

Contribution to the flora of Asian and European countries: new national and regional vascular plant records, 7

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Contribution to the flora of Asian and European countries: new national and regional vascular plant records, 7

Marcin Nobis^a, Gianniantonio Domina^b , Marjol Meço^c, Alfred Mullaj^c, Giuseppe Bazan^d, Aleksandr L. Ebel^e, Gergely Király^f, Andrey Erst^{g,h}, Arkadiusz Nowakⁱ, Alexander P. Sukhorukov^j , Elena B. Pospelova^k, Igor N. Pospelov^k, Vladimir M. Vasjukov^l, Renata Piwowarczyk^m, Alexey P. Sereginⁿ, Angéla Király^o, Maria Kushunina^p, Bing Liu^q, Attila V. Molnár^r, Marina Olonova^e, Miklós Óvári^r, Beata Paszko^s, Chen You-Sheng^q, Alla V. Verkhovzina^t, Elena Yu Zykhova^g, Ewelina Klichowska^a, Agnieszka Nobis^a, Anna Wróbel^a, Zübeyde U. Aydın^u, Ali A. Dönmez^u, Parvana Garakhani^v, Jacob Koopman^w, Andrey Korolyuk^g, Krzysztof Oklejewicz^x, Tunzala Qasimova^y, Wei Wang^q, Helena Więclaw^y, Mateusz Wolanin^x and Kunli Xiang^q

^aInstitute of Botany, Jagiellonian University, Kraków, Poland; ^bDipartimento SAAF, University of Palermo, Palermo, Italy; ^cFaculty of Natural Sciences, University of Tirana, Tirana, Albania; ^dDepartment STEBICEF, University of Palermo, Palermo, Italy; ^eLaboratory of Systematics and Phylogeny of Plants, Department of Botany, Institute of Biology, National Research Tomsk State University, Tomsk, Russia; ^fInstitute of Silviculture and Forest Protection, Faculty of Forestry, University of West Hungary, Sopron, Hungary; ^gCentral Siberian Botanical Garden, Siberian Branch of Russian Academy of Sciences, Novosibirsk, Russia; ^hLaboratory of Systematics and Phylogeny of Plants, National Research Tomsk State University, Tomsk, Russia; ⁱBotanical Garden-Center for Biological Diversity Conservation, Polish Academy of Sciences, Warszawa, Poland; ^jDepartment of Higher Plants, Biological Faculty, Lomonosov Moscow State University, Moscow, Russia; ^kFederal State Budgetary Institution "Taimyr reserves", Norilsk, Russia; ^lInstitute of Ecology of the Volga River Basin, Russian Academy of Sciences, Togliatti, Russia; ^mDepartment of Botany, Institute of Biology, Jan Kochanowski University, Kielce, Poland; ⁿHerbarium (MW), Department of Geobotany, Faculty of Biology, M.V. Lomonosov, Moscow State University, Moscow, Russia; ^oInstitute of Environmental and Earth Sciences, Faculty of Forestry, University of West Hungary, Sopron, Hungary; ^pDepartment of Plant Physiology, Biological Faculty, Lomonosov Moscow State University, Moscow, Russia; ^qState Key Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences, Beijing, China; ^rDepartment of Botany, University of Debrecen, Debrecen, Hungary; ^sDepartment of Vascular Plant Systematics and Phytogeography, W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, Poland; ^tSiberian Institute of Plant Physiology & Biochemistry, Siberian Branch of Russian Academy of Sciences, Irkutsk, Russia; ^uDepartment of Biology, Faculty of Science, Hacettepe University, Ankara, Turkey; ^vInstitute of Botany, Academy of Sciences of Azerbaijan, Baku, Azerbaijan; ^wChoszczno, Poland; ^xDepartment of Botany, Rzeszów University, Rzeszów, Poland; ^yDepartment of Plant Taxonomy and Phytogeography, University of Szczecin, Szczecin, Poland

ABSTRACT

The paper presents new records for 29 vascular plant species from 12 Eurasian countries. Seven taxa (*Agave sisalana*, *Austrocylindropuntia subulata*, *Lagurus ovatus* subsp. *nanus*, *Opuntia stricta*, *Orobancha serbica*, *Oxalis articulata*, *Vitis × instabilis*) are reported from Albania, one (*Allium carinatum*) from the European part of Russia, six (*Dipsacus fullonum*, *Gagea shmakoviana*, *Mentha × dalmatica*, *Thymus indigiricensis*, *Thymus sergievskajae*, *Viola × sukaczewii*) from the Asian part of Russia, two (*Agrostis sozanensis*, *Poa mustangensis*) from China, two (*Carex muskingumensis*, *Sedum rubens*) from Poland, two (*Crataegus macrocarpa*, *Dactylorhiza lapponica*) from Romania, two (*Oxygraphis delavayi*, *Ranunculus eryuanensis*) from Nepal, two (*Erigeron bonariensis*, *Ophioglossum vulgatum*) from Tajikistan, one (*Ranunculus olgae*) from Kazakhstan, one (*Najas guadelupensis*) from Hungary, one (*Orobancha bartlingii*) from Armenia, one (*Crataegus petrodavisii*) from Azerbaijan and one (*Amaranthus powellii*) from Georgia. For each species, synonyms, general distribution, habitat preferences, taxonomy with remarks on recognition, and differentiation the species from the most similar taxa occurring in a given country, as well as a list of recorded localities (often far from the previously known areas) are presented.

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Chorology; taxonomy; native species; alien species; Asia; Europe

Introduction

During field explorations across the vast area of 10 European and Asian countries, as well as during taxonomic revisions on herbarium materials of different groups of vascular plants, the authors found some species that are new to the floras of particular countries or their significant regions (provinces or republics).

The paper is the continuation of previous works (Nobis et al. 2014, 2015, 2015, 2016, 2017), which similarly to the works of Sukhorukov et al. (2016, 2017), are dedicated to new national and regional vascular plant records, to broaden our knowledge on their distribution and taxonomy. The aim of this paper is to report new records for 29 vascular plant species: 16 from Asian and 13 from European countries.

New records for Asian countries

Agrostis sozanensis Hayata (Poaceae)

Contributors – Beata Paszko, Bing Liu

Distribution and habitat

The genus *Agrostis* L. in China is represented by 25 species (Lu and Phillips 2006). An ongoing revision of the genus *Agrostis* for *Flora of Nepal* (Paszko 2012, 2014; Paszko and Pendry 2013; Paszko and Soreng 2013) revealed the first records of *Agrostis sozanensis* Hayata from two Chinese provinces: Guangxi and Shandong. Previously, these specimens, housed at the PE herbarium, were misidentified as *Agrostis clavata* Trin. *Agrostis sozanensis* was described by Hayata (1918: 85) based on a gathering from Taiwan (formerly known as Formosa). Until now, *Agrostis sozanensis* was recorded only from China, from the following Chinese provinces: Anhui, Fujian, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Sichuan, Taiwan, Yunnan and Zhejiang (Lu and Phillips 2006). *Agrostis sozanensis* is not recorded by Zheng (1990) and Li (2004) from Shandong Province. The new record at Shandong Peninsula (E. Shandong) extends its known distribution northwards from the closest localities at Anhui, Henan and Jiangsu, whereas two new records from Guangxi Province cover the gap in its distribution in the southern part of China. The distribution limit of *Agrostis sozanensis* in China is similar to that of *Calamagrostis extremiorientalis* (Tzvel.) Prob. (Paszko, Liu, and Ma 2017; Paszko and Ma 2011).

Agrostis sozanensis prefers moist growing conditions and is commonly found growing along roadsides, in ditches, at stream and river sides, nearby to lakes and ponds; at low elevations below 1300 m. Hsui (1971) noted that *Agrostis sozanensis* is very common in northern Taiwan at low elevations.

Taxonomic notes

Agrostis sozanensis is similar in spikelet morphology to *Agrostis clavata* Trinius, but it usually has awned spikelets (awn 0.5–2.5 mm long) and longer anthers (0.6–1.2 vs. 0.2–0.7 mm long). About 10% of spikelets of *Agrostis sozanensis* have awnless lemmas and 10% of its spikelets have very short lemma awns, less than 0.5 mm long (Paszko, unpubl. data). Previously, Chinese specimens of *Agrostis sozanensis* were misidentified as *Agrostis canina* L., i.e. by Rendle (in Forbes and Hemsley 1904), as noted by Yang (1987). *Agrostis sozanensis* is very close to *Agrostis canina* and *Agrostis infirma* Buse. It is distinguished from *Agrostis canina* by the presence of creeping surface stolons and an awn arising from the lower part of the lemma back (Lu and Phillips 2006), and from *Agrostis infirma* by the presence of awns and longer anthers in relation to lemma length (0.48–0.81 vs. 0.29–0.48) (Paszko, unpubl. data).

Examined specimens (new records)

CHINA: Guangxi Prov.: Xing'an Co., Simen Township, valley, May 1953, *Guangxi Exped. Team* 95 (PE); Hengxian Co., Zhenlong distr., Dazhan Township, Gujin, Taodailing, grassland on slope, 640 m, 22 Aug. 1963, Z.Z. Chen 50304 (PE). Shandong Prov.: Muping Co., Yuxiahe, 27 May 1930, T.N. Liou 935 (PE).

Amaranthus powellii S.Watson (Amaranthaceae)

Contributors – Alexander P. Sukhorukov, Maria Kushunina

Distribution and habitat

Amaranthus powellii is a ruderal species of American origin that is now widespread in Western and Central Europe (e.g. Chytrý 2009; Forman 2003). The first survey on its range in Eastern Europe was provided by Mosyakin (1996). Further field investigations in Russia have shown that *A. powellii* is common in the Central Black Earth Region, with scattered records eastwards and northwards (Sukhorukov 2012). In the Caucasus, it was reported only from the Black Sea coast (Sochi floristic district: Zernov 2006) and is not known in any other parts (Takhtajan 2012). The revision of *Amaranthus* specimens in the herbarium WIR (Saint-Petersburg, Russia) led to the discovery of several records from different parts of Georgia from 1970, which suggest that *A. powellii* started to spread in the Western Caucasus rather a long time ago. The easternmost record of the species is in the eastern Kazakhstan (Sukhorukov 2009).

Taxonomic notes

Amaranthus powellii is similar in many aspects to *Amaranthus retroflexus* L. or *Amaranthus hybridus* L., but it can be easily recognized by its dark green, long and stiff inflorescence, bracts approximately twice longer than the perianth, and acute perianth segments (Iamonico 2015; Sukhorukov 2012). In herbaria it is often erroneously labelled as *Amaranthus retroflexus*.

