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To cite this article: Marcin Nobis, Andrey Erst, Arkadiusz Nowak, Dmitry Shaulo, Marina Olonova, Yuriy Kotukhov, Asli Doğru-Koca, Ali A. Dönmez, Gergely Király, Aleksandr L. Ebel, Maria Kushunina, Renata Piwowarczyk, Alexander P. Sukhorukov, Agnieszka Nobis, Filip Verloove, Joanna Zalewska-Gałosz, Golshan Zare, Jean-François Burri, Danko Caković, Elżbieta Jędrzejczak, Nejc Jogan, Ewelina Klichowska, Artur Pliszko, Anton V. Popovich, Danijela Stešević, Urban Šilc, Natalia Tupitsyna, Vladimir M. Vasjukov, Wei Wang, Philippe Werner, Magdalena N. Wolanin, Mateusz M. Wolanin & Kun-Li Xiang (2017) Contribution to the flora of Asian and European countries: new national and regional vascular plant records, 6, Botany Letters, 164:1, 23-45, DOI: [10.1080/23818107.2016.1273134](https://doi.org/10.1080/23818107.2016.1273134)

To link to this article: <http://dx.doi.org/10.1080/23818107.2016.1273134>



Published online: 15 Mar 2017.



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Contribution to the flora of Asian and European countries: new national and regional vascular plant records, 6

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ABSTRACT

The paper presents new records for 28 vascular plant species from 14 Eurasian countries. Five taxa (*Catabrosa capusii*, *Poa albertii*, *Poa intricata*, *Poa pseudoaltaica*, *Poa sergievskajae*) are reported from Kazakhstan, three (*Ranunculus pseudomonophyllus*, *Ranunculus smirnovii*, *Ranunculus turczaninowii*) from Mongolia, three (*Panicum barbipulvinatum*, *Stipa eriocaulis*, *Tragopogon pratensis* subsp. *minor*) from Poland, three (*Euphorbia subtilis*, *Corydalis grubovii*, *Thymus callieri*) from Russia, two (*Atriplex ornata*, *Corispermum dutreuilii*) from Afghanistan, two (*Orobancha grenieri*, *Ranunculus mongolicus*) from Kyrgyzstan, two (*Erigeron annuus*, *Sternbergia lutea*) from Tajikistan, two (*Orobancha baumanniorum*, *Orobancha kotschyi*) from Turkey, one (*Polygonum subaphyllum*) from China, one (*Orobancha bartlingii*) from Georgia, one (*Rubus slavonicus*) from Germany, one (*Cenchrus spinifex*) from Montenegro, one (*Rubus canadensis*) from Slovenia and one (*Bolboschoenus yagara*) from Switzerland. For each species, synonyms, general distribution, habitat preferences, taxonomy with remarks on recognition and differentiation of 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.

ARTICLE HISTORY

Received 22 September 2016
Accepted 10 December 2016

KEYWORDS

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

Introduction

This paper is the continuation of the previous works dedicated to new national and regional vascular plant records (Nobis, Nowak et al. 2014, 2015, 2016; Nobis, Ebel et al. 2014, 2015). During field exploration across the vast area of European and Asian countries as well as during taxonomic revisions of herbarium materials of different

groups of vascular plants, the authors found some species that are new to the floras of particular countries or to their significant regions. The aim of this paper is to report new records for 28 vascular plant species from 14 Eurasian countries, namely Afghanistan, China, Georgia, Germany, Kazakhstan, Kyrgyzstan, Mongolia, Montenegro, Poland, Russia, Slovenia, Switzerland, Tajikistan and Turkey.

New records for Asian countries

Atriplex ornata Iljin (Chenopodiaceae–Amaranthaceae)

Contributor – Alexander P. Sukhorukov, Maria Kushunina

Distribution and habitat

Atriplex ornata is an annual psammophytic species with predominant distribution in the deserts of southern Kazakhstan, Uzbekistan, Tajikistan, Turkmenistan and northern Iran (Hedge 1997; Sukhorukov 2006). The exact distribution is still not evident, and the number of specimens in major European and Asian herbaria does not exceed 20. It should be noted that most Chenopodiaceae species from western China and Himalayas are under-collected and, partly for this reason, taxonomically critical (Sukhorukov 2011; Uotila 2013; Sukhorukov and Kushunina 2014; Sukhorukov, Zhang, and Kushunina 2015; Nobis, Ebel et al. 2015; Nobis, Nowak et al. 2016). After revision of the material preserved at MSB herbarium, we report a new record of *A. ornata* for the flora of Afghanistan. Northern parts of Afghanistan and Iran are probably the southern limits of the species range.

