Asia. The main diagnostic character differentiating these two taxa is the density of glands on the leaf sheaths keel (Scholz 2010). However, we find this character as having low taxonomic value and follow Seregin (2012) in treating *E. voronensis* as conspecific with *E. amurensis*.

Examined specimens (new record)

TAJKISTAN: Western Pamir, Shakh dara River Valley, stony river bank near Shivoz settlement, alt. 2850 m, 1 July 2014, *M. Nobis* & *M. Kozak* (KRA).

***Juncus effusus* L. (Juncaceae)**

Contributors – Alla V. Verkhozina, Aleksandr L. Ebel

Distribution and habitat

Juncus effusus L. is an extremely polymorphic species; being accepted in a broad sense (*J. effusus* s.l.) it has cosmopolitan distribution (Hultén and Fries 1986). It occurs on the banks of rivers, ponds or lakes, as well as in marshes, wet fields, ditches and open wet woodlands. It is most characteristic on sandy and peaty substrates, especially open heaths and moors, where it can be a dominant (Lansdown 2014). In the Asian part of Russia, it was previously known from the Altai Territory, southern part of Krasnoyarsk Territory and Kemerovo Region (Kovtonyuk 1987; Stepanov 1992; Ebel 2012).

Juncus effusus has not been reported earlier from eastern Siberia, so it is a new, alien species in the flora of Baikal region. We found the species on the

southeastern shore of the Lake Baikal, together with the other alien species that are considered as invasive in Siberia, namely *Epilobium pseudorubescens* A.K. Skvortsov and *Juncus tenuis* Willd.

Taxonomic notes

Juncus effusus has been recognized as containing several species or a single species with numerous infraspecific taxa (Snogerup, Zika, and Kirschner 2002). It is a perennial plant with short creeping, thick rhizome. The species in narrow sense (*J. effusus* var. *effusus*) is mainly restricted to Europe (Hultén and Fries 1986). Other taxa, which are ranked in different interpretations from varieties to separate species, naturally grow in eastern and southeastern Asia (*J. effusus* var. *decipiens*), in Africa [*J. effusus* subsp. *laxus* (Robyns & Tournay) Snogerup] and in North America (Snogerup, Zika, and Kirschner 2002). *Juncus effusus* var. *decipiens* Buchenau, also considered as a separate species *Juncus decipiens* (Buchenau) Nakai grows in the Russian part of the Far East. Records for *J. effusus* from China (Wu and Clemants 2000) also probably belong to this taxon.

Juncus effusus can be confused with closely related species *Juncus conglomeratus* L., from which it differs by more sprawling, bunchy inflorescence, involucre bracts without noticeable dilatation, glossy-green and smooth stem with inconspicuous striations and less pressed capsule without protuberance. The hybrid between these two species is named as *J. × brueggeri* Domin (= *J. × kern-reichgelthii* Jansen & Wachter ex Reichg.; Govaerts 2014; O'Mahony 2002).

Examined specimens (new record)

RUSSIA: Irkutsk Region, Slyudyansky district, southeastern outskirts of the Solzan village, near the bridge over the Bolshaya Osinovka river, right bank of the river, the Baikalsk Paper and Pulp Mills treatment works, 51°29'34" N, 104°14'33" E, alt. 484 m, at the water's edge, bulrush-moss-sedge community, 22 August 2013, A. V. Verkhovina (IRK) ID 29486, 29488.

Lepidium densiflorum Schrad. (Brassicaceae)

Contributor – Aleksandr L. Ebel

Distribution and habitat

Lepidium densiflorum is native to North America but now can be found in most temperate regions of the northern hemisphere. Nowadays, *L. densiflorum* occurs in most European countries, as well as in some Asian countries, e.g. China, Korea, Mongolia, Tajikistan and the Asian part of Russia (Hultén and Fries 1986; Zhou et al. 2001; Ebel 2001; Vinogradova, Majorov, and Khorun 2010).

During our field research conducted in Kazakhstan in 2002 and 2014, *L. densiflorum* was found repeatedly in few different localities.

Taxonomic notes

Lepidium densiflorum has basal leaves 1-pinnatifid or serrate; rachises with terete or subclavate trichomes pedicel papillate only adaxially, fruits obovate to obovate-suborbicular, widest above middle. The discussed taxon is similar to *Lepidium apetalum*; however, the latter has elliptic fruits widest in the middle part, raceme papillae clavate or capitate. *Lepidium densiflorum* is also relatively close to *Lepidium ruderales* L., which has basal leaf blades (1)2- or 3-pinnatisect; rachises with straight slender trichomes; fruiting pedicels pubescent throughout with slender trichomes, fruit elliptic.

Since 1970s *Lepidium densiflorum* was confused with *L. apetalum* Willd. This confusion was caused by the fact that some authors (e.g. Czerepanov 1973; Kotov 1979) considered *L. apetalum* as conspecific with *L. densiflorum*. Therefore, subsequent data on distribution of *L. densiflorum* in the Asian part of the former Soviet Union can be attributed both to this species and to *L. apetalum*. Previous records for *L. densiflorum* from Kazakhstan and other countries of Central Asia mostly refer to *L. apetalum*.