Examined specimens (new records)

GEORGIA: [Shida Kartli region], Khashuri, 4 August 1970, *A. Stankevitch s.n.* (WIR); [Imereti region], Mayakovsky distr. [Baghdati municipality], Optcha village, vegetable plot, 5 August 1970, *A. Stankevitch s.n.* (WIR); [Kakheti region], between Telavi and Kvareli, irrigated wheat field, 12 June 1975, T.I. Zhilenko s.n. (WIR). RUSSIA. Daghestan, Tsuntinsky district, Shaury village, cereal field, 1800–1900 m, 12 August 1976, T.I. Zhilenko s.n. (WIR).

Crataegus petrodavisii Dönmez (Rosaceae)

Contributors – Ali A. Dönmez, Zübeyde Uğurlu Aydın, Tunzala Qasimova, Parvana Garakhani

Distribution and habitat

Crataegus petrodavisii has been described from Hakkari (Turkey) by Browicz (1972a) (under the name of *Crataegus davisii* Browicz) and its occurrence in Turkey has been confirmed by further field works by the first author. The species has also been reported from Iran by Khatamsaz 1992 (as *Crataegus davisii*), and has been collected by the first author from various locations around the country.

The specimens of *Crataegus petrodavisii* were collected from Baku (Azerbaijan) during a field trip in 2015. They were identified using the relevant literature and floras (Browicz 1972b; Christensen 1992; Dönmez 2014; Pojarkova 1939) as a new record for Azerbaijan flora. The population of the species is composed of a few individuals that are similar to the populations present in Turkey and Iran. Both herbarium studies and field works have shown that this species is not commonly present in Azerbaijan. We propose that *Crataegus petrodavisii* should be put in the EN category of Azerbaijan flora.

Taxonomic notes

Crataegus petrodavisii is a new name of *Crataegus davisii* recently established by Dönmez (2014) due to homonymy with a name previously published from N. America (Christensen 1992).

Crataegus petrodavisii is a clearly distinct species from *Crataegus pentagyna* Waldst. & Kit. ex Willd. in terms of morphological characteristics. Moreover, their ecological preferences are also somewhat different. *Crataegus pentagyna* naturally grows in humid forests, hedges of forests or openings of these forests, while *Crataegus petrodavisii* prefers humid areas along riverbanks or forest openings in dry steppes.

Examined specimens (new record)

AZERBAIJAN: Baku, Xizi, National Park of Altiaghaj, 837 m, 40°53'66"N, 048°58'23"E, 15 September 2015, A.A. Dönmez 19681- Z. Uğurlu- P. Garakhani- T. Qasimova (HUB, BAK).

Dipsacus fullonum L. (Dipsacaceae)

Dipsacus sylvestris Huds

Contributors – Elena Yu. Zyкова, Aleksandr L. Ebel

Distribution and habitat

Dipsacus fullonum is a species with natural distribution in Europe, the Mediterranean and Asia Minor (Bobrov 1978), where it grows in the river valleys, in the bushes and in weedy places. As a decorative, honey-bearing, industrial plant, as well as a feed for birds and a seed pollutant of other cultures, it was introduced to North and South America, South Africa, China, Australia and New Zealand (Encyclopedia of Life 2007; The Plant List 2013), where it was naturalized, forming a secondary distribution area. In North America, *Dipsacus*

fullonum is currently considered an invasive species (National Invasive Species Information Center 2005). In the European part of Russia it is found on the banks of reservoirs, on vacant lots and as a weed in holiday villages, sometimes in large numbers; it is able to survive for a few years on some habitats, even in the meadow communities (Mayorov 2014; Mayorov et al. 2012). When studying the species in the culture of the Moscow Botanical Garden since 1965, its winter hardiness has been identified, as well as its very high resistance to diseases and pests (Demidov 2011). These properties contribute to the successful naturalization of the species in new territories.

This is a new alien species for Asian Russia.

Taxonomic notes

The genus *Dipsacus* comprises about 15 species, distributed in temperate and tropical Eurasia, the Mediterranean and tropical Africa. The members of this genus are biennial, rarely perennial plants with spiny-bristly stems and sharp bracts. In the past, the fruit of the related species *Dipsacus sativus* (L.) Honck., often regarded as *D. fullonum* subsp. *sativus* (L.) Thell. or even as a synonym of *D. fullonum*, were used for napping wool. While, the difference between these species is quite significant: the point of the bracts of *D. sativus* is rigid, elastic and downward facing, while *D. fullonum* has straight and flexible points (Mayorov 2014).

Examined specimens (new record)

RUSSIA: Altay Republic, Turochak district, Turochak village, streets of the village, near the roads, 5 August 2016, E. Zykova (NS, TK).

Erigeron bonariensis L. (Asteraceae)

Conyza bonariensis (L.) Croncq.

Contributors – Marcin Nobis, Arkadiusz Nowak, Ewelina Klichowska

Distribution and habitat

Despite the fact that its native range is probably limited to South America, *Erigeron bonariensis* is widespread and naturalized in tropical and warm-temperate regions of different continents (Negrean and Ciortan 2012). Much of the distribution data comes from European countries. Starting from the first half of the twentieth century, the species has spread in the territory of Albania, Belgium, Bulgaria, Croatia, Czech Republic, France, Germany, Great Britain, Greece, Italy, Macedonia, Montenegro, Netherlands, Portugal, Romania, Slovenia, Spain, Switzerland; in Asia it was reported e.g. from China (Chen and Brouillet 2011; Havrenne 1982; Martincic et al. 1999; Negrean and Ciortan 2012; Palmer 1984; Rohlena 1923, 1942; Šida 2003; Stace 1997; Strother 2006; Verloove 2017; Verloove and Boulet 2001).

Erigeron bonariensis is a thermophilous species, occurring on dry and sunny places mostly in ruderal habitats such as roadsides, pavements, fences or railway tracks (Negrean and Ciortan 2012; Verloove 2017).

According to Kochkareva and Zhogoleva (1988), and Nobis et al. (2017) in the Flora of Tajikistan there are 26 species of *Erigeron*. After revision of the material preserved at KRA, we report *E. bonariensis* as new to the flora of Tajikistan.

Taxonomic notes

Erigeron bonariensis represents *Erigeron* sect. *Conyza* (Lessing) Baillon, which contains annual and perennial species with stems erect, simple or branched, hirsute to strigose, often with glands. Leaves usually linear to lanceolate with margin coarsely serrate, less often entire. Ray florets usually white, gathered into several inflorescences. Achenes 0.8–2 mm, 2-veined. Pappus 1-seriate, 10–25 bristles (Chen and Brouillet 2011).

Erigeron bonariensis differs from most similar and widely dispersed *Erigeron canadensis* L. by having phyllaries usually hispidulous or strigose, receptacles 3–5 mm diameter in fruit, pistillate florets 60–150+, pappi 3–4+mm vs. phyllaries glabrous or sparsely strigose, receptacles 1–3 mm diam. in fruit, pistillate florets 20–45+ and pappi 2–3 mm. *Erigeron sumatrensis* Retz. is another species that is morphologically similar to *Erigeron bonariensis*, but differs from the latter species by shorter peduncles 3–5 mm, involucre ca. 4 mm, pappus white, later yellowish brown, ray floret lamina short, filiform vs. peduncles 10–15 mm, involucre ca. 5 mm, pappus reddish, sordid, or tawny, ray floret elaminate (Chen and Brouillet 2011; Strother 2006).

Examined specimens (new record)

TAJIKISTAN: Dushanbe (South-Tajikistanian Region A), roadside lawn, near the bridge, Kakharov St. [trawnik przydrożny, w pobliżu mostu, ul. Kakharova], alt. 940 m, 9 July 2009, M. Nobis, T. Kowalczyk s.n. (KRA464496).

Gagea shmakoviana Levichev (Liliaceae)

Contributor – Aleksandr L. Ebel

Distribution and habitat

Gagea shmakoviana was described from West Altai (Levichev 2001) and for years was known only from its *locus classicus*: “Rossia, Provincia Altai, districtus Tscharyschensis, in viciniis pagi Sentelek”. This species has been mentioned (Levichev 1999) as endemic to Altay with the possibility of its presence in Chinese Altay. In the most recent publications (German 2016; Sherin and Shmakov 2011), the species is treated as endemic to West Altay. It has been also specified for several parts of Altay-Sayan floristic province (Ebel 2012) but no concrete locations have been given.

It grows on dry meadows, among shrubs and the margins of dry forests, on fine-grained soils in foothills and in the lower belt of mountains. This is a rare native species to the flora of Southern Siberia.

Taxonomic notes

According to protologue (Levichev 2001), *shmakoviana* is close to Asiatic *Gagea fedtschenkoana* Pascher and south-Siberian *Gagea longiscapa* Grossh. ex Serg. It differs from the former in its longer peduncles and rather soft basal leaves, from the latter in its brown sheaths of main bulbs and fine warty surface of substitutive bulbs. Unlike the other species, this one forms two substitutive bulbs on the opposite sides at base of the generative shoot. Moreover, *Gagea shmakoviana* slightly differs from both abovementioned species in the green color of the stem and leaves, whereas two others are characterized by the well-defined bluish hue of their shoots.

Interestingly, in 2000, Levichev labeled as *Gagea shmakoviana* several herbarium samples stored in the Herbarium of Komarov Botanical Institute (LE) previously under names *Gagea fedtschenkoana* and *Gagea longiscapa*, but did not mention them in the protologue.

Examined specimens (new records)

RUSSIA: Kuznetsk Region, Shchegolysk district, Shchegolo, The right side of the Iskitimka River, birch grove. 28 May 1928, A. Karpov (LE, det. by I. Levichev at 25 February 2000); Neighborhoods of Krasnoyarsk, the Kacha river valley, near a brick factory, along the northern slope, in bushes. 16 May 1948, L. Cherepnin (LE, det. by I. Levichev at 25 February 2000); Gorno-Altai Autonomous Okrug, Turochak District, village Verkh-Biysk, 400 m above sea level, lawn with bushes on rich soil. 10 May 1979, N. Zolotukhin (LE, det. by I. Levichev at 25 February 2000); Gorno-Altai Autonomous Okrug, Ust-Kansky district, left bank of the Charysh river, 1 km below the village Ust-Kan, 1050 m above sea level, dry meadow. 12 May 1979, N. Zolotukhin (LE, det. by I. Levichev at 25 February 2000); Kemerovo Oblast, surroundings of Kemerovo city, southern slope along the edge of a pine-birch forest. 03 May 2009 (flourishing samples), 27 May 2009 (fruiting samples), A. Ebel (TK); Kemerovo Oblast, Yashkino district, neighborhood of the village Pacha, in the bushes along the southern slope. 04 May 2011, A. Ebel (TK).