Taxonomic notes

Atriplex ornata is a member of the large C_4 *Atriplex* clade uniting the species from all continents (Kadereit et al. 2010). Sukhorukov (2006) placed *A. ornata* and *Atriplex dimorphostegia* Kar. & Kir. in a separate section *Psammophila* Sukhor. based on the presence of black (unusual seed colour in C_4 lineage) and brown seed types. The shape of the valves enclosing the fruit is the main difference between these taxa (trilobed in *A. ornata* and roundish or ovate in *A. dimorphostegia*). Additionally, the latter species fruits in May and June (depending on the region), while *A. ornata* fruits from July to September. Unlike *A. ornata*, *A. dimorphostegia* is widely distributed from northern Africa to western China (Hedge 1997; Sukhorukov 2006).

Examined specimens (new records)

AFGHANISTAN: Faryab province, 38 km SW von Andkhoy an der Strasse nach Maimana [38 km SW from Andkhoy to Maimana], 360 m, 7 October 1969, D. Podlech 16,968 (MSB-121,363); Faryab province, Dashti-Laili, 40 km ONO von Dawlatabad an der Strasse nach Sheberghan [40 km ENE from Dawlatabad to Sheberghan], 450 m, 7 October 1970, D. Podlech 19,813 (MSB-121,364).

Catabrosa capusii Franch. (Poaceae)

Catabrosa aquatica subsp. *capusii* (Franch.) Tzvel.

Contributors – Aleksandr L. Ebel, Marcin Nobis

Distribution and habitat

Catabrosa capusii is distributed in southwest and Central Asia, from Turkey and Iran in the west to Tajikistan and China eastwards (Kovalevskaya 1968; Wu and Phillips 2006). It grows on riversides, gravels, marshy ground and water meadows, in the middle and upper mountain belts. This species is a new native species to the flora of Kazakhstan, which was recently found in Chu-Ili Mountains.

Taxonomic notes

The genus *Catabrosa* is represented in Central Asia by two species, namely widespread polymorphic species *Catabrosa aquatica* (L.) P. Beauv., and *C. capusii* (Kovalevskaya 1968; Tzvelev 1976; Wu and Phillips 2006). Some taxonomists treat *C. capusii* at subspecific level, or even as a synonym of *C. aquatica*. The latter has open, spreading or loosely contracted panicles with long branches, and greenish-brown or yellowish lemmas, whereas *C. capusii* is characterized by very narrow, dense panicles with very short appressed or suberect branches and sessile spikelets, and blackish-purple or blackish-brown lemmas (Kovalevskaya 1968; Tzvelev 1976; Wu and Phillips 2006). Until recently, only one species of the genus *Catabrosa* was recorded from Kazakhstan, namely *C. aquatica* (Abdulina 1999). But just recently one more species of *Catabrosa* was described from southern Siberia and Central Asia – *Catabrosa ledebourii* Punina & Nosov (Punina et al. 2016). Hence, the revision of the Central Asian specimens from the genus *Catabrosa* is required.

Examined specimens (new record)

KAZAKHSTAN: Zhambyl Oblast, Chu-Ili Mountains, surroundings of town Khantau, creek watercourse. 14 May 2014, A. Ebel s.n. (TK, KRA).

Corispermum dutreuilii Iljin (Chenopodiaceae–Amaranthaceae)

Contributors – Alexander P. Sukhorukov, Maria Kushunina

Distribution and habitat

The psammophytic genus *Corispermum* is still critical in Asia, especially in northern Himalaya and Tibet. The latest investigations show that the most taxonomically valuable trait is fruit anatomy (Sukhorukov 2007), which plays a crucial role in the diagnostics of morphologically similar, but phylogenetically distant taxa (Sukhorukov, Zhang, and Nilova 2014; Zhang and Sukhorukov, in prep.). *Corispermum dutreuilii* Iljin was described from Tajikistan (Iljin 1937), and was recorded in Tibet and adjacent regions of China (Zhu (Chu), Mosyakin, and Clemants 2003). The new record from Afghanistan extends the distribution of this species westwards, into the Karakoram Range.

Taxonomic notes

Three *Corispermum* species were reported from Afghanistan (Hedge 1997): *Corispermum afghanicum* Podlech, *Corispermum lehmannianum* Bunge, and *Corispermum orientale* Lam. However, later the specimens of *C. orientale* were transferred into a new species, *Corispermum rechingeri* Sukhor. (Sukhorukov 2008), the name *C. orientale* was proposed for rejection (Sukhorukov 2008) and the Nomenclature Committee for Vascular Plants voted in favour of this rejection (Applequist 2012). *Corispermum dutreuilii* is placed in a formal “Dutreuilii” carpological group (Sukhorukov 2007), which includes mountainous species distributed in Pamir and adjacent regions. The species is carpologically well studied, and two morphological varieties are known so far – the type variety with glabrous fruits (sometimes with warty outgrowths) and *C. dutreuilii* var. *montanum* Sukhor. with stellate-pubescent fruits (Sukhorukov, Zhang, and Nilova 2014). The specimen cited below and previously identified as *C. afghanicum* has glabrous fruits.