Examined specimens (new records)

KAZAKHSTAN: East Kazakhstan Region, Zyryanovskii district, 5 km on the southwest from the settlement New Bukhtarma, roadside, 29 May 2002, A. Ebel (TK); East Kazakhstan Region, the city of Ust Kamenogorsk, sand-and-shingle coast of the Irtysh River near a bridge, 6 June 2002, A. Ebel (TK); North Kazakhstan Region, Taiynshinskii district, neighbourhood of the village Zeleni Gai, fallow land, 26 June 2014, A. Ebel (TK); North Kazakhstan Region, Ualikhanovskii district, settlement of Ualikhanov, waste ground, 26 June 2014, A. Ebel (TK); Akmolinskii Region, Ereymentauskii district, city of Ereymentau, waste ground, 27 June 2014, A. Ebel (TK).

Linum catharticum L. (Linaceae)

Contributors – Arkadiusz Nowak, Marcin Nobis, Vítězslav Plášek

Distribution and habitat

Linum catharticum is a species native to Europe, southeastern Asia and northeastern Africa. It is known from Iceland, through the British Isles, southern Scandinavia, France, Central Europe, Italy, to the Balkans. The species was also noted in Asia Minor, Caucasus and Iran (Yuzepchuk 1949a; Hegi 1975).

In the former Soviet Union the species was reported mainly from European part of its distribution, Caucasus and Crimea (Yuzepchuk 1949a). It was never found in Central Asia (Adylov 1983). *Linum catharticum* is a plant with relatively wide ecological amplitude. In Europe, the species prefers dry grasslands. However, it is also frequently spotted on wet habitats (in wet meadows, mires and springs). It grows on alkaline or at least base-rich substrates. *Linum catharticum* is another new, native taxon found recently in Tajikistan (Nobis 2013; Nobis, Nobis, Nowak, Nowak 2014; Nobis, Nowak, and Zaleska-Gałosz 2010). The population of the species was found in several sites in the middle section of the Urech River Valley near Artuch alpine camp. The population consists of thousands of individuals and growing in peat bogs and mires built mainly by *Swertia* sp., *Eleocharis* sp., *Primula* sp., *Carex* sp. and many mosses with domination of *Calliergonella cuspidata* (Hedw.) Loeske, *Drepanocladus aduncus* (Hedw.) Warnst., *Sphagnum* sp. and *Polytrichum* sp. It is worth noting that the localities of *Linum catharticum* found in Tajikistan are located almost 2000 km east of the nearest stations known so far.

Taxonomic notes

In the flora of Tajikistan, the genus *Linum* L. is represented by seven species (Kinzikaeva 1981). However, only three of them, namely *Linum catharticum*, *Linum corymbosum* Reichb. and *Linum humile* Mill, are annual plants. *Linum catharticum* differs from the other two species by white petals, as opposed to yellow and blue in *Linum corymbosum* and *Linum humile*.

Examined specimens (new records)

TAJIKISTAN: Peat bogs and alpine mires in Urech River valley (Zeravshan Mountains): near Artuch alpine camp, 39°16'38.1" N, 68°09'14.5" E, 2296 m, 26 June 2014, *A. Nowak & M. Nobis* (KRA, Herbarium of the Opole University OPUN); near Artuch alpine camp, 39°16'28.4" N, 68°08'14.1" E, alt. 2153 m, 26 June 2014, *A. Nowak & M. Nobis* (KRA, OPUN); to the south of Madovra, 39°17'07.7" N, 68°07'13.1" E, alt. 2069 m, 26 June 2014, *A. Nowak & M. Nobis* (Herbarium of the Opole University OPUN); to the south of Madovra, 39°18'07.9" N, 68°07'08.4" E, alt. 1907 m, 26 June 2014, *A. Nowak & M. Nobis* (KRA, Herbarium of the Opole University OPUN).

Ludwigia peploides (Kunth) P.H. Raven subsp. *stipulacea* (Ohwi) P.H. Raven (Onagraceae)

Contributors – Arkadiusz Nowak, Marcin Nobis, Sylwia Nowak

Distribution and habitat

Ludwigia peploides is a species native to eastern Asia. It was reported from China, Japan and Taiwan (Chen, Hoch, and Raven 2007). The species has not been reported from Central Asia, or from the former Soviet Union (Shteinberg 1949; Adylov 1983). During the floristic research conducted in western Tajikistan in 2014, the species was found in several locations on both sides of the Kafirnighan River Valley. *Ludwigia peploides* subsp. *stipulacea* inhabits mainly shallow pools and puddles on valley wings with close contact with patches representing the *Phragmitetea* class. The species creates floating or creeping carpets in standing waters, as well as on wet grasslands. It was also found in ditches and on inundated pastures. One population grows on the irrigated city lawn near the Dushanbe sewage treatment plant. In all sites *Ludwigia* occurs in large numbers and establishes its own community. The species inhabits swampy areas. It was spotted in ditches, rivers, lakes and rice fields. In Tajikistan *Ludwigia peploides* subsp. *stipulacea* was noted in disturbed habitats, in shallow reservoirs, small ditches or even on irrigated lawns in urban areas. The historical status of the species in the country is not certain. In southwestern Tajikistan, due to climate conditions and lack of geographical barriers, many tropical and subtropical species are distributed as native species, e.g. *Echinochloa colona* (L.) Link, *Ammania auriculata* Willd.; *Ludwigia peploides* subsp. *stipulacea* could contribute to this group of species after invasion from southeastern Asia. However, considering the occupied habitat type (generally disturbed wetlands or even city lawns), it seems to be justified to classify the species as a newcomer. Further research is needed to solve this problem.