Mentha × dalmatica Tausch (Lamiaceae)

Contributors – Alla V. Verkhozina, Aleksandr L. Ebel

Distribution and habitat

Mentha × dalmatica is widely grown as an aromatic plant, sometimes escaping from culture. This nothospecies is known from Fennoscandia (Hylander 1965; Marklund 1963); Central Europe (Hegi 1975), and European Russia (Gladkova and Menitzky 1978; Tzvelev 2000; Mayorov and Kazakova 2014).

It grows in seminatural and human-made habitats, usually in or near abandoned gardens, near cottages, on roadsides in villages and in wastelands. Due to long rhizomes it easily propagates vegetatively, sometimes forming large thickets.

This is a new alien nothospecies for Asian Russia.

Taxonomic notes

The genus *Mentha* L. comprises 27 species and 15 inter-specific hybrids (The Plant List 2013). In mint species, dioeciousness is widespread, promoting interspecific hybridization. *Mentha* × *dalmatica* is treated as a sterile hybrid between Eurasian species *Mentha arvensis* L. and *Mentha longifolia* (L.) L. (Hegi 1975). Morphologically, *Mentha* × *dalmatica* resembles pubescent forms of *M. arvensis*. Also, this hybrid can be confused with the pubescent form of another hybrid, *Mentha* × *gracilis* Sole (*Mentha arvensis* × *Mentha spicata* L.). The latter is also known from Siberia (Ebel 2007; Ebel, Sheremetova, and Buko 2009), but it differs from *Mentha* × *dalmatica* by being glabrous at the base of the calyx, and with less prominent calyx veins as well as quite a different scent of both alive and dried plants. Due to polymorphism of parental species, *Mentha* × *dalmatica* is a rather variable nothospecies consisting in several morphologically distinguishable clones, some of which were described as intraspecific taxa (Hegi 1975; Hylander 1965).

Examined specimens (new records)

RUSSIA: Tomsk Oblast, Tomsk city, wasteland near abandoned garden plots. 09 Sept 2009, A. Ebel (TK, LE); the same place and habitat, 19 Aug 2016, A. Ebel (TK); N051°29'18.00" E104°14'03.00" Irkutsk Oblast, Slyudyanka district, south-eastern outskirts of the village Solzan, the left bank of the river Bolshaya Osinovka, on ash dumps of the Baikal Pulp and Paper Mill factory. 20 Aug 2013, A. Verkhovina (IRK, LE).

Ophioglossum vulgatum L. (Ophioglossaceae)

Contributors – Arkadiusz Nowak, Marcin Nobis

Distribution and habitat

The adder's tongue is a widely distributed throughout the Northern Hemisphere (Dostál 1984). The plant grows in wet pastures and meadows, within grassy swards, mainly in Agropyro-Rumicion and Molinion alliances (Dostál 1984). Sporadically it was also spotted in humid Carpinion communities or river-side forests from the Alnion alliance. *Ophioglossum vulgatum* is known mainly from lowlands, but also from colline, montane and subalpine belts up to 1400 m a.s.l. (Dostál 1984).

To date, the species has not been included in the flora of Tajikistan. During revision of herbarium materials and field research in the Darvaz region, we found specimens of that taxon.

Taxonomic notes

The two species differ mainly in the shape of the sterile laminas, which are narrow wedges in *Ophioglossum bucharicum* and egg-like wide wedges in *Ophioglossum vulgatum* (Vvedenskii and Puchkova 1968). The fertile spike with two rows of sporangia starts from the basal section in *Ophioglossum bucharicum* O.Fedtsch. & B.Fedtsch. or from the middle part of the vegetative leaf in *Ophioglossum vulgatum* (Fomin 1934).

Examined specimens (new records)

TAJIKISTAN: Hissar-Darvasian region: near Umarak village, *Platanus orientalis* forest; N 38°26'27"/ E 70°45'40", alt. 1245 m, 1 June 2011, A. Nowak & M. Nobis (OPUN); Pyandzh riverside forest, road verge; N 38°24'59"/ E 70°41'11", alt. 1300 m, 3 July 2009, M. Nobis, A. Nowak (KRA); near Kivron settlement, alt. 1300 m, 30 July 1947, Zapryagaeva (TAD 326); southern slope of Darvaz Mts, near Patkino settlement, alt. 1250 m, 20 August 1969, Chukavina, Rybakova 2962 (TAD 96092, 96093, 139564); southern slope of Darvas Mts, near Patkino settlement, alt. 1250 m, 6 May 1969, Chukavina et al. 5 (TAD 94721).

Orobanche bartlingii Griseb. (Orobanchaceae)

Contributor – Renata Piwowarczyk

Distribution and habitat

Orobanche bartlingii is a Eurasian species, occurring from Spain, through Central and Eastern Europe and Russia to Siberia (Carlón et al. 2009; Kreutz 1995). From the Caucasus is listed only *Orobanche alsatica* Kirschl. *sensu lato* (Gagnidze 2005; Novopokrovskij and Tzvelev 1958; Takhtajan 1987), except in Georgia, where a locality of *Orobanche bartlingii* has been recently found (Piwowarczyk in Nobis et al. 2017). A new locality of *Orobanche bartlingii* has been found in the rocky grassland in Armenia. The species is a new, native taxon to the flora of this country. The population of the species is comprised of 15 shoots.

Taxonomic notes

The flora of Armenia consist of 39 species of holoparasitic *Orobanche* s.l. (Takhtajan 1987). However, distributions of this genus and their hosts in Armenia are not sufficiently known, as evidenced by new discoveries (e.g., Piwowarczyk, Sánchez Pedraja, and Moreno Moral 2017; Piwowarczyk et al. 2017a, 2017b).

Orobanche alsatica is a polymorphic aggregate, and comprises a parasite Apiaceae species: *Orobanche alsatica*, s. str., parasitise of *Peucedanum cervaria* (L.) Lapeyr. and *Orobanche bartlingii* Griseb., parasitise of *Libanotis pyrenaica* (L.) Bourg. Taxonomic problems and differentiating features have been described in detail in previous works (e.g. Nobis et al. 2017; Piwowarczyk, Halamski, and Durska 2014).

Examined specimens (new record)

ARMENIA: South-eastern Armenia, the Lesser Caucasus, between Karabakh range and Zangezur range, in the Syunik province, between Kharahunj (S. of Goris) and Vorotan, steep western slope of the Goris river valley, near road, landslides and rocky grassland, south-eastern exposure, parasitise *Libanotis pyrenaica*, alt. 970 m, 2 June 2016 R. Piowarczyk s.n. (KTC).

***Oxygraphis delavayi* Franch. (Ranunculaceae)**

Oxygraphis delavayi var. *nyingchiensis* W.L. Zheng

Contributors – Alexander P. Sukhorukov, Andrey Erst

Distribution and habitat

The small genus *Oxygraphis* has a wide distribution in the mountains of Himalaya, Tibet, Pamir and Altay (Malyshev and Peshkova 1993; Sharma, Balakrishnan, and Rao 1993; Tiwari 2016). Three *Oxygraphis* species were reported for Nepal (Press, Srestha, and Sutton 2000), including *Oxygraphis nepalensis* Tamura, a local endemic of Nepal identified from a single location (Tamura 1978). *Oxygraphis delavayi* was described from Yunnan province (China) and later found in north-west Sichuan and south-east Xizang (Wang and Gilbert 2001). Recently, it was reported from Arunachal Pradesh, India (Tiwari 2016) and was not found from the territory of Nepal (Press, Srestha, and Sutton 2000; Yonekura 2008). *Oxygraphis delavayi* grows in moist alpine meadows, grassy slopes, and gravelly places at the altitudes 3500–5000 m a.s.l.

Taxonomic notes

The systematics of *Oxygraphis* is still not elaborated. Its species differ in the morphology of their scapes, leaves and petals (Rai and Rawat 2015; Wang and Gilbert 2001). In *Oxygraphis delavayi*, the scapes are apically puberulent, the leaf blades are reniform with crenate margins, and the petals are yellow and usually deciduous.

Examined specimens (new record)

NEPAL: Bagmati zone, Langtang area, Rasuwa distr., trekking route Dhunche – Gosaikunda, near Chulungpati village, 3500 m, forest margin, 20 April 2014, A. Sukhorukov 53 (MW).

***Poa mustangensis* Rajb. (Poaceae)**

Contributors – Marina Olonova, Chen You-Sheng

Distribution and habitat

Poa mustangensis is a Himalayan species, distributed in Nepal and Sikkim (Koba 2008), and Bhutan (Noltie 2000), where it grows at the alpine belt on screes and stony places. There are dwarfish rigid plants with narrow panicle and ascending short branches. The main characteristic that attracts attention is the presence of

proliferated (viviparous) spikelets, prevailing in all panicles. This characteristic is quite rare for section *Stenopoa* (Tzvelev 1976), and only three species have such spikelets. Besides *Poa mustangensis*, there are *Poa arnoldii* Melderis, which is distributed in Pan-Himalaya and some provinces of China (Nobis et al. 2014; Rajbhandari 1991; Zhu et al. 2006), and arctic species *Poa pekulneensis* Jurtz. & Tzvel., distributed only in some points of Russian Beringia and in Alaska (Soreng 2007). *Poa mustangensis* was described from the Mustang district of C. Nepal (Rajbhandari 1988). In the summer of 2015, the Institute of Botany, CAS, organized the II Sychuan expedition to study the flora of the Pan-Himalayas. The fieldwork in the alpine belt of Sichuan province enabled us to observe a viviparous bluegrasses population, which was morphologically similar to *Poa mustangensis*. Field studies of alpine bluegrasses and observations in nature allowed for a new interpretation of available data. We found that the panicles within these populations were narrow and consistent at all stages of development. For this reason, we recognize *Poa mustangensis* as a distinct species and attribute the found viviparous populations to this species.

Taxonomic notes

Poa mustangensis belongs to the very difficult and problematic section of *Stenopoa*. In the Flora of China (Zhu et al. 2006), this species has been synonymized with another viviparous species, *Poa arnoldii* Meleders. According to the protolog, these two species differ from each other mainly on the basis of the shape of panicle, which vary greatly during the growing period even within the same plant, and the surface of culm and leaves, which is quite variable as well. Nevertheless, field work in summer of 2015 allowed us to observe some populations of the viviparous bluegrasses, which were morphologically similar to *Poa mustangensis*. We noticed that the panicle shape in these plants was narrow and consistent at all stages of development. Besides having a narrow panicle, all these plants were as robust and rigid as *Poa glauca* Vahl, whereas types of *Poa arnoldii* and all observed samples were more gentle, almost smooth, and even resembled other sections.