Examined specimens (new record)

AFGHANISTAN: Ghazni province, Dasht-e Nawur, southeast border, 3050 m, sandy places, 17 July 1967, H. Freitag 1519 (MSB-121,637).

Corydalis grubovii Mikhailova (Papaveraceae)

Contributors – Dmitry Shaulo, Andrey Erst, Wei Wang

Distribution and habitat

Corydalis grubovii was described from Mongolia (Khovd Province). It is distributed in Mongolia (Mongolian Altai) and China (Nan Shan) (Gubanov 1996; Mikhailova 1981); however, it has not been included in the latest taxonomic treatment of the Flora of China (Zhang, Su, and Lidén. 2008). The species grows on rocky substrate. *Corydalis grubovii* is a new native species to the flora of Russia.

Taxonomic notes

According to the protologue, *Corydalis grubovii* is distinguished from *Corydalis stricta* Steph. by having larger smooth-edged broadly elliptical deciduous sepals and long bolls (28–35 mm) (Mikhailova 1981). The latter species belongs to the section *Strictae* (Fedde) Wendelbo, which includes 25 species: a very uniform and easily recognized group characterized by leaves with one to three pinnate divisions. Flowers yellow, usually narrow, with short obtuse spur. Inner petals with inconspicuous dorsal crest. Stigma with a small transversely set ellipsoid body with six usually distinct marginal papillae plus two pairs of submarginal papillae close to style (10 papillae altogether). Capsule linear to oblong. Seeds in one row; elaiosome present, set below a protruding hilum area (Zhang, Su, and Lidén. 2008).

Examined specimens (new records)

RUSSIA: Altai Republic, Kosh-Agachsky District, neighbourhoods Chagan-Uzun Village, rock outcrops, 1 July 1951, A. Kuminova, A. Skvortzova s.n. (NS); Altai Republic, Kosh-Agachsky District, Ukok Plateau, river-side of Kalguty River (confluence of Ak-Alakha River), limestone cliff, 27 July 1955, A. Kuminova, I. Listova s.n. (NS); Altai Republic, Kosh-Agachsky District, neighbourhoods Kosh-Agach Village, steppe, 19 August 1962, S. Timokhina s.n. (NS); Altai Republic, Kosh-Agachsky District, middle course of the Tarchata River, clay and gravelly slope, no. 139, 12 July 1982; Altai Republic, clay and gravelly slope, Kosh-Agachsky District, valley of Tarchata River, 49°45' N, 88°30' E, 2400 m, 13 August 1982, M. Lomonosova s.n. (NS); Tuva Republic, Mongun-Taiga District, near Kyzyl-Khaya Village, 15 km to the south, southern slope of Ehren-Karagach Mount, on gravel spots among gravelly scree, 2750 m, 10 August 1980, V. Hanminchun, N. Zdobnina, Yu. Polev n.s. (NS).

Erigeron annuus (L.) Desf. (Asteraceae)

Contributors – Artur Pliszko, Marcin Nobis, Arkadiusz Nowak

Distribution and habitat

Erigeron annuus is native to eastern North America, including the United States and southern Canada (Nesom 2006). It is also well naturalized in Central America (Costa Rica, Nicaragua, Panama), Europe, Asia and Oceania (New Zealand) (Given 1984; Nesom 2006; Chen et al. 2011). It occurs mostly in disturbed habitats such as abandoned fields, roadsides and waste areas, being a common early-successional weed (Stratton 1991). *Erigeron annuus* is treated as an invasive plant in many European countries (Randall 2012 and literature cited therein). It produces a large number of wind-dispersed achenes, i.e. one plant may produce 10,000 to 100,000 achenes in a season (Stratton 1991), so it easily colonizes new areas.

In the *Flora of Tajikistan*, the genus *Erigeron* L. is represented by 25 species (Kochkareva and Zhogoleva 1988), and *E. annuus* is a new alien species to the flora of the country. Several individuals of this taxon were found in anthropogenic habitats, mainly on roadsides in Dushanbe.