Taxonomic notes

The genus *Ludwigia* L. is represented in the flora of Tajikistan by one taxon – *Ludwigia perennis* L., syn. *Ludwigia parviflora* Roxb. (Abdusalyamova 1981). *Ludwigia peploides* subsp. *stipulacea* is well separated from *Ludwigia perennis* (Chen, Hoch, and Raven 2007), by distinctly longer sepals (6–12 vs. 1.5–3.5 mm) and longer petals (5–11 vs. 0.7–2 mm).

Examined specimens (new records)

TAJIKISTAN: Dushanbe, city irrigated lawn, 38°30'06.8" N, 68°45'22.5" E, alt. 757 m, 1 July 2007, *A. Nowak, M. Nobis* (Herbarium of the Opole University OPUN); Dushanbe, southern outskirts of the city, shallow pools in Kafirnighan River, 38°28'14.7" N, 68°44'53.1" E, alt. 710 m, 3 July 2014, *A. Nowak, M. Nobis* (Herbarium of the Opole University OPUN); southwest of Chimtepa, shallow set-aside ponds and river valley swamps, 38°26'58.5" N, 68°42'13.3" E, alt.

700 m, 3 July 2014, *A. Nowak, M. Nobis* (Herbarium of the Opole University OPUN); south of Hisor, swamps and ditches in Kafirnighan River Valley, 38°27'05.6" N, 68°38'05.6" E, alt. 697 m, 3 July 2014, *A. Nowak, M. Nobis* (Herbarium of the Opole University OPUN).

***Mollugo cerviana* (L.) Ser. (Molluginaceae)**

Contributors – Irina A. Khrustaleva, Aleksandr L. Ebel

Distribution and habitat

Mollugo cerviana is native to tropical, subtropical and temperate regions of the Old World, but now, it can be found on most continents as a weed growing in many types of dry, sandy habitats (Vincent 2003). This plant is inconspicuous and easily overlooked. In Eurasia, the species is distributed in southern Europe reaching northwards to 52° N in Russia (Tutin 1964), and southwards to southeastern Asia (Lu and Hartmann 2003). This is the only representative of the genus on the territory of Russia, where it is widespread in southern regions of the European part of the country (Byalt 2004), but rarely found in the Caucasus (Tatanov 2012). Records of the species in western Siberia (Byalt 2004) are currently located in Kazakhstan.

During field studies conducted in southern Siberia in 2012, *M. cerviana* was found on sands in disturbed areas within pine forest. It is a new alien species to the flora of the Asian part of Russia.

Taxonomic notes

The genus *Mollugo* L. contains c. 35 species (Vincent 2003). Although the systematic position of some species is unclear and taxonomic revision of *Mollugo* is required, *M. cerviana* is a rather well-defined member of the genus. However, infraspecific variation and delimitation between described varieties, needs further study (Vincent 2003).

Examined specimens (new record)

RUSSIA: Altai Territory, Volchikha district, surroundings of Bor-Forpost village, Bychye lake coast, pine forest, fire-prevention gap, on sands, 51°50' N, 80°09' E, 13 August 2012, *I. Khrustaleva* (KUZ).

***Orobanche alba* Stephan ex Willd. subsp. *xanthostigma* Rätzel & Uhlich (Orobanchaceae)**

Contributor – Renata Piwowarczyk

Distribution and habitat

Orobanche alba subsp. *xanthostigma* was described from northwestern Caucasus (Rätzel and Uhlich 2004). To

date, it is known from sparse localities in Russia (Republic Adygeya, Krasnodar Territory, Stavropol Territory), Azerbaijan and Turkey. This taxon parasitizes *Origanum vulgare* L. and *Thymus* L. (Rätzel and Uhlich 2004; orowiki.org).

New localities were found in Georgia in 2014, as a new native taxon to the flora of this country.

Taxonomic notes

Orobanche L. s.l. is very difficult in terms of the determination of genus, comprising c. 28 holoparasitic species in Georgia (Gagnidze 2005). These data require verification, thorough revision and field research throughout the Caucasus. Taxonomic problems are especially great in relation to *Orobanche alba*, a polymorphic and poorly studied taxon, varying in morphometric traits, colour, phenological periods, preferred hosts and even pollen micromorphology (e.g. Piwowarczyk, Chmielewski, and Cwener 2011; Piwowarczyk, Madeja, and Nobis 2015). *Orobanche alba* subsp. *xanthostigma* differs from the typical subspecies mainly by always bright yellow colour of the stigma (purple is typical), calyx segments free, entire, and lower inserted filaments. Within *Orobanche alba* subsp. *xanthostigma* two colour forms were distinguished, f. *typica* has corolla ± normal coloured, i.e. yellowish-reddish below and to the edge darker red and red-violet veined; and, f. *sineglandulosa* Rätzel & Uhlich: whole plant, also corolla and stigma, wax-like yellow, darker glandules not visible (Rätzel and Uhlich 2004; orowiki.org). The newly discovered populations in Georgia include both colour forms.