Examined specimens (new records)

CHINA: Sichuan: Xiaojin County, Rilong, Balangshan mountain, at the gravel slope, N30.91472, E102.8011, alt. 4348, 14 September 2015, Y.Sh. Chen, Ch.L. Xiang, M.V. Olonova (PE, KUN, TK); Kangding county, Zheduoshan mountain, the thicket of *Rhododendron*, N30.08082, E101.79500, alt. 4245, at 10 September 2015, Y.Sh. Chen, Ch.L. Xiang, M.V. Olonova (PE, KUN, TK).

***Ranunculus eryuanensis* Erst (Ranunculaceae)**

Ranunculus kunmingensis W.T. Wang var. *hispidus* W.T. Wang

Contributors – Alexander P. Sukhorukov, Andrey Erst

Distribution and habitat

Ranunculus eryuanensis was described from the Yunnan and Guizhou provinces of China (Wang 1995), and later found in south-west Sichuan (Wang and Gilbert 2001). This species has not been previously reported from Nepal (Press, Srestha, and Sutton 2000; Yonekura 2008). This native species prefers grassy hill slopes or forest margins at altitudes from 2300 to 3000 m a.s.l.

Taxonomic notes

Twenty-five *Ranunculus* species have been reported from the territory of Nepal (Press, Srestha, and Sutton 2000). Recently, two additional species, *Ranunculus longicaulis* C.A.Mey. and *Ranunculus pseudohirculus* Schrenk, were added to the flora of Nepal (Erst and Sukhorukov 2011). *Ranunculus eryuanensis* was previously known as *Ranunculus kunmingensis* var. *hispidus* (Wang 1995) and was later raised to the species rank (Erst 2015). It differs from *Ranunculus kunmingensis* var. *kunmingensis* in its spreading hispid stems and leaf dissection. Based on its morphological characteristics, it belongs to the type section of the genus. This group consists of ~30 species distributed in Eurasia, North America and Africa, with a basic chromosome number of $x = 7$ (Goepfert 1974; Hörandl and Emadzade 2012; Xu et al. 2003).

Examined specimens (new record)

NEPAL: Karnali Zone, Mugu District, trekking route Jumla–Rara Lake, between Bora and Rara villages. 2400 m, grassy hill slope, 3 October 2014, A. Sukhorukov 780 (K, MW).

Ranunculus olgae Regel & Schmalh. (Ranunculaceae)

Ranunculus afghanicus Aitch. & Hemsl., *Ranunculus chaffanjonii* Danguy ex Finet & Gagnep.

Contributors – Andrey Erst, Andrey Korolyuk, Kunli Xiang, Wei Wang

Distribution and habitat

Ranunculus olgae was originally described from the Samarqand and Tashkent regions of Uzbekistan (Regel and Schmalhausen 1882). Now, this species has been recorded from Turkmenistan, Afghanistan (Fedtshenko 1925), Tajikistan (Byalt and Bubyreva 2014) and Kyrgyzstan (Lazkov and Sultanova 2011). No confirmed record of *Ranunculus olgae* has been reported from Kazakhstan so far (Gamajunova 1961). The species grows in steppe to alpine zones, including steppe communities, meadows, near snow in the high mountains and along rivers and streams. *Ranunculus olgae* is a new native species to the flora of Kazakhstan.

Taxonomic notes

In the flora of Kazakhstan, the genus *Ranunculus* L., including the genus *Batrachium* (DC.) Gray, is represented by 65 species (Gamajunova 1961). *Ranunculus olgae* morphologically belongs to paraphyletic Sect. *Ranunculastrum* DC. This section consists of c. 70 species from the Irano-Turanian region, Mediterranean Basin, eastern Europe, northern Africa, and Macaronesia, and is characterized by beaks mostly equalling or longer than the achene body, often long or short triangles, entirely glabrous receptacles, partly tuberous roots, and mostly elongated collective fruit (Hörandl and Emadzade 2012).

The section is divided into two groups (Hörandl and Emadzade 2012). The first group is characterized by strongly bilaterally compressed, papery, winged along sutures, not strongly fused with the receptacle achenes (e.g. *Ranunculus platyspermus* Fisch. and *Ranunculus pedatus* Waldst. & Kit.). The second group is characterized by thicker, not papery, narrowly marginate along sutures, strongly fused with the receptacle achenes (e.g. *Ranunculus oxyspermus* Willd. and *Ranunculus orientalis* L.). *Ranunculus olgae* morphologically belongs to the first group.

Unlike *Ranunculus mindshelkensis* B.Fedtsch., *Ranunculus olgae* has hairy achenes. This species also exhibits a heart-shaped base of the leaf blade, pubescent stems and curved upper part of the beak of the achene, as opposed to *Ranunculus czimganicus* Ovcz. which has a wedge-shaped leaf base and beak that is curved from its base (Ovczinnikov 1937). Species with leaves rounded, entire or three-lobed are morphologically close to *Ranunculus olgae*. *Ranunculus chaffanjonii* Danguy ex Finet & Gagnep. was described from Chaffanjon, which is near Tashkent, and this location is the locus classicus for *Ranunculus olgae*. If considered conspecific, the *Ranunculus olgae* name, published in 1882, has priority over *R. chaffanjonii*, published in 1904. *Ranunculus afghanicus* Aitch. & Hemsl. was described later than *R. olgae*, and therefore this last name is of higher priority (Fedtshenko 1925).

Examined specimens (new record)

KAZAKHSTAN: South Kazakhstan Region, Baydibek District, Karatau Mountains, 15–20 km north-east from the Baraldy Village, Baraldy River, bushes, N 42°52' E 69°53'N, 580 m, 13 May 2005, A. Korolyuk (NS).

Thymus indigirkensis Karav. (Labiatae)

Contributors – Vladimir M. Vasjukov, Elena B. Pospelova, Igor N. Pospelov

Distribution and habitat

Thymus indigirkensis was described from the north-eastern part of Eastern Siberia: Yakut ASSR, Ojmiakon district, right bank of the Nera river (tributary of the Indigirka river), near the village Balaganach, steppe plot

on south slope of the main bank (Karavaev 1971). It grows on gravelly-rocky and sandy slopes in the tundra zone of Eastern Siberia in the western part of the Magadan region and in the north-western part of the Sakha (Yakutia) Republic: the basin of the Indigirka river to N68° and near the village of Sangar (MW; Karavaev 1971, 1974; Doronkin 1997); the species is known as endemic to that area.

Recently, specimens of that taxon were found in the northern part of Middle Siberia (Taymyr), almost 1500 km away from the known Eastern Siberian populations.

Taxonomic notes

Thymus indigirkensis belongs to the series *Praeserpylla* Klokov section *Euserpyllum* Klokov (*Serpyllum* auct. non (Mill.) Benth., p.p.), with the transitional morphological characters to section *Verticillati* (Klokov et Des.-Shost.) Klokov.

Thymus indigirkensis, along with *Thymus tonsilis* Klokov, differ notably from other species of series *Praeserpylla* in their strongly pronounced heterophylla. Characteristics of *Thymus indigirkensis* distinguishing it from close species include the following: leaves on the surface of both sides are more or less pubescent with long and short hairs, 4–9 mm long and 1.5–4 mm wide; generative shoots are 2–7 cm tall, under inflorescence and on the upper internodes densely pubescent with horizontally protruding long hairs, lower – with short hairs; calyx at time of flowering is 3.5–4 mm long, the teeth of the upper lip on the edge are long ciliated.

Examined specimens (new records)

RUSSIA: [Middle Siberia], Krasnoyarsk region, Taymyr district, the debris stream of the right bank of the river Maimecha 20 km above the mouth, 99°57'20.8"N/71°12'9.71"E, 20 August 2009, E. Pospelova, 09–0401 (PVB; det. V. Vasjukov); Krasnoyarsk region, Taymyr district, sand bar at the mouth of the river Bolshaja Lesnaja Rassokha, 72°37'29.2"N/101°16'43.3"E, 6 August 2009, I. Pospelov, 12–1002 (PVB; det. V. Vasjukov).

Thymus sergievskajae Karav. (Labiatae)

Contributors – Vladimir M. Vasjukov, Elena B. Pospelova, Igor N. Pospelov

Distribution and habitat

Thymus sergievskajae was described from the northern part of Eastern Siberia: Yakutia, Zhigansky district, the left bank of the Lena river, the right bank of the river Chorenka at the confluence of the rivers Conor-Sete, sand bars near the river-bed (Karavaev 1971). It grows on sandy and rocky slopes river in the north-eastern part of the Central Siberian upland in the Sakha (Yakutia) Republic: the mouth of the river Chorongcho – the

left tributary of Lena river (MW; Karavaev 1971, 1974; Doronkin 1997); it is known to be endemic to that area.

Recently, the species was found of the northern part of Middle Siberia (in the South-Eastern Taymyr), almost 800 km away from the Eastern Siberian populations.

Taxonomic notes

Thymus sergievskajae belongs to series *Marschallaini* Klokov et Des.-Shost. section *Verticillati* (Klokov et Des.-Shost.) Klokov. *Thymus sergievskajae* differs from other similar species by having: quite long thin stipes, lower stem leaves distinctly different in shape from the upper, long petioles (almost equal to the lamina), and elongated inflorescence.

Examined specimens (new record)

RUSSIA: [Middle Siberia], Krasnoyarsk region, Taymyr district, north-western part of Anabar plateau, the region of Odihinch mountain and the confluence of Kyndyn and Kotuy rivers, rocks on the Kyndyn steep bank at its mouth, 70°88'87" N/102°16'89.8"E, 13 August 2007, I. Pospelov, 07–0756 (PVB; det. V. Vasjukov).

Viola × sukaczewii Vl. V. Nikitin (Violaceae)

Contributor – Aleksandr L. Ebel

Distribution and habitat

Viola × sukaczewii up to now was known only by type specimens collected in the beginning of the twentieth century on the territory of former Samara Province. The type specimen is labelled: "Samarskaya gub., Buzulukskii uезд, listvennyĭ les severnoi chasti Mogutovskogo lesnichestva. 13 V 1903. V.N. Sukaczev" (LE!). Now this place is located in the westernmost part of Orenburg Oblast. Nevertheless, this nothospecies was not mentioned in the generalizing regional floristic publication (Ryabinina and Knyazev 2009).

As well as both parent species, the hybrid grows in both deciduous and coniferous forests and on their margins, sometimes on forest meadows.

This is a new native nothospecies for Asian Russia.