Taxonomic notes

Erigeron annuus belongs to *Erigeron* sect. *Phalacroloma* (Cass.) Torr. & A.Gray, which consists of annual to biennial or short-lived perennial plants with branched, strigose to sparsely hirsute stems, oblanceolate and toothed leaves, and with capitula in loose paniculiform or corymbiform synflorescences. The section is restricted to three North American species, namely *E. annuus*, *Erigeron strigosus* Muhl. ex Willd. and *Erigeron tenuis* Torr. & A.Gray (Nesom 2008). In contrast to *E. tenuis*, both

E. annuus and *E. strigosus* produce bristles only on the disc achenes (Nesom 2006). *Erigeron annuus* is superficially very similar to *E. strigosus*, but it has broader leaves and more teeth than the latter. Intermediate morphological features between *E. annuus* and *E. strigosus* are found in *E. strigosus* var. *septentrionalis* (Fernald & Wiegand) Fernald (Nesom 2006). Taking into account cytological and morphological data, Frey, Baltisberger, and Edwards (2003) concluded that *E. strigosus* var. *septentrionalis* should be placed in *E. annuus*. They evidenced that *E. annuus* s. l. (including *E. strigosus* var. *septentrionalis*) is agamospermous and triploid, whereas *E. strigosus* is sexual and di- or tetraploid. Moreover, they also suggested that the “mowing effect” can explain a common confusion between *E. annuus* and *E. strigosus* in Europe. Plants of *E. annuus* that regrow after cutting show a clear morphological resemblance to *E. strigosus* var. *septentrionalis*. Considering the placement of *E. strigosus* var. *septentrionalis* in *E. annuus* s. l., it is important to reevaluate the occurrence of *E. strigosus* s. str. out of its native range.

Examined specimens (new records)

TAJIKISTAN: Dushanbe, 110 microregion, on the roadside on the S. Sherozi St. (near the bridge), alt. 900 m, 21 June 2007, M. Nobis s.n. (KRA 456,871, 456,872, 456,874); Dushanbe, in the gaps of the pavement plates, on the Rudaki St. (near Bukhoro St.), alt. 900 m, 20 June 2007, M. Nobis s.n. (KRA 456,874).

Euphorbia subtilis Prokh. (Euphorbiaceae)

Contributors – Aleksandr Ebel

Distribution and habitat

Euphorbia subtilis is a predominantly European species occurring in the steppes of eastern Europe and southern Ural (Geltman 1996a, 2015; Kulikov 2005; Ryabinina and Knyazev 2009). Geltman (1996a) suggested that this species is distributed also in western Siberia, but he gave no specifying locations. Baikov (2005) pointed out (in note to *Euphorbia microcarpa* Prokh.) that plants similar to *E. subtilis* were found in the steppes of the Altai Country but has not included this species in the general list. In Baikov (2012) and Silantyeva (2013) *E. subtilis* was not accounted for Altai Krai or for Asiatic Russia. This species is a rare native species to the flora of Siberia and Asiatic Russia growing in the lowlands of West Altai.

Taxonomic notes

Euphorbia subtilis belongs to subsect. *Esula* Boiss., series *Leptocaula* Geltn., which includes eight species of thin-stemmed ephemeroid plant with grey-green involucre during flowering (Geltman 2000). *Euphorbia subtilis* resembles some other narrow-leaved species, e.g. European *Euphorbia kaleniczenkoi* Czern. and *Euphorbia leptocaula* Boiss. or Asian *E. microcarpa*, and

may be confused with each of them. *Euphorbia subtilis* differs from *E. kaleniczenkoi* by smaller size of more slender stems and grey-green involucre of inflorescence consisting of few rays (usually four to six, rarely up to eight); from *E. leptocaula* by much wider leaves, usually rounded at the top and often bent over the edge, and from *E. microcarpa* by smaller size of shoots, shorter spatulate-linear leaves, grey-green involucre and xeromorphic habitus. Geltman (1996a, 1996b, 2015) recognized *E. subtilis* as a separate well-limited species closely related to primarily Altai species *E. microcarpa*. Two of the discussed species, namely *E. kaleniczenkoi* and *E. subtilis*, can occur in two forms – glabrous and pubescent (Geltman 1996b, 2015). The specimens cited below from Altai belong to the latter one.

Examined specimens (new record)

RUSSIA: Altayskyi Krai, Kurya district, surrounding Lake Beloe, stony steppe. 5 June 2005, A. Ebel s.n. (TK, determ. K. Baikov 17.11.2005).