Examined specimens (new records)

GEORGIA: Southeast Georgia, Tbilisi, Gldani-Nadzaladevi district, between Chargali St. and Tbilisi Reservoir, dry grasslands and shrubs on slopes of the exposure south, southwest and northwest, alt. 570 m, parasitic on *Thymus*, 25 May 2014, *R. Piwowarczyk* (KTC); Mtskheta-Mtianeti district, between village Saguramo S and Saguramo Range, 300 m east from St George Church, xerothermic shrubs, hornbeam forest edges, alt. 690 m, parasitic *Origanum vulgare*, 6 June 2014, *R. Piwowarczyk* (KTC).

***Poa sphondylodes* Trin. (Poaceae)**

Contributor – Marina Olonova

Distribution and habitat

Poa sphondylodes was described from the Chinese province Hubei and up to 2013 it was known primarily in eastern Asia, being a common species in eastern China, Korea and Japan. The species was recorded by

Rozhevitz (1934) in the Russian Far East, but later these specimens were determined as *Poa versicolor* subsp. *ochotensis* (Trin.) Tzvel. (Tzvelev 1976). Last year it was found in Russia, in Tyva Republic (Olonova 2013). In the present work the second record of *Poa sphondylodes* for Russia and the first one for the western part of Siberia is reported from the steppes of the Altai Mountains.

Taxonomic notes

Poa sphondylodes was synonymized by Tzvelev (1968) and Probatova (1985) with *Poa ochotensis* Trin. described in 1830. Later it was treated by Tzvelev (1976) as *Poa versicolor* subsp. *ochotensis* (Trin.) Tzvel. Indeed, the type of *Poa ochotensis* (Siberia, circa Ochozk a b. Redowsky lect, det. AM. Prescott, 1828, LE-TRIN) and lectotype of *Poa sphondylodes* (in montosis prope Ssi-jui Ssy (China) legit A. Bunge, LE-TRIN-2698.3) selected by Tzvelev, looks very similar, but differs in the length of ligules. In *Poa ochotensis* ligules are 1.5–1.7 mm long, (“ligulis pl. min. productis” in accordance with protologue), whereas in *Poa sphondylodes* its length exceeds 3.5 mm. Investigation of a large collection of the species from China and the Russian Far East, allows us to consider them as different species (Zhu et al. 2006; Olonova and Chen 2010).

All specimens found on the territory of Altai have lacinate panicles, and long ligules (≥ 3.5 mm), typical for *Poa sphondylodes*. In general, these specimens seem to be more xeromorphic than typical specimens of *Poa sphondylodes*, e.g. from the eastern provinces of China, and, especially from Japan. Nevertheless, these characters did not exceed the limits, characteristic for *P. sphondylodes*. It is interesting that specimens of the taxon translocated from the dry steppes of the Altai Mountains to Tomsk and planted in wetter habitats form broad green leaves, just like the specimens of the taxon occurring in western China.

Examined specimens (new records)

RUSSIA: Republic Altai. Mouth of Chuya river, dry steppe on the right bank. 2 July 2014, *M.V. Olonova & N.S. Mezina* (TK).

***Pyrethrum mikeschinii* Tzvel. (Asteraceae)**

Tanacetum mikeschinii (Tzvel.) Takht., *Pyrethrum kovalevskiae* Ikonn.

Contributors – Arkadiusz Nowak, Marcin Nobis

Distribution and habitat

Pyrethrum mikeschinii is an endemic species of the southern part of Kyrgyzstan (Tzvelev 1961). The species was described from the northern slopes of the Turkestan

Mountains from the Isfara River Valley to the south of Vorukh town. It was found in *Artemisia* cryophilous steppes at an altitude of c. 2900 m. This was the only known location of this species.

During our field research in eastern Pamir in Tajikistan we found several individuals of this species growing on high mountain steppes with domination of *Artemisia* species. The new location is c. 500 km to the southeast of the *locus classicus*. The population was scattered on hills and flattened river valley wings, on stony, alkaline soils. The only anthropogenic influence here was the early spring incidental grazing. *Pyrethrum mikeschinii* is a new, native species to the flora of Tajikistan.

Taxonomic notes

Pyrethrum mikeschinii is closely related to *Pyrethrum kovalevskiae* described by Ikonnikov (1993) from Kyrgyzstan. The main diagnostic character for differentiating these two taxa is the length of leaflets in lower pinnate leaves. In *Pyrethrum kovalevskiae* leaflets are longer than in *Pyrethrum mikeschinii* (15–17 vs. up to 9 mm long; Ikonnikov 1993). Specimens that we found in Tajikistan having leaflets in lower pinnate leaves 4–6 mm long, match the description of *P. mikeschinii* (Tzvelev 1961). However, it is worth noting that Lazkov and Sultanova (2011) treat *Pyrethrum kovalevskiae* as conspecific with *Pyrethrum mikeschinii*.