Taxonomic notes

This nothospecies was described as an interspecific hybrid between Eurasian species *Viola mirabilis* L. and *Viola nemoralis* Kuetz. (Nikitin 2001). Like other *Viola* hybrids, this taxon is characterized by significant elongation of stems by the end of summer.

In the protologue (Nikitin 2001) only flourishing samples were mentioned, but no thoughts on the fertility of this hybrid were expressed. On the other hand, as Nikitin had placed parent species to two different sections (*Trigonocarpaea* Godr. and *Mirabiles* (Nyman ex Borbás) Vl. V. Nikitin, accordingly), and in the introduction part of the abovementioned paper (Nikitin 2001) he stated that intersectional *Viola* hybrids are usually highly

sterile, it is logical that the discussed nothospecies should be sterile too. To check this assumption, we observed and thoroughly explored a large population (not less than 100 individuals) found in Tomsk city during whole vegetation season in 2015 – from the beginning of May until September. We found that chasmogamous flowers emerging in spring are fully sterile (like those of *Viola mirabilis*), but some cleistogamous flowers formed in summer produce completely ripe seeds.

Examined specimens (new record)

RUSSIA: Tomsk Oblast, surroundings of Tomsk city, margin of pine-birch forest. 15 Jun 2013; 26 May 2015 (flourishing samples), 26 Jun 2015; 15 Aug 2015 (fruiting samples), A. Ebel sn. (TK).

New records for European countries

Agave sisalana Perrine (Asparagaceae)

Contributors – Giannantonio Domina, Marjol Meço, Alfred Mullaj

Distribution and habitat

Agave sisalana is native to Mexico. It was spread as a fiber plant and is now naturalized in North and South America, North and Central Africa, Europe, East Asia and East Australia (Hochstätter 2015; Nobel 1988). In the Mediterranean, it is reported as naturalized in Spain, peninsular Italy, Sardinia, Sicily, Morocco, Algeria and Libya (African Plant Database 2017; DAISIE 2017; Euro+Med Plantbase 2017). This species occurs on disturbed habitats such as abandoned fields, roadsides and waste areas. It produces a large number of bulbils on the flowering stem (pseudovivipary) (Elmqvist and Cox 1996), so it easily spread to the surroundings of the areas where it was introduced. In the most recent floras of Albania (Pils 2016; Vangjeli 2015; Vangjeli et al. 2000), only *Agave americana* L. is reported.

Agave sisalana was observed in a strip between the sea and the Butrint lagoon on carbonate rocky soil, of about 0.3 ha, with hundreds of mature and juvenile individuals among Mediterranean native and exotic plants. For Albania, this species is to be considered as a naturalized, invasive, species.

Taxonomic notes

Agave sisalana can be distinguished from *Agave americana* by its shorter and narrower leaves (90–130 × 9–12 cm instead than 100–200 × 15–25 cm) and by its shorter corollas (55–65 instead than 70–100 mm) (Hochstätter 2015). The colour of the leaves and the spines on their margins vary depending on the clonal lines.

Examined specimens (new record)

ALBANIA: Saranda district, Aliko, 39°49'18" N, 20°1'11" E, 10 m a.s.l., very abundant on a carbonate slope with

Phlomis fruticosa, *Spartium junceum* and *Paliurus spinacristi*, 30 April 2015, G. Domina & M. Meço s.n. (PAL).

Allium carinatum L. (Amaryllidaceae)

Contributor – Alexey P. Seregin

Distribution and habitat

Pskov Oblast is the westernmost region of the Russian mainland influenced by the Atlantic air masses and exhibiting some influence of Middle European flora (Sennikov 2005). *Allium carinatum*, a new species for Russia, was collected here as an established alien in 2002 on anthropogenic meadow along the Moscow–Riga railway in the town of Sebezh (ca. 15 km to the east of the Latvian border). The section of this railway within the Sebezhsy District harbours some well-known sites of floristic interest in the Northwestern Russia, which were initially discovered by Dr Galina Konechnaya in 1999. Dozens of thermophilous alien plants of southern origin were recorded here in 1999–2004, mainly – but not exclusively – in steppe-like communities dominated by *Festuca pseudovina* Wiesb. (Konechnaya 1999, 2004; Konechnaya and Tzvelev 2004). *Allium carinatum* was collected in Sebezh during one of these research missions, but was not properly named.

Allium carinatum is a widely distributed European species known from Austria, Albania, Belgium, Bulgaria, Czech Republic, Denmark, France, Germany, Great Britain, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Romania, Slovakia, Spain, Sweden, Switzerland, Turkey and nearly all former Yugoslavian countries (Stearn 1980). It was also reported upon a single gathering from Northern Anatolia by Kollmann (1984).

The species was not recorded from Eastern Europe by Omelczuk-Myakushko (1979), although lately it has been dubiously reported from Estonia (Stearn 1980) and Ukraine (Mosyakin and Fedoronchuk 1999). The former record was not confirmed afterwards, whereas the latter is not supported by any specimens from the main Ukrainian and Russian herbaria (Seregin 2007). Therefore, the record from Sebezh is a novelty for Eastern Europe.

At the moment, Sebezh is the easternmost locality of *A. carinatum*, but the current state of the local population is unknown.

Taxonomic notes

Allium carinatum is a typical member of the section *Codonoprasum* Reichenb. It has showy drooping flowers with stamens twice as long as the ovoid perianth. Tepals are rose to purple, rarely white, usually tinged with whitish wax. Usually, *Allium carinatum* subsp. *carinatum* can be confused with *Allium oleraceum* L., which has stamens hidden in the campanulate perianth.

The species has two morphotypes, i.e. with bulbills in the inflorescence and without them. Distribution of these morphotypes has clear geographical patterns, and therefore these are usually regarded as subspecies. *Allium carinatum* subsp. *carinatum* is a widely distributed viviparous morphotype with numerous bulbills in the base of pedicells and rarely produced seeds, whereas *Allium carinatum* subsp. *pulchellum* (G.Don) Bonnier & Layens (*A. cirrhosum* Vand.) has umbels with flowers only, numerous seeds, and grows in Southern Europe from Greece to France (Stearn 1978, 1980). Stearn (1978) is the best reference for the complicated taxonomy of “*Allium pulchellum*”.

Examined specimens (new record)

RUSSIA: Pskov Oblast, Sebez, 1 km to E from railway station, meadow along railway, 24 Jul 2002, I.O. Buzunova & G.Yu. Konechnaya s.n. (LE).

Austrocyllindropuntia subulata (Muehlenpf.) Backeb. (Cactaceae)

Contributors – Gianniantonio Domina, Marjol Meço, Alfred Mullaj

Distribution and habitat

Austrocyllindropuntia subulata is native to south Peru (Anderson 2001; Berthet 1990). It was introduced in Australia, Madagascar, North Africa and Europe (Allorge-Bioteau 2002; Berthet 1990; Dobignard 1997; Potter and Ruthrford 2013). In the Mediterranean it is reported as naturalized in Portugal, Spain, Morocco, peninsular Italy, Sardinia and Sicily (DAISIE 2017; Dobignard 1997). This species occurs on disturbed habitats such as abandoned fields, roadsides and waste areas. In Albania it is infrequently cultivated as ornamental along the coast up to 200–300 m. For this country, *Austrocyllindropuntia subulata* can be considered a casual alien species.

Taxonomic notes

Austrocyllindropuntia subulata can be distinguished from *Austrocyllindropuntia cylindrica* (Lam.) Backeb., and other widespread species of *Austrocyllindropuntia* cultivated and naturalized in the Mediterranean (DAISIE 2009), by its areoles with 1–4 spines, 5–7 cm long, instead of 2–6 spines, 1–2 cm long. The fruits in *Austrocyllindropuntia subulata* are up to 10 cm long, while in *Austrocyllindropuntia cylindrica* they are 4–5 cm long (Potter and Ruthrford 2013).

Examined specimens (new record)

ALBANIA: Saranda district, Lukovë, 40° 3'54" N, 19°51'6" E, 50 m a.s.l., casual alien on the base of a carbonate rock, 29 April 2015, G. Domina & M. Meço s.n. (PAL).

Carex muskingumensis Schwein. (Cyperaceae)

Carex arida Schwein. & Torr., *Carex scoparia* Torr., *Carex scoparia* var. *muskingumensis* (Schwein.) Tuck., *Thysanocarex muskingumensis* (Schwein.) Fedde & J.Schust., *Vignea muskingumensis* (Schwein.) Soják

Contributor – Krzysztof Oklejewicz, Helena Więclaw, Mateusz Wolanin, Jacob Koopman

Distribution and habitat

Carex muskingumensis is a species native to North America; it occurs in eastern Canada (Ontario), north-central USA (Illinois, Iowa, Kansas, Minnesota, Missouri, Oklahoma, Wisconsin), north-eastern USA (Indiana, Michigan, Ohio) and south-eastern USA (Arkansas, Kentucky, Tennessee) (Mastrogriuseppe et al. 2002). It has been introduced to Europe where it occurs in Belgium, Czech Republic, Germany, Netherlands, Sweden, (Koopman 2015a), Austria (Wallnöfer and Essl 2016) and Poland. In North America, the sedge grows on moist to wet soils on deciduous forest-overgrown flood plains, in lowland woods and in thickets. In Europe, it is encountered in both man-made and natural habitats, frequently along rivers and streams (e.g., Gregor et al. 2012; Otto, Gebauer, and Hardtke 2015; Řepka and Grulich 2014; Wallnöfer and Essl 2016).

Carex muskingumensis has been cultivated in Europe as an ornamental plant (Tomaškin, Tomaškinová, and Kizeková 2015). In 1947, it was recorded, for the first time outside cultivation, in the Czech Republic, on a dumping ground in Brno-Pisárky (Grüll 1952; Jedlička 1949; Řepka and Grulich 2014). The species was subsequently reported in 2010 and 2012, in Bohemia along the Vltava River (north of Prague) and in the flood plain forest near Vranovice in southern Moravia, respectively (Řepka and Grulich 2014). In the Czech Republic, the species belongs to the casual alien plants, i.e. “alien species that may flourish and even reproduce occasionally in an area, but which do not form self-replacing populations, and which rely on repeated introductions for their persistence” (Pyšek, Sadlo, and Mandak 2002). In Germany, *Carex muskingumensis* appeared outside cultivation in 1992 (Gregor et al. 2012; Kramer 1992; Otto, Gebauer, and Hardtke 2015). In Austria, the sedge was discovered in 2002 along a rivulet downstream from a market garden near the western border of Vienna (Wallnöfer and Essl 2016). In 2003, *Carex muskingumensis* was for the first time recorded in the Netherlands (in Bommel, Gelderland), and has been found in numerous localities since, particularly in the provinces of Gelderland and Noord-Brabant (Koopman 2015b; van der Meijden and Holverda 2006). In Sweden, the species has been known since 2007 as a casual species (Karlsson 2003; Karlsson and Ågestam 2014). It has also been reported from Belgium, for the first time in

2010 in Nieuwerkerken (Lambinon and Verloove 2012; Verloove 2016).