Orobanche bartlingii Griseb. (Orobanchaceae)

Contributor – Renata Piwowarczyk

Distribution and habitat

Orobanche bartlingii is a Eurasian species, occurring from the Pyrenees in Spain through France, Germany, Central Europe, and more frequently in Eastern Europe (the Baltic states), Russia to Siberia (Kreutz 1995; Carlón et al. 2009). *Orobanche alsatica* sensu lato has been listed from the Caucasus by Novopokrovskij and Tzvelev (1958) with remarks that the taxon occurs rarely and not in all regions. New localities of *O. bartlingii* have been found in rocky grasslands on steep slopes in the Greater Caucasus (southern slopes of the Racha Range) and in the Lesser Caucasus (southern slopes of the Meskheta Range) in Georgia. The species is a new, native taxon to the flora of this country (comp. Gagnidze 2005). Populations of the species are differentiated in size and comprise from 20 to 300 shoots. The largest population is located on the edge of Borjomi-Kharaguli National Park.

Taxonomic notes

Polymorphic species *Orobanche alsatica* s.l., parasite of the species from Apiaceae family, usually divided into *O. alsatica* Kirschl. [= var. *typica* Beck, subsp. *alsatica*; a parasite of *Peucedanum cervaria* (L.) Lapeyr.] and *O. bartlingii* Griseb. [= var. *libanotidis* (Rupr.) Beck, subsp. *libanotidis* (Rupr.) Tzvel.; a parasite of *Libanotis pyrenaica* (L.) Bourg.]. These two taxa were classified at various ranks, as varieties (Beck 1890), subspecies (Pusch 2009), or as an aggregate comprising both of them (Zázvorka 1997, 2000). However, most authors considered them as separate species (e.g. Kreutz 1995; Kotov 1999; Pujadas Salvà and Gómez García 2000;

Tzvelev 2006; Carlón et al. 2009; Piowarczyk 2011, 2012; Piowarczyk, Halamski, and Durska 2014). In the older approaches these taxa were included within the grex *Curvatae* Beck (Beck 1890), however, in the recent classification, they are classified in the series *Alsaticae* Teryokh., within the section *Orobanche* (Teryokhin et al. 1993).

Orobanche alsatica and *O. bartlingii* can be differentiated by macromorphology: *O. alsatica* has a longer corolla (20–25 versus 12–17 mm, respectively), regularly and strongly curved dorsal line of the corolla versus evenly curved at the base, glandular pubescent style versus glabrous or rarely glandular-pubescent, stamens inserted 4–7 mm versus 1–3 mm above base of the corolla tube (Pujadas Salvà and Gómez García 2000; Piowarczyk, Nobis, and Przemyski 2009). The differences are also observed in seed and pollen micro-morphology (Piowarczyk, Halamski, and Durska 2014; Piowarczyk 2015; Piowarczyk, Madeja, and Nobis 2015), as well as hosts (mentioned above) and habitat preferences (Piowarczyk 2012; Piowarczyk and Jankowska-Błaszczuk 2014). *Orobanche bartlingii* is considered by Carlón et al. (2005a) to be an independent species very closely allied to *O. alsatica*, which was evidenced in molecular studies (Manen et al. 2004).

From the subalpine meadows in the Caucasian Range *Orobanche alsatica* var. *heraclei* Tzvel. and *Orobanche ingens* (Beck) Tzvel. were also described, with lax inflorescence, large corolla and densely hairy filaments, both parasitizing *Heracleum* (Novopokrovskij and Tzvelev 1958; Tzvelev 1990). Moreover, along the borders of Iran, where typical *O. alsatica* is absent, *O. alsatica* var. *iranica* Tzvel. was recorded – with large corolla and subglabrous filaments, of which the host is unknown (Novopokrovskij and Tzvelev 1958). This taxon requires further field study and taxonomic revisions with molecular investigations.

Examined specimens (new records)

GEORGIA: Northwestern Georgia, slopes of the Greater Caucasus, on the border Imereti/Racha Lechumi provinces, between Kharistvala and Tkibuli (southwest of Ambrolauri), steep slopes near serpentine road, landslides and rocky grassland, south exposure, parasitizes *Libanotis pyrenaica*, alt. 1140 m, 16 July 2015, R. Piowarczyk s.n. (KTC); southwestern Georgia, Lesser Caucasus, Samtskhe-Javakheti province, south of Abastumani, rocky shaded grasslands, on the edge of forest, meadows, on slope with southwestern exposure, parasitize *Libanotis pyrenaica*, alt. 1215 m, 12 July 2015, R. Piowarczyk s.n. (KTC).