Examined specimens (new record)

TAJIKISTAN: Stony and gravel steppes to the east of Dzhlilyandy village, eastern Tajikistan, 37°33'47.7" N, 72°38'32.8" E, alt. 3671 m, 17 August 2013, *A. Nowak & M. Nobis* (KRA, Herbarium of the Opole University OPUN).

***Ranunculus schmakovii* A. Erst (Ranunculaceae)**

Contributor – Andrey S. Erst

Distribution and habitat

Ranunculus schmakovii is an endemic species to the Altai Mountains and to date has been known only from two localities in the Kosh-Agach District, (1) the South Chuya Mountains, the lower course of the Tara River and (2) Irbistu tract (Erst 2007). The taxon is typical for a nival mountain belt and is one of the dominant species in alpine meadows. *Ranunculus schmakovii* is a new native species to the flora of Mongolia.

Taxonomic notes

Ranunculus schmakovii belongs to the *Ranunculus altaicus*–*Ranunculus sulphureus* group of species (Erst 2010). The main striking characters for the species are:

rosellate leaves at the top with three to five tridentate laminae, sepals covered with dark-brown hairs and glabrous or with sparsely pilose receptacles (Erst 2010).

Examined specimens (new record)

MONGOLIA: Uvs, Charchiaa bei Ulaangom, Suslan Chamar, 2400 m a.s.l., Sumpfige Stelle in alpiner Stufe, June 1978, Z. Schamsran & coll., Acc. No.: 49371 (HAL).

***Solidago canadensis* L. (Asteraceae)**

Contributors – Arkadiusz Nowak, Marcin Nobis

Distribution and habitat

Solidago canadensis is a species native to North America, but today is widely distributed almost throughout the world. In many regions of the world it is regarded as an invasive plant species (Wagenitz 1979; Slavik 2004; Tokarska-Guzik 2005). In Central Asia, the species has not been noted until now (Adylov and Zuckerwanik 1993). In the former Soviet Union the species was reported from the European part, generally Baltic regions as well as from the Caucasus Mountains (Yuzepchuk 1959). It grows in different types of disturbed habitats, mainly on wastelands, road verges, heaps and home gardens. In Central Europe, the species enters patches representing the *Artemisietea vulgaris* class. Generally, the taxon contributes to phytocoenoses from the *Arction lappae* alliance or the *Aegopodion podagrariae* alliance. Rarely, it occupies also the river embankments with the *Convolvuletalia sepium* vegetation (Tokarska-Guzik 2005). *Solidago canadensis* is a new alien species in the flora of Tajikistan. Populations of *Solidago canadensis* were found in two sites in the central part of Dushanbe. Both populations consist of c. 10 specimens. The first one was found in a small neglected garden plot near the city pavements, and the second inhabits the grasslands in the city central park.

Taxonomic notes

The genus *Solidago* L. is represented by one taxon *Solidago kuhistanica* M. Pop. ex Juz. in Tajikistan (Kochkareva 1988). *Solidago canadensis* differs from *Solidago kuhistanica* by stems densely covered by protruding short hairs versus glabrous (at least in the middle part), inflorescences form a broad pyramidal panicle with a central axis and recurving branches versus cylindrical, flowers yellow, heads c. 2–3 mm wide versus > 4 mm wide, respectively.

Examined specimens (new records)

TAJIKISTAN: Ruderal habitats in central part of Dushanbe, 38°34'14.4" N, 68°47'22.7" E, alt. 833 m and

38°34'40.6" N, 68°47'07.2" E, alt. 841 m, 5 July 2014, A. Nowak & M. Nobis (Herbarium of the Opole University OPUN).

***Stipa czerepanovii* Kotuch. (Poaceae)**

Contributors – Marcin Nobis, Polina D. Gudkova

Distribution and habitat

Stipa czerepanovii is regarded as an endemic to the Zaisan region in eastern Kazakhstan (Kotukhov 2002). Till now the species has been known only from the southwestern slopes of the Akseir Mountains (*locus classicus*) where it grows on a Tertiary clay substrate. During our field studies conducted in 2014, the species was found in the Zhambylsk Region in the southwestern part of Balkhash Lake in southern Kazakhstan. The station is located c. 900 km from the *locus classicus* of *Stipa czerepanovii*.

Taxonomic notes

The genus *Stipa* L. contains approximately 50 taxa in Kazakhstan (Pavlov 1956; Tzvelev 1976; Kotukhov 2002; Nobis, Nowak, and Nobis 2013; Nobis 2010, 2013, 2014); however, in the area of the country taxonomic revision of the genus is required. *Stipa czerepanovii* is morphologically most similar to *Stipa szcerbakovii* Kotuch. They differ mainly in the character of callus (1.2–1.6 in *Stipa czerepanovii* vs. 1.5–2.5 in *Stipa szcerbakovii*), hairiness of awn column (hairs 0.3–0.7 mm long in *Stipa czerepanovii* vs. < 0.3 mm long in *Stipa szcerbakovii*), and seta with hairs 1–1.5 mm long in *Stipa czerepanovii* vs. 0.6–1.3 mm in *Stipa szcerbakovii*.