The newly discovered locality of *Carex muskingumensis* is situated in south-eastern Poland, near the village of Uście Gorlickie. Two clumps of *Carex muskingumensis* were found growing in the near-shore zone of a dam reservoir on the river Ropa near Lake Klimkowskie. One clump consisted of several hundreds of stems, including about 30 generative ones; the other clump consisted of several tens of stems, including six generative ones. At a low water level, the population grew on the muddy bottom of the reservoir (in our estimation, at a normal water level the sedge patches have to be immersed down to a depth of about 20–30 cm). The sedges were accompanied by a mass occurrence of *Eleocharis acicularis* (L.) Roem. & Schult. and scattered specimens of *Veronica anagallis-aquatica* L., *Juncus compressus* Jacq. and *Epilobium adnatum* Griseb. The first Polish report dates from 2015; like in other European countries, the species is considered to be an ephemerophyte. However, on account of its resistance to temperature changes, the lack of any particular requirements as to the soil type (the sedge usually prefers moist and moderately shaded sites, but can also grow in dry and sunny localities), as well as its ability to vigorously vegetative reproduce (Tomaškin, Tomaškinová, and Kizeková 2015), the occurrence of the sedge should be monitored and new stands recorded and reported.

Taxonomic notes

Carex muskingumensis belongs to the section *Ovales* Kunth, which is the largest in the subgenus *Vignea* (Beauv. ex Lestib.) Peterm. and contains ca. 85 species (Egorova 1999; Mastroggiuseppe et al. 2002). Members of the section *Ovales* have dense spiciform or capitate inflorescence with typically gynaeceous spikes. Generally, the main morphological characteristics of the section *Ovales* are flattened, usually plano-convex utricles, membranous, with a narrow denticulate wing, short-bidentate beak, fruit smaller than utricle, and bracts glumaceous, with the lowest ones sometimes narrow-leaf-like (see also Chater 1980; Egorova 1999; Mastroggiuseppe et al. 2002).

Examined specimens (new record)

POLAND: Beskid Niski Mts., Uście Gorlickie (EG28), silted bottom of the dried-up lagoon, alt. 385, 49°31'51" N, 22°07'57" E, alt. 192 m, 27 Oct 2015, K. Oklejewicz (KRA).

Crataegus macrocarpa Hegetschw. (Rosaceae)

Contributor – Gergely Király

Distribution and habitat

Crataegus macrocarpa is widespread or scattered in northern Central Europe (Czech Republic, Germany),

but rather rare in Northern Europe and southern and eastern Central Europe (Austria, Baltic regions, Hungary, Poland, Scandinavia, Slovakia) (Christensen 1992; Gostyńska-Jakusewska and Hrabětová-Uhrová 1981; Kerényi-Nagy 2015; Kurtto, Sennikov, and Lampinen 2013; Oklejewicz et al. 2014; Schmidt 2002). It grows in similar habitats (e.g. forest fringes, woody pastures, and open forests) as per other hawthorn species, mainly on mesic, neutral soils. In the northern part of its range it reaches the lowlands, in the south-eastern part its occurrences are rather restricted to the submontane belt with *Fagetalia* forest communities.

Crataegus macrocarpa had no reliable records from Romania (Ciocârlan 2009; Kurtto, Sennikov, and Lampinen 2013). The species was found in the Meseş Mts (Central Transylvania) in 2014, wherein the locality is situated approx. 200 km SE of its previously known eastern edge of range in NE Hungary. However, it is a typical poorly known, often overlooked taxon; therefore, further observations are expected in the submontane regions of W Romania.

Taxonomic notes

Notwithstanding the relatively low number of accepted species in Europe, the genus *Crataegus* is often considered to be both taxonomically and nomenclaturally an especially complicated group. *Crataegus macrocarpa* itself is an entity of hybrid origin; however, its status and synonymy have been widely discussed (Byatt 1976; Christensen 1992; Franco 1968). Recently, it has generally been treated as a hybrid of *Crataegus laevigata* (Poir.) DC. and *Crataegus rhiphydophylla* Gand. (Kurtto, Sennikov, and Lampinen 2013; Lippert 1995), which has, nevertheless, a coherent distribution area. According to sometimes controversial identification keys (Holub and Zázvorka 2002; Schmidt 2002; Fischer, Adler, and Oswald 2008; Kerényi-Nagy 2015) *Crataegus macrocarpa* has 1–3 styles and nutlets (*Crataegus laevigata*: 2, exceptionally 1 or 3; *Crataegus* × *media* Bechst.: 1–2); and narrow, long sepals (*Crataegus laevigata* and *Crataegus* × *media* have broad, short sepals). Furthermore, *Crataegus macrocarpa* is also distinguishable from *Crataegus laevigata* by the deeper lobed leaves.

Examined specimen (new record)

ROMANIA: Sălaj County, Meseş Mts, 1.4 km SE of Mirşid, near the road to Moigrad, abandoned hilly pasture with bushes (among oak-hornbeam forest patches), alt. 351 m, 47°13'13" N; 23°08'39" E, 24 July 2014, G. Király (BP).

Dactylorhiza lapponica (Laest. ex Hartm.) Soó (Orchidaceae)

Dactylorhiza traunsteineri subsp. *lapponica* (Laest. ex Hartm.) Soó

Contributors – Attila V. Molnár, Miklós Óvári

Distribution and habitat

The known distribution area of *Dactylorhiza lapponica* covers northern Europe, the Alps and the northern Carpathians (Delforge 2006; Vlčko, Dítě, and Kolník 2003). Presence of the species in some Central European countries has been detected only during recent decades, e.g. Austria and Switzerland (Reinhard 1985), Germany (Gallerach and Wucherpfennig 1987), France (Amardeilh 1997), Slovakia (Vlčko 1995) and Hungary (Dítě, Eliáš, and Király 2006). *Dactylorhiza lapponica* grows in low-herb communities of springs and fens, and along mountain streams (Dítě, Eliáš, and Király 2006). The species occurs from lowlands to alpine altitudinal zones (Delforge 2006). Occurrence of *Dactylorhiza lapponica* in Romanian was previously unknown. Overlooked herbarium sheets collected 50 years ago, together with a newly found locality, represent the most south-eastern known population of the species. The habitat of the newly found locality near Călățele is characterized by slightly acidic soil (pH 6.0), with high (15.4%) organic matter content and very low carbonate (< 0.05%), phosphorous (60 mg/kg), potassium (174 mg/kg) and nitrogen (58.8 mg/kg) content.

Taxonomic notes

Dactylorhiza lapponica belongs to the allotetraploid complex *Dactylorhiza majalis* s. l. (Aagaard et al. 2005). The members of this complex originated as results of repeated hybridization events between the diploid taxa *Dactylorhiza incarnata* (L.) Soó and *Dactylorhiza fuchsii* (Druce) Soó (Devos et al. 2003; Hedrén 1996). Among the main characters allowing to distinguish *Dactylorhiza lapponica* from morphologically most similar *Dactylorhiza majalis* (Rchb.) P.F.Hunt & Summerh., the most important are: lower flowering stem (10–40 cm vs. 20–90 cm high), fewer (2–5 vs. 4–10) and narrower (3–25 mm vs. 15–35 mm width) leaves, fewer (3–20 vs. 10–60) flowers and shorter (20–70 mm vs. 20–160 long) inflorescence, respectively.

Examined specimens (new records)

ROMANIA: Jud. Cluj, Munții Giláului, Băișoara, “In loco paludoso, montis ‘Öreg Havas’ montium ‘Gyalui Havas’. Alt. cca. 1600 m super mare. Prope pagum Kisbánya, comitatis Kolozs.”, 23 August 1956, D. Pázmány & E. Jeney sn., as “*Orchis morio* L.?”; rev.: A. Molnár V. as “*D. lapponica* (Laest. ex Hartm.) Soó” (BP 684168); the next herbarium sheet (BP 684402) collected on the same locality, at same date, originally identified as: “*Orchis sambucina* L.”; rev.: A. Molnár V. as “*D. lapponica* (Laest. ex Hartm.) Soó”; Jud. Cluj, near Călățele (46.72654° N, 23.03298° E, 948 m alt.), wet hay meadows, 11 June 2015, A. Molnár V. & M. Óvári sn. (DE).

Lagurus ovatus subsp. *nanus* (Guss.) Messeri (Poaceae)

Contributors – Gianniantonio Domina, Marjol Meço, Alfred Mullaj

Distribution and habitat

Lagurus ovatus subsp. *nanus* was previously known from Morocco, Spain, peninsular Italy, Sicily, Egypt, Israel and Greece (Euro+Med Plantbase 2017). In southern Albania it was found in a waste area along the coast. On the contrary, *Lagurus* subsp. *ovatus* is the most common subspecies occurring in the rest of the coast of Albania.

Taxonomic notes

Three subspecies of *Lagurus ovatus* L. are known from the Mediterranean basin: *Lagurus ovatus* subsp. *ovatus*, *Lagurus ovatus* subsp. *nanus* (Guss.) Messeri and *Lagurus ovatus* subsp. *vestitus* (Messeri) Brullo.

Lagurus ovatus subsp. *nanus* is an appressed plant, very much branched with sub-rounded spikes and glumes that have short, rare, hairs up to the apex. On the contrary, *Lagurus ovatus* subsp. *ovatus* and *Lagurus ovatus* subsp. *vestitus* are erect plants, with few branches and glumes with long hairs (Messeri 1942).

Examined specimens (new record)

ALBANIA: Vlorë district, Orikum, 40°19'14" N 19°25'32" E, 5 m a.s.l., sandy coastal area, 28 April 2015, G. Domina & M. Meço s.n. (PAL).

Najas guadelupensis (Spreng.) Magnus (Najadaceae)

Contributors – Gergely Király, Angéla Király

Distribution and habitat

Najas guadelupensis is native to the Americas, widespread in the USA as far north as the Canadian borderland, and scattered in Mexico, the West Indies and South America (Haynes 1979, 2000). Within the native range it shows some invasive tendency, mainly in artificial aquatic habitats (channels, ponds) (DiTomaso and Healy 2003; DiTomaso et al. 2013), and in rice fields (Seaman 1983); due to its supposed invasive potential it is classified as a “high risk plant” in some countries (e.g. New Zealand: Champion, de Winton, and Clayton 2014). It is known as an aquarium plant (Mühlberg 1980); however, notwithstanding other aquatic plants with cross-border trade (e.g. *Elodea* spp.), expressly few and relatively late introductions were recorded outside of the native range. It was found in N. Israel (Witztum and Chaouat 1991), supposedly as a result of the fish trade, and, as first in Europe, in Slovakia (Kaplan 2010) in thermal waters, probably intentionally planted.