Orobanche grenieri F.W. Schultz (Orobanchaceae)

Contributors – Renata Piowarczyk, Marcin Nobis, Agnieszka Nobis, Arkadiusz Nowak, Joanna Zalewska-Gałosz

Distribution and habitat

Orobanche grenieri was known from southwestern Europe: Spain and France (Schultz 1845; Carlón et al. 2005a; Crouzet, Pavon, and Michaud 2009; Tison, Jauzein, and Michaud 2014). However, it was recently found in the Caucasus: in Georgia (Piowarczyk et al. 2015) and Azerbaijan (Rätzel, Ristow, and Uhlich 2015), as well as in the Pamirs in Tajikistan (Piowarczyk et al. 2015). Apart from that, previously uncertain data were confirmed from Italy, Ukraine (Crimea), and Turkey (Carlón et al. 2005a; Rätzel, Ristow, and Uhlich 2015). *Orobanche grenieri* parasitizes the roots of *Lactuca* spp., and grows in sunny, rocky slopes and hills, in grasslands or steppe communities of mountainous areas (Carlón et al. 2005a, 2005b; Piowarczyk et al. 2015).

A new locality of *Orobanche grenieri* parasitizing *Lactuca* sp. has been found in Kyrgyzstan, and it is a new, native species to the flora of this country.

Taxonomic notes

The flora of Kyrgyzstan contains 15 species of *Orobanche* and five species of *Phelipanche* Pomel. (Lazkov and Sultanova 2011), but their distributions and hosts species are not sufficiently known and require further research.

Orobanche grenieri is similar to *Orobanche cernua* Loefl., and was previously treated as one of its synonyms (e.g. Chater and Webb 1972). Recent studies clearly showed that the two taxa differ in host preferences as well as morphological and molecular traits (Carlón et al. 2005b; Piowarczyk et al. 2015).

Orobanche grenieri differs from *O. cernua* by having \pm gracile and longer stem 16–38(52) versus \pm thick and (10)15–32 cm long, inflorescence shorter than remaining stem versus \pm as long as remaining stem, slightly longer corolla (17–18 versus 15–18 mm, respectively), and calyx (7–11 versus 6–10 mm long), corolla dorsal lines are regularly curved and upper part patent versus geniculated, upper part decurved, lower lip of corolla with \pm large and broad lobes versus \pm small and narrow, corolla are bluish-violet, basally often yellowish-white versus dark blue to violet, sometimes almost black at margins of lips; host species: *Lactuca* spp. vs. *Artemisia* spp. (rarely other species from Asteraceae) (Carlón et al. 2005b; Piowarczyk et al. 2015).

Examined specimens (new record)

KYRGYZSTAN: Scree, inclination 50%, slope northeast, on the roadside in the Kekemeran River valley, to the north of Kyzyl-oi settl. near Aral village, parasitize on *Lactuca*, 42°00'13"N, 74°10'28"E, alt. 1815 m, 3 August 2016, M. Nobis, A. Nobis, A. Nowak & J. Zalewska-Gałosz s.n. (KRA).

Poa albertii Regel (Poaceae)

Contributors – Marina Olonova, Yuriy Kotukhov

Distribution and habitat

Poa albertii is distributed in the alpine zone of Asian mountains. It is a common species in Middle and Central Asia (Roshevitz 1934; Tzvelev 1968), but has not been previously recorded in the Altai Mountains.

Taxonomic notes

This species combines the characters of *Poa attenuata* Trin. and *Poa glauca* Vahl., but it is supposed to be of hybrid origin. The hybridization of these two species seems to form an agamic complex, which is treated here as agg. *P. albertii*. It comprises taxa with different morphological types and vague status. Some of them were described as *Poa rangkulensis* Ovcz. & Czuk., *Poa scabriculumis* N.R.Cui and *Poa indattenuata* Keng ex P.C.Keng & G.Q.Song. During examination of type material of *P. albertii*, *Poa attenuata* and *P. glauca*, we noted their morphological similarity. Nevertheless, they can be distinguished by the characters of lemma and callus (glabrous or hairy), length of ligules, and characters of culm. As this work is aimed to reveal the morphological diversity as completely as possible, all the taxa mentioned above are treated here as separate species within agg. *P. albertii*. All of the species listed here occur in Central Asia and Pan-Himalayas, and only *P. albertii* s.str. was found in the Altai Mountain system.

Examined specimens (new record)

KAZAKHSTAN: South Altai Ridge, near Chindagatuy, north slope, 2750 m above sea level (a.s.l.), tundra, 17 August 1972, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan).

Poa intricata Wein. (Poaceae)

Contributors – Marina Olonova, Yuriy Kotukhov

Distribution and habitat

This hybridogenous species seems to be distributed quite broadly, mainly in Siberia and northeastern Europe. This distribution might be broader, but it seems to be missing in collections, being identified as *Poa palustris* L. or *Poa nemoralis* L. This species has not been recorded in Kazakhstan to date (Gamayunova 1956; Abdulina 1999; Baitulin and Kotukhov 2011). It grows in clearings of deciduous and mixed forests, within thickets, on meadows.