Stipa czerepanovii is also slightly similar to *Stipa heptapotamica* Golosk.; however, it differs from this species by longer ligules of vegetative shoots (0.5–1.1 vs. up to 0.2 mm) and longer awns (6–8 vs. 9–15 mm long). Both taxa have a hybrid origin. *Stipa czerepanovii* arose through hybridization between *Stipa richteriana* Kar. & Kir. and *Stipa orientalis* Trin. whereas *Stipa heptapotamica* arose through hybridization between *Stipa richteriana* and *Stipa lessingiana* Trin.

Examined specimens (new record)

KAZAKHSTAN: Zhambylsk Region, southwest part of Balkhash Lake, steppe grassland, on rocks, 45°30'32" N, 73°30'06" E, alt. 440 m, 20 May 2014, M. Nobis & P. Gudkova (KRA).

***Vulpia myuros* (L.) C.C. Gmel. (Poaceae)**

Contributors – Marcin Nobis, Aleksandr L. Ebel, Polina D. Gudkova, Alla V. Verkhovina

Distribution and habitat

Vulpia myuros is a species native to southern Europe, northern Africa and southern and southwestern Asia. It is introduced in America, Australia, northern Europe, southern Africa and eastern Asia (Cotton and Stace 1976). In the former Soviet Union the species was reported from the European part, Caucasus, Middle Asia and Far East (Tzvelev 1976; Probatova 1985). It grows in different types of disturbed habitats, mainly on roadsides, steppes and rocks. During field studies in southern Siberia, we found specimens of *Vulpia myuros* in the western part of the Lake Baikal region. The species has not been reported earlier from the Central Asia and Siberia (Tzvelev 1968, 1976; Malyshev and Peschkova 1990). Several specimens of the species were found along the roadside, in ruderal habitat, at the edge of dry, steppe grasslands. *Vulpia myuros* should be regarded as a new, alien species in the flora of that region, but it is not known whether it should be treated as ephemerophyte or epecophyte. The status of *Vulpia myuros* in the flora of Siberia requires further studies.

Taxonomic notes

Vulpia myuros is a characteristic annual plant. The most striking feature of the species is long compressed panicle with spikelets with 1.5–2.5 mm long branches. It can be confused with *Vulpia persica* (Boiss. & Buhse) Krecz. & Bobr., which occurs in Central Asian countries; however, its spikelets have very short, 0.3–1 mm long branches. *Vulpia myuros* is also slightly similar to *Vulpia bromoides* (L.) S.F. Gray occurring in southwestern Asia and Europe, but the latter taxon has much longer lower glumes, 1/2–3/4 length of the upper instead of 1/10–1/3 length as it is in *Vulpia myuros*.

Examined specimens (new record)

RUSSIA: Irkutsk Region, ruderal habitats on roadsides, ok. 2 km east of Chemorud village near the Baikal Lake, 53°00'05.6" N, 106°44'38.9" E, alt. 470 m, 4 August 2014, *M. Nobis et al.* (KRA, TK).

***Xanthium albinum* (Widder) H. Scholz & Sukopp (Asteraceae)**

Xanthium riparium Itz. et Hertsch var. *albinum* Widder
Contributor – Aleksandr L. Ebel

Distribution and habitat

Xanthium albinum is considered to be an American plant. It is believed that it originated in Central or South America, from where it was settled at first across America, and then over the countries of the Old World.

Recently, the species has been widely settled across Eurasia: from Great Britain to Korea (Vinogradova, Majorov, and Khorun 2010). It is widely distributed in Europe, including European part of Russia (Greuter 2006; Vinogradova, Majorov, and Khorun 2010), and in some southern Asiatic regions of Russia (e.g. Barkalov 1992; Ebel 2012). In Kazakhstan, *Xanthium albinum* was noted only in the eastern part of the country (Ebel and Ebel 2003). During field studies, subsequent localities of the species growing in wet disturbed places were found in central Kazakhstan.

Taxonomic notes

The taxonomy of *Xanthium* species occurring in the Old World is very complicated. Some authors recognize only two species in the genus *Xanthium* L., namely *Xanthium spinosum* L. and *Xanthium strumarium* L. s.l., with the name *X. albinum* as a synonym of the latter taxon (e.g. Weaver and Lechovicz 1982). In some floras, *Xanthium albinum* is confused with native European *X. strumarium*. Mature burs of *X. albinum* are 15–25(30) mm long, densely covered with hooked thorns up to the top, with more or less plentiful glandular cover, practically without simple hairs, the basis of the thorns with rigid bristles; the stem (which often has violet or brown markings) and petioles of leaves are covered with rigid bristle hairs. In contrast, *X. strumarium* has shorter burs sparsely covered with smooth thorns usually not achieving the top, and no glandular cover on their surfaces; the trichomes on stem and leaves are rather soft.