The species has already been reported from Hungary, but only on the checklist of aquatic aliens (Lukács et al. 2016), and it was introduced into the Hungarian identification key (Király 2009); nevertheless, accurate localities and habitats have not yet been published from the country. *Najas guadelupensis* was found in Hungary at two localities, always in connection with thermal water. In Budapest it was probably intentionally planted on thermal lakes fed by natural warm springs, though this stand has recently disappeared. On the contrary, the species has a stable occurrence in the water body of Tapolca Creek, which is an outflow of the thermal spring “Lake Cave”. Here, it grows together with other exotic aliens (e.g. *Egeria densa* Planch., *Hydrocotyle ranunculoides* L. f., *Vallisneria* spp.), and its further spread is probably blocked even by the neighboring stronger invaders. Despite the recently limited invasion in this locality, the species is still a potential threat to the aquatic habitats of Hungary and the Pannonian Basin, especially in the region of Lake Balaton, which is rich in channels and rivers connected to thermal springs.

Taxonomic notes

Najas guadelupensis belongs to the subgenus *Caulinia* (Willd.) Rendle, which comprises monoecious species with slender stem and leaves, generally (excluding *N. minor* All.) without spines on the stem internodes and the leaf midrib. The subgenus has three native (*N. minor*, *N. flexilis* (Willd.) Rostk. & Schmidt and *N. tenuissima* (A. Braun) Magnus), and three introduced (*Najas gracillima* (A. Braun ex Engelm.) Magnus, *Najas graminea* Del. and *Najas guadelupensis*) species in Europe. Compared to the similar representatives of the subgenus, *Najas guadelupensis* differs from *Najas tenuissima* and *Najas gracillima* by having unicellular leaf teeth (both of the latter have multicellular teeth), and from *Najas graminea* by the rounded to truncate leaf sheaths and pitted seeds (the latter has deeply auriculate leaf sheaths and smooth seeds), respectively (Haynes 1979, 2000; Triest 1988). Hybrids of *Najas guadelupensis* have been demonstrated with the phylogenetic sister *Najas flexilis* (Les, Sheldon, and Tippery 2010). *Najas guadelupensis* is a polymorphic species; its infraspecific taxa have been assessed in different ways: as varieties or subspecies (Haynes 1979, 2000).

Examined specimens (new records)

HUNGARY: Budapest, Margaret Island (Margitsziget), small artificial thermal ponds, alt. 104 m, 47°32'05" N; 19°03'09" E, 13 October 2006, G. Király, I. Dancza (herbarium of G. Király); Veszprém County, Tapolca, 0.5 km S of the Tapolca “Lake Cave” in the natural thermal water of the slowly flowing Tapolca Creek, alt. 116 m, 47°13'13" N; 23°08'39" E, 3 November 2007, A. Király, G. Király, R. Vidéki (BP)

Opuntia stricta (Haw.) Haw. (Cactaceae)

Contributors – Gianniantonio Domina, Giuseppe Bazan

Distribution and habitat

Opuntia stricta is native to SW USA, Cuba and the Bahamas islands (Anderson 2001; Berthet 1990). It has been introduced in North and South America, North and Central Africa, Europe, East Asia, East Australia (Hochstätter 2015; Nobel 1988). In the Mediterranean, it is reported as naturalized in Algeria, France, peninsular Italy, Libya, Morocco, Sicily, Spain and Tunisia (African Plant Database 2017; DAISIE 2017) and it is expanding further, becoming even more aggressive in the most fragile habitats, such as small islands (Celesti-Grapow et al. 2010, 2016).

Opuntia stricta was found with few individuals at Përmet in a waste area among the ruins of an abandoned Italian military building dating back to the Second World War. This species is infrequently cultivated along the coast and in the basal belt in Albania. For this country, it can be considered a casual alien species.

Taxonomic notes

Opuntia stricta is a prostrated or erect shrub up to 1 m tall; stem segments up to 20–30 cm; areoles without spines, or occasionally one; fruit to 6 cm long, purplish red (Anderson 2001). These characteristics easily distinguish this species from *Opuntia ficus-indica* (L.) Mill., cultivated and naturalized along the coast and basal belt of Albania.

Examined specimens (new record)

ALBANIA: Përmet district, Përmet, 40°13'42" N, 20°21'22" E, 250 m a.s.l., casual alien among the ruins of an abandoned military building, 27 June 2015, G. Domina & G. Bazan s.n. (PAL).

Orobancha serbica Beck & Petrovič (Orobanchaceae)

Contributors – Gianniantonio Domina, Giuseppe Bazan

Distribution and habitat

The species is a parasite of *Artemisia alba* Turra, described from Serbia and subsequently found in Bulgaria (Beck 1890). Recently, it was also recorded in S. France and Spain (Carlón et al. 2005, under the name *Orobancha ozanonis* F.W.Schmidt ex Beck).

In Albania, it was found in dozens of mature individuals on *Artemisia alba*, in the Mount Dhëmbel on the NE slope overlooking the village of Përmet, between 900 and 1300 m above the sea level.

Taxonomic notes

Orobancha serbica was initially considered close to *O. alba* Willd. (Beck 1890), but the absence of red glandular

hairs on the flowers and the small size of the corolla noted by Carlón et al. (2008), and also observed on the Albanian plants, suggests that it is taxonomically closer to the group of *Orobanche minor* Sm.

Examined specimens (new record)

ALBANIA: Përmet district, Dhëmbel Mt., 40°12'22" N. 20°20'3" E, 950 m a.s.l., parasite on *Artemisia alba*, 28 June 2015, G. Domina & G. Bazan s.n. (PAL).

Oxalis articulata Savigny (Oxalidaceae)

Contributors – Gianniantonio Domina, Marjol Meço, Alfred Mullaj

Distribution and habitat

Oxalis articulata is native to East temperate and South America. In Europe and in the Mediterranean, it is reported as naturalized in Algeria, Croatia, France, Germany, Greece, Iberian Peninsula, Italy, Libya, Norway, Slovenia, Turkey and the United Kingdom (African Plant Database 2017; DAISIE 2017; Euro+Med Plantbase 2017). In the most recent floras of Albania (Pils 2016; Qosja et al. 1992; Vangjeli 2015), only the native *Oxalis acetosella* L. and *Oxalis corniculata* L. and the exotic *Oxalis dillenii* Jacq., *Oxalis fontana* Bunge, *Oxalis pes-caprae* L. and *Oxalis stricta* L. have been reported.

In Albania, the species is cultivated for ornamental reasons along the coast and near villages. For this country, it can be considered a casual alien species.

Taxonomic notes

This species can be easily distinguished from the other species of *Oxalis* reported from Albania by the pink colour of the corollas and the rhizome, which is made up of many roundish segments.

Examined specimens (new record)

ALBANIA: Lushnjë district, Tërbuf, 41°3'12" N 19°38'58" E, 20 m a.s.l., base of a perimeter wall of a parking area, 27 April 2015, G. Domina & M. Meço s.n. (PAL).

Sedum rubens L. (Crassulaceae)

Contributors – Marcin Nobis, Agnieszka Nobis, Anna Wróbel

Distribution and habitat

Sedum rubens originates from Eastern Mediterranean ('T Hart and Eggli 2003). The species is distributed mainly in the Mediterranean region, i.e. in southern Europe, northern Africa, Asia Minor and the Canary Islands; it is also noted in Central Europe, Crimea and northern Iran (Carlström 1985; Jäger and Werner 2002; 'T Hart and Eggli 2003; Webb, Akeroyd, and 'T Hart 2007). The species occurs within dry, stony or gravel habitats on different soil types, between ca. 0–2000 m a.s.l. (Jäger and Werner 2002; 'T Hart and Eggli 2003).

In Central Europe, *Sedum rubens* has been observed in Germany (Rothmaler, Jäger and Werner 2002); besides, in Slovakia the species is regarded as rarely escaping from cultivation (Bertová 1985). Until now, *Sedum rubens* has not been noted in Poland (Mirek et al. 2002; Pawłowska 1955; Rutkowski 1998). In 2014, however, the occurrence of *Sedum rubens* was reported from Kraków, Poland. In Kraków it has been observed for a few years on gravel-stony habitats within anthropogenic sites, i.e. along tramway tracks, and its populations are abundant, consisting of ca. hundreds of individuals. *Sedum rubens* should be considered an alien taxon to the Polish flora, and as a local epiphyte.

Taxonomic notes

In Poland, *Sedum rubens* may be confused with the somewhat morphologically similar *Sedum album* L., a species currently spreading in the country (Tokarska-Guzik 2005). However, *Sedum rubens* differs from the latter in shape of flowers and petals. Besides, it is an annual plant, while *Sedum album* is a perennial (Webb, Akeroyd, and 'T Hart 2007).

Examined specimens (new records)

POLAND: Kraków, Kurdwanów, Witosa St., tramway tracks, May–June 2014, 2015, 2016, 2017, obs. A. Nobis, M. Nobis; 16 May 2016 M. Nobis s.n. (KRA); Kraków, Zakrzówek, Pychowicka St., gravel square (parking), May 2016, obs. M. Nobis.

Vitis × instabilis Ardenghi, Galasso, Banfi & Lastrucci (Vitaceae)

V. riparia Michaux × *V. rupestris* Scheele

Contributors – Gianniantonio Domina, Giuseppe Bazan

Distribution and habitat

Rootstock hybrid originating in Europe. It is known as a casual or naturalized alien in Greece, Italy and Spain (Ardenghi et al. 2014). Rootstock taxa often occur naturalized in agricultural areas, spreading by vegetative or sexual reproduction. In Albania, this nothospecies was observed in the Përmet district in several localities in agricultural areas. In Pils (2016, 296), a photo of this hybrid rootstock is labelled as *Vitis vinifera* subsp. *sylvestris* (C.C.Gmel.) Hegi.

Taxonomic notes

Recently, all the hybrid rootstocks commonly used since the last century in Italy have been named (Ardenghi et al. 2014) which intensified the floristic survey of these alien taxa in the Italian territory and the surrounding areas (Ardenghi, Banfi, and Galasso 2015). The identification of this nothotaxon was conducted on the basis of the key and morphological description in Ardenghi et al. (2014).