Taxonomic notes

Global geological and climatic changes in the northern hemisphere during the Pleistocene have resulted in widespread shifts of vegetation zones and subsequent large-scale hybridization as a result of secondary contacts of previously isolated taxa (Tzvelev 1976). That kind of hybridization seems to occur between *P. palustris* and *P. nemoralis*. Hybrids between these species were described as *P. intricata* by Wein (1911), but in

our opinion *P. intricata* is not the modern hybrid, but an aggregate, which includes the hybrid populations, which could arise over time.

Examined specimens (new records)

KAZAKHSTAN: West. Altai, near Ubinskaya, Taranka settl., shadow cliffs, 13 April 1987, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan); Ivanovskiy Ridge, along river Bystrukha, among willow thickets, 15 August 1984, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan); Narymskiy Ridge, gorge Terekty near settl. north Beryozovka, upstream of brook Kedroviy, zone of deciduous forest, north slope, 1500 m a.s.l., bottom of the gorge. 27 April 1976, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan).

Poa pseudoaltaica (Olonova) Olonova (Poaceae)

Contributors – Marina Olonova, Yuriy Kotukhov

Distribution and habitat

To date, *Poa pseudoaltaica* has only been recorded from Russian Altai, being quite common, but endemic to this area. It occurs in the subalpine belt, on the cliffs among thickets or rare trees near the timberline. The species was found among collections from the adjacent part of Kazakhstani Altai, in similar habitats. Some samples from Kazakhstani Altai were found in the P.N. Krylov herbarium (TK) as well.

Taxonomic notes

At TK, specimens of *P. pseudoaltaica* have been determined by V. Reverdatto as *Poa altaica* Trin. Nevertheless they differ from this species with shorter spikelets, and uppermost nodes being exposed at the upper part of lower one-third of stem. These plants are closer to *P. palustris* or *Poa stepposa* (Kryl.) Roshev., whereas “true” *P. altaica* belongs to agg. *P. glauca*. This race is supposed to arise from hybridization of *P. glauca* and *P. palustris* or *P. stepposa*.

Examined specimens (new records)

KAZAKHSTAN: Ivanovskiy Ridge, northwest slope, 2000 m a.s.l., pine-cedar-larch rare forest near the timberline, 25 July 1997, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan); Khaydun Ridge, southwest slope, 2000 m a.s.l., scree among the thickets, 18 July 1976, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan); Narymskiy Ridge, near settl. N. Berezovka, gorge Terekty, northern slope, cliffs on the slope, alt. 2000 m a.s.l., 27 April 1976, Yu. Kotukhov s.n. (Herb. of Altai Botanical Garden, Ridder, Kazakhstan); Semipalatinskaya gub., Bukhtarminskiy uezd, near Katon-Karagay, Narymskiy Ridge, upstream of Tautykel river, 49°–55½°, gravel slope in alpine area, 24 July 1929, P. Krylov, L. Sergievskaja s.n. (TK); Semipalatinskaya gub.,

vicinity of Kaba river, Dara-Tatan, alpine area. 30 July to 2 August 1920, *Exp. of V.V. Sapozhnikov s.n.* (TK).

Poa sergievskajae Prob. (Poaceae)

Contributors – Marina Olonova, Yuriy Kotukhov

Distribution and habitat

This species is quite common in Siberia and Russian Far East, some localities were recorded in Mongolia, Ural and Eastern Europe. During revision of *Poa* for the new *Flora of Altai* three samples of *P. sergievskajae* were found among the collections of Yuriy Kotukhov, collected by him in the Kazakhstani part of Altai. This species was not recorded in Kazakhstan before (Gamayunova 1956; Abdulina 1999; Baitulin and Kotukhov 2011) and its distribution in the Altai region requires further study. It occurs in the birch and spruce forests, forest clearings, among thickets.

Taxonomic notes

Poa sergievskajae was described in 1971 from Russian Far East: “Amurskaya Distr., Amursko-Zejskoe plateau, basin of river. M. Pery, tributary of Zeya, near village Klimovtsy, birch forest on the plateau with forbs, *Carex* and *Calamagrostis*, 11.VI.1957, V. Lipatova, I. Petrova” (LE!). This species is very close to *P. pratensis* L. and differs from it by more narrow leaf blades and moderately pubescent lemmas. Probatova (1985) suggests that it arises from hybridization between species of nominal section and the section *Homalopoa* or *Macropoa*, and replaces *P. pratensis* in forests. Because of its narrow leaves the dry samples of *P. sergievskajae* in the herbarium are frequently confused with *Poa angustifolia*. Nevertheless, they easily differ by their habitat, whereas the narrow leaves are common not only for xeromorphic *P. angustifolia*, but for mesomorphic *P. sergievskajae* and even for *Poa turfosa* Litv. from peat bogs (Olonova 2007).