It is not excluded, that the correct name for the discussed species widespread in Eurasia as alien plant is *Xanthium orientale* L. (Greuter 2006; Vinogradova, Majorov, and Khorun 2010). Some authors prefer to use the heterotypic synonym *X. orientale* subsp. *riparium* (Celak.) Greuter instead of *X. albinum* (e.g. Greuter 2006). On the other hand, in some modern European floras and checklists (e.g. Buttler and Hand 2008; Danihelka, Chrtek, and Kaplan 2012) *X. albinum* is regarded as a separate species.

Examined specimens (new records)

KAZAKHSTAN: Karaganda Region, Aktogay district, foothills of mount Bektauata, the coast of a stream near a cattle track, 1 May 2012 and 12 May 2014, *A. Ebel* (TK); Karaganda Region, Aktogay district, Sary Shagan settlement, wet waste place, 04 July 2014, *A. Ebel* (TK); Pavlodar Region, the city of Ekibastuz, waste place, 21 April 2013; *A. Ebel* (TK).

New records for European countries***Dianthus campestris* M. Bieb. (Caryophyllaceae)**

Contributor – Grzegorz Łazarski

Distribution and habitat

Natural range of *Dianthus campestris* extends from western and southern Ukraine, northeastern Romania, Moldova, to southern Russia (to western Siberia) and central Kazakhstan (Shishkin 1936; Jalas and Suominen 1986). Additionally, single localities of anthropogenic origin are known from Belarus (Parfenov 1999), Latvia (Laasimer et al. 1993) and northeastern Poland (Pawlikowski 2008; Kalinowski 2012).

The newly recorded locality of the species in central Poland (near Kielce city) significantly enlarged its western range limit. The species grows there on sandy grassland between roadside and fallow land, in close vicinity to a railway. Population of the taxon consists of over 100 specimens. It is probable that this locality is a result of long-distance migration of species along railway lines. Expansion of the species in anthropogenic habitats was observed also in Ukraine (Fedoronchuk and Didukh 2002).

Taxonomic notes

Dianthus campestris is most similar to *Dianthus gratianopolitanus* Vill. and *Dianthus deltooides* L. In contrast to them its stems are higher (to 60 cm) and petals are greenish-yellow beneath. Additionally, *D. campestris* has bigger flowers (1.5–3.0 cm in diameter) with paler petals and shorter epicalyx scales (c. 1/3 as long as calyx) than *D. deltooides*.

Examined specimens (new record)

POLAND: Małopolska Upland (Świętokrzyskie Mountains), Słowik-Markowizna village (in the vicinity of Kielce city), sandy grassland near railway line. 50°49' 54" N, 20°32'21" E, 18 August 2013, G. Łazarski (KRA).

***Ranunculus kauffmannii* Clerc (Ranunculaceae)**

Batrachium kauffmannii (Clerc) V. Krecz.

Contributors – Joanna Zalewska-Gałosz, Alexander A. Bobrov

Distribution and habitat

Until now *Ranunculus kauffmannii* has only been known from the boreal part of eastern Europe, Siberia, Far East, northern parts of Mongolia, China and Japan (Tzvelev and Grintal 2001). The westernmost localities outside the provided range are reported from Belarus (Sautkina 2007) and northern Ukraine (Tzvelev 1998). *Ranunculus kauffmannii* thrives exclusively in running waters and prefers fast-flowing, shallow streams and rivers with sand–stony bottoms (Bobrov and Movergoz 2014).

Ranunculus kauffmannii is a new, native species in the flora of Poland. It has been discovered in two rivers

to date. Both populations of *R. kauffmannii* are well established, comprising more than 10 clumps per locality. In the river Czarna Hańcza *R. kauffmannii* grows together with *Ranunculus trichophyllus* whereas in the river Błędzianka only *R. kauffmannii* was observed at the locality.

Taxonomic notes

The taxonomic position of *Batrachium* varied from a section to the genus, however, in the light of recently published phylogenetic studies of *Ranunculus* and Ranunculaceae, recognition of *Batrachium* in the rank of section is best supported (Hörandl and Emadzade 2012). *Ranunculus* sect. *Batrachium* is highly adapted to aquatic environment and regarded as taxonomically one of the most difficult group within the genus. The taxonomic difficulties rise from an extreme phenotypic plasticity, well-developed polyploidy, frequent hybridization and breeding systems, where various types of sexual reproduction and vegetative propagation are combined (Cook 1966; Zalewska-Gałosz, Jopek, and Ilnicki 2015). As a result of insufficiently defined taxa, the total number of species within a section varies from 17 to 30 species, depending on particular treatment.

Ranunculus kauffmannii was described from the basin of the river Kama in Ural (nowadays Permsk Territory, Russia). In the monograph of *Batrachium*, Cook (1966) regarded this species as conspecific with *R. trichophyllus* Chaix but in the same publication he also listed *R. kauffmannii* along with synonyms of *Ranunculus penicillatus* (Dumort.) Bab. In the next account Cook (1993) changed his mind and regarded *R. kauffmannii* as conspecific with *Ranunculus pseudofluitans* (Syme) Newbold ex Baker et Foggitt. Since the description *R. kauffmannii* had not been widely recognized, and was reported mainly by Russian authors. Genetic studies conducted recently (J. Zalewska-Gałosz et al., unpubl.) proved that *R. kauffmannii* is an established species with hybrid origin consistently different from *R. trichophyllus* and *R. penicillatus* s.l.