Examined specimens (new records)

ALBANIA: Përmet district, Qendër, 40°16'50" N, 20°16'55" E, 250 m a.s.l., edge of a field cultivated with cereals, 27 June 2015, *G. Domina & G. Bazan s.n.* (PAL); Përmet district, Petran, 40°13'39" N, 20°22'25" E, 250 m a.s.l., edge of a vineyard, 27 June 2015, *G. Domina & G. Bazan s.n.* (PAL).

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Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Marcin Nobis is a researcher and assistant professor of the Institute of Botany Jagiellonian University in Kraków, and curator of the KRA herbarium. His main research fields

are taxonomy, chorology, phylogeny and ecology of native and non-native vascular plants of central Europe and central Asia. The author's contributions comprised the idea and project coordination, field and/or laboratory research, and preparation of the manuscript.

Gianniantonio Domina is a researcher at the Department of Agriculture and Forest Sciences, University of Palermo, and General Secretary of OPTIMA (Organization for the Phyto-Taxonomic Investigation of the Mediterranean Area). His main research fields are taxonomy and chorology of Mediterranean vascular flora. The author's contributions comprised field work and preparation of selected parts of the manuscript.

Marjol Meço is a PhD student and assistant of Plant Systematic in the Department of Biology, Faculty of Natural Sciences, University of Tirana. The author's contributions comprised field work and preparation of selected parts of the manuscript.

Alfred Mullaj is a professor at the Research Center for Flora and Fauna, Faculty of Natural Sciences, University of Tirana. The author's contributions comprised revision of the herbarium material and preparation of selected parts of the manuscript.

Giuseppe Bazan is professor at the Department of Biological, Chemical and Pharmaceutical Sciences and Technologies, University of Palermo. The author's contributions comprised field work and preparation of selected parts of the manuscript.

Aleksandr L. Ebel is a professor at the Department of Botany and a researcher at the Laboratory of Systematics and Phylogeny of Plants at Tomsk State University. He is working on the systematics of flowering plants, and the diversity and biogeography of vascular plants of Siberia and Kazakhstan. The author's contributions comprised field and laboratory research and preparation of selected parts of the manuscript.

Gergely Király (Sopron, Hungary) has experience in taxonomy, chorology and floristics of Central European flora and nature conservation. He has participated in several national and European projects on alien plant species and Red Lists of threatened vascular plants. The author's contributions comprised field studies and preparation of selected parts of the manuscript.

Andrey Erst (Central Siberian Botanical Garden, Russian Academy of Sciences and Tomsk State University). His main research fields are taxonomy and chorology of native flora of some Asian mountains, and taxonomy and phylogeny of vascular plants (especially Ranunculaceae). The author's contribution comprised preparation of selected parts of the manuscript.

Arkadiusz Nowak has worked on the syntaxonomy of Middle Asian vegetation, with special focus on forest, scree, rock, segetal and riparian vegetation, for more than 11 years. He has conducted many field studies in Tajikistan, Kyrgyzstan and Uzbekistan. The author's contributions comprised field studies and preparation of selected parts of the manuscript.

Alexander P. Sukhorukov, Dr. Sci. since 2016, is the leading scientist at the Department of Higher Plants, Biological faculty, Moscow M.V. Lomonosov State University, professor

of Chinese Academy of Sciences (since 2012) and member of the Russian Botanical Society and Botanical Society of America. His main research fields are flora of Russia; flora of the Himalayas; flora of Africa; plant anatomy; and taxonomic, carpological, and molecular revisions of Chenopodiaceae, Molluginaceae, Nyctaginaceae and Asteraceae. A.S. is the author or co-author of the taxonomic treatments of some families in the manual identifications of European Russia and Caucasus, as well as Flora of China, Flora of Iraq, Flora of Palestine, Flora of Russia (general editor), and Flora of Central Africa projects. The author's contributions comprised revision of the herbarium collections and preparation of selected parts of the manuscript (Amaranthaceae).

Elena B. Pospelova's interests cover taxonomy and chorology of vascular plants. The author contributed in preparing selected parts of the manuscript.

Igor N. Pospelov's interests cover taxonomy and chorology of vascular plants. The author contributed in preparing selected parts of the manuscript.

Vladimir M. Vasjukov is a researcher at the Institute of ecology of the Volga river basin of the Russian Academy of Sciences. The author contributed in preparing selected parts of the manuscript.

Renata Piwowarczyk, (UJK, Kielce). The author's main research fields are parasitic plants (Orobanchaceae), systematic botany, plant ecology, plant biology and phylogenetics. The author conducted fieldwork in the Caucasus, and contributed to the preparation of selected parts of the manuscript.

Alexey P. Seregin is a head of the Moscow University Herbarium (MW). Being a founder of the *Moscow Digital Herbarium* initiative, he is now administrating digitization of the major Russian herbaria. His main research interests are plant recording and taxonomy of the genus *Allium*. The author's contributions comprised laboratory research and preparation of selected parts of the manuscript.

Angéla Király interests cover taxonomy, chorology and floristics of the Central European flora and nature conservation. The author's contributions comprised preparing selected part of the manuscript.

Maria Kushunina is a researcher at the Department of Plant Physiology, Biological Faculty, Lomonosov Moscow State University. Her main research interests are plant anatomy, plant distribution, plant mineral nutrition and plant taxonomy. The author's contribution comprised preparation of selected parts of the manuscript (Amaranthaceae).

Bing Liu is a researcher at the Institute of Botany, Chinese Academy of Sciences, currently working on taxonomy and biogeography of Chinese flora. The author co-wrote selected parts of manuscript.

Attila V. Molnár interests cover taxonomy, chorology and ecology of vascular plants (especially orchids). The author's contributions comprised field research and preparation of selected parts of the manuscript.

Marina Olonova (Biological Institute of Tomsk State University) has worked on the systematics and evolution of bluegrasses more than 40 years. She has conducted many

field studies in Siberia, China and Tajikistan, focusing on their diversity, systematics and biogeography. The author's contributions comprised analyses of data and preparation of selected parts of the manuscript.

Miklós Óvári interests cover taxonomy, chorology and ecology of vascular plants (especially orchids). The author's contributions comprised field research and preparation of selected parts of the manuscript.

Beata Paszko is an agrostologist interested in the taxonomy of selected grass genera, i.e. *Agrostis*, *Calamagrostis*, *Deschampsia*, *Deyeuxia* and *Zingeria*, based on morphology, anatomy, cytology and molecular markers. The author's contributions comprised revision of herbarium materials and preparation of selected parts of the manuscript.

Chen You-Sheng interests cover taxonomy and chorology of vascular plants. The author's contributions comprised preparing selected parts of the manuscript.

Alla V. Verkhovina is a Head of Group Herbarium (IRK) of the Siberian Institute of Plant Physiology & Biochemistry at Irkutsk. Her main research interests are the study of flora of Baikal Siberia. The author's contributions comprised field and laboratory research and preparation of selected parts of the manuscript.

Elena Yu. Zytkova is a researcher at the Laboratory Herbarium (NS) of the Central Siberian Botanical Garden at Novosibirsk. Her main research interests are study of the alien flora of Southern Siberia. The author's contributions comprised field and laboratory research and preparation of selected parts of the manuscript.

Ewelina Klichowska is a PhD student at the Institute of Botany, Jagiellonian University. Her main interests include systematics, evolution and ecology of the genus *Stipa*. The author's contribution comprised preparation of selected parts of the manuscript.

Agnieszka Nobis is a botanist interested mainly in the distribution model of vascular plants in river valleys and the explanation of river corridor plant distribution patterns. The author's contributions comprised field studies and preparation of selected parts of the manuscript.

Anna Wróbel is a third-year student of biology at Jagiellonian University, Krakow, Poland. The author co-wrote selected parts of manuscript.

Zübeyde U. Aydın is a researcher of the Laboratory of Molecular Plant Systematic (MOBİS) at Hacettepe University. Her research interests are phylogeny and taxonomy of the genus *Pyrus*. The author's contributions comprised field work and preparation of selected parts of the manuscript.

Ali A. Dönmez is a professor at the Hacettepe University (Turkey) faculty of science and working on systematics, diversity and phylogeny of Rosaceae and Orobanchaceae in Turkey. The author contributed to the taxonomic discussion and improvement of selected parts of the manuscript.

Parvana Garakhani is a researcher at the Academy of Sciences of Azerbaijan. Her research interests are flora of Azerbaijan and taxonomy of the genus *Crocus*. The author's contributions comprised field work.

Jacob Koopman is a Dutch botanist who has lived in Poland (Choszczno) since 2005 and is currently a PhD student at Szczecin University. His main interests include the nomenclature, taxonomy, ecology and distribution of the genus *Carex* and its hybrids. The author's contribution comprised revision of the herbarium material.

Andrey Korolyuk, Dr. Sci. since 2002, head of laboratory in Central Siberian Botanical Garden SB RAS (Novosibirsk, Russia). His main research fields are the vegetation of arid and subarid regions of Asia, syntaxonomy of grasslands and remote sensing of ecosystems. The author's contribution comprised preparation of selected parts of the manuscript.

Krzysztof Oklejewicz is a head of the Department of Botany, Rzeszów University (Poland). His main research interests are plant chorology and taxonomy of the genus *Rubus*, *Crataegus* and *Taraxacum*. The author's contributions comprised field studies and preparation of selected parts of the manuscript.

Tunzala Qasimova is a researcher at the Academy of Sciences of Azerbaijan. Her research interests are flora of Azerbaijan and taxonomy of the genus *Sorbus*. The author's contribution comprised field work.

Wei Wang (State Key Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences in Beijing) is an associate professor at the Institute of Botany, Chinese Academy of Sciences. His main research fields are taxonomy, phylogeny and biogeography of land plants. The author contributed in the preparation of selected parts of the manuscript.

Helena Więclaw is a researcher of Department of Plant Taxonomy and Phytogeography, Faculty of Biology, Szczecin University. Her main interests include the taxonomy, ecology and distribution of the genus *Carex*. The author's contributions comprised revision of the herbarium material and preparation of selected parts of the manuscript.

Mateusz Wolanin is a researcher at the University of Rzeszów (Poland), currently working on taxonomy and chorology of dandelions and blackberries in Poland. The author co-wrote selected parts of manuscript.

Kunli Xiang is a PhD student at the Institute of Botany, Chinese Academy of Sciences. She is interested in taxonomy and phylogeny of angiosperms (especially in Ranunculaceae). The author contributed to the preparation of selected parts of the manuscript.

ORCID

Giannantonio Domina  <http://orcid.org/0000-0003-4184-398X>

Alexander P. Sukhorukov  <http://orcid.org/0000-0003-2220-826X>

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