Examined specimens (new records)

KAZAKHSTAN: Ivanovskiy Ridge, upstream of river Bolshaya Poperechnaya, 1600 m a.s.l., rare pine–cedar forest, 21 July 2002, *Yu. Kotukhov s.n.* (Herb. of Altay Botanical Garden, Ridder, Kazakhstan); Ivanovskiy Ridge, near lakes Beloubinskie, high forbs among rare pine–cedar trees, 18 July 1976, *Yu. Kotukhov s.n.* (Herb. of Altay Botanical Garden, Ridder, Kazakhstan); Listviaga Ridge, near lake Bukhtarminskoye, at the zone of larch forest, at 2200 m a.s.l., southwestern slope. 23 August 1975, *Yu. Kotukhov s.n.* (Herb. of Altay Botanical Garden, Ridder, Kazakhstan).

Polygonum subaphyllum Sumnev. (Polygonaceae)

Contributors – Dmitry Shaulo, Andrey Erst, Natalia Tupitsyna

Distribution and habitat

Polygonum subaphyllum is distributed in Central Asia: Balkhash territory, Muyunkum desert, Bolshie Barsuki sands, in the vicinity of Tashkent city, Fergana Valley, Tian Shan (Western), the Pamir-Alai (Western), the Kopet-Dag, Badkhyz (Chukavina 1971), and is reported from China for the first time. It is found in the alkaline steppes, saltworts, meadows, sands, roads and fields, altitude 200–2200 m.

Taxonomic notes

In the *Flora of China*, the genus *Polygonum* L. s.l. is represented by 113 (23 endemic) species (Li et al. 2003). *Polygonum subaphyllum* is included in the section *Polygonum* L., subsection *Patula* Tzvel. This section consists of 50 species, which are annual and perennial herbs, sometimes shrubs (Tzvelev 1978). Existing treatments of this section vary widely in numbers of recognized species (Akeroyd 1993). Great morphological variability caused by environmental conditions and interspecific hybridization creates difficulties in the taxonomy of this section (Yurtseva 2001). The subsection is characterized by thin laminae, bracts shorter than flowers, opaque fruits with a longitudinally rugose surface. Species belonging to this subsection differ in fruit length to perianth ratio, perianth separation depth, elliptical or linear forms of laminae, presence or absence of lateral veins on the lower surface of the laminae (Tzvelev 1996). *Polygonum subaphyllum* differs from *Polygonum patulum* M. Bieb. in its leaves, which have mostly fallen by flowering, glaucous leaf blades with inconspicuous lateral veins at base; perianth near fruit with separated segments, less deep (two-thirds) cleft.

Examined specimens (new records)

CHINA: Xinjiang Uyghur Autonomous Province, Altai Prefecture, surroundings of Altai city, 47°38' N, 87°59' E, 22 September 2012, *D. Shaulo, S. Smirnov & A. Erst 1c/303, D. Shaulo, S. Smirnov & A. Erst 1c/305, 1a/312* (NS); China, Xinjiang Uyghur Autonomous Province, Altai Prefecture, Fuhai (Burultokay) County, 100 km southeast Lake Ulyungur, by the roadsides, 46°16' N, 87°50' E, 22 September 2012, *D. Shaulo, S. Smirnov & A. Erst 4/313* (NS).

Ranunculus mongolicus (Krylov) Serg. (Ranunculaceae)

Contributors – Joanna Zalewska-Gałosz, Agnieszka Nobis, Marcin Nobis, Arkadiusz Nowak

Distribution and habitat

Ranunculus mongolicus occurs in Siberia, Russian Far East, Mongolia, China and Nepal. It is found also along the west coast of North America, where it is reported as *Ranunculus aquatilis* L. (G.Wiegleb, J.Zalewska-Gałosz, A.A.Bobrov, unpubl). The species

grows in shallow, predominately standing water, but occasionally also running water. During the taxonomic revision of herbarium materials from the section *Batrachium*, performed in the Herbarium of the National Academy of Science, Kyrgyzstan (FRU), specimens representing *R. mongolicus* (Krylov) Serg. were found. Plants were gathered in the brackish lake in Terskei, Alatau, Kyrgyzstan, and were identified as *Batrachium triphyllum* (Wallr.) Dum. This name is not widely accepted now and is regarded as synonymous with *Ranunculus peltatus* Schrank