Morphologically *R. kauffmannii* is very close to *R. trichophyllus*. Both species are homophyllous and develop relatively small flowers with lunate nectar pits. There are some morphological characters, however, which allow both species to be distinguished. In general *R. kauffmannii* is larger (up to 1.5–2 m) than *R. trichophyllus* (up to 1 m). *Ranunculus kauffmannii* develops more elongate leaves, which are longer than internodes whereas the leaves of *R. trichophyllus* are as long as or shorter than internodes. The terminal segments of leaves of *R. kauffmannii* are longer and exceed 10 mm in comparison to the same segments developing by *R. trichophyllus*, which are up to 10 mm long. Leaf segments of *R. kauffmannii* are soft and collapsing out of water in contrast to leaf segments of *R. trichophyllus*, which are frequently flaccid. Petioles of *R. kauffmannii* are long in comparison to those of

R. trichophyllus, which develops much shorter petioles or its leaves are sessile. *Ranunculus kauffmannii* produces larger flowers and fruits, which are more elliptical in shape in comparison with *R. trichophyllus*. More distinctive characters and morphological details are provided by Bobrov (2003).

It is worth underlining that *R. kauffmannii* is a wintergreen perennial that occurs in running water and spreads mainly vegetatively whereas *R. trichophyllus* is an annual species that occurs in standing, sometimes temporary waters, where it spreads mainly generatively (Bobrov and Movergov 2014).

Examined specimens (new records)

POLAND: Northeast Poland, Pojezierze Suwalskie lakeland, the river Czarna Hańcza near the bridge between Osowa and Potasznia, 54°8'55.09" N, 22°51'34.57" E, 11 July 2012, J. Zalewska-Gałosz (KRA); northeast Poland, Puszcza Romnicka wilderness, the river Błędzianka near the bridge between Żytkiejmy and Bludzie, 54°20'25.6" N, 22°35'03.6" E, 16 July 2012, J. Zalewska-Gałosz (KRA).

Viola suavis M. Bieb. (Violaceae)

Contributors – Arkadiusz Nowak, Marcin Nobis, Sylwia Nowak, Agnieszka Nobis

Distribution and habitat

Viola suavis s.l. is a species native to eastern Mediterranean areas and southwestern Asia (Gams 1975). It is reported from many central, western and eastern European countries (Valentine, Merxmüller, and Schmidt 1968; Mered'a et al. 2011). In Asia the species is distributed throughout the Caucasus, Kopet-Dagh, Pamir Alai and Tian-Shan Mts (Yuzepchuk 1949b).

In Poland, *Viola suavis* has been regarded as a neophyte (ephemerophyte) escaping sporadically from cultivations (Mirek et al. 2002). It was reported in southwestern Poland (Silesia region) from Wrocław and Mikułów near Zgorzelec (Schube 1903; Gams 1975).

Long-term observations conducted by the authors in Silesia region between 1997 and 2014 prove that the species is a permanent element of the flora, occurring in large numbers at some of the stations.

In Poland, *Viola suavis* grows on fertile, nutrient rich-soils in marginal slopes or on shelves of old, exploited limestone excavation within the Opole city borders. It contributes generally to tree-stands with domination of *Salix caprea* L., *Crataegus monogyna* Jacq. and *Acer platanoides* L. In Wrocław, the species grows in old graveyards that are now town parks. In sparse tree stands, along the road verges several small populations were found in 2013. The canopy consists of different species, generally *Tilia cordata* Mill., *Acer platanoides* and *Quercus robur* L.

Taxonomic notes

Viola suavis is a critical species that requires revision in its whole geographical range. In Central Europe it is represented by typical subspecies (Mered'a et al. 2011). The taxon is most similar to *Viola odorata* L. and the two species can be easily confused. These taxa differ mainly in the character of bracts (present below middle of peduncle in *Viola suavis* vs. at or above peduncle in *Viola odorata*) and in stolons (short and stout in *Viola suavis* vs. long, procumbent and rooting in *Viola odorata*) (Valentine, Merxmüller, Schmidt 1968).

Examined specimens (new records)

POLAND: Former graveyard and now town park in Wrocław: 51°05'16.6" N, 16°58'36.5" E, 128 m, 12 May 2013, A. Nowak (Herbarium of the Opole University OPUN); Opole, disused limestone quarries "Odra 1" 50°40'58.2" N/17°54'57.3" E, 154 m, May 2013, A. Nowak (Herbarium of the Opole University OPUN, KRA); Opole, disused limestone quarries "Piaśt" 50°39'29.1" N/17°57'05.8" E, 160 m, May 1997 and May 2013, A. Nowak (Herbarium of the Opole University OPUN); Głogówek [near Opole], cementary, 3 April 1974, P. Szotkowski (KRA).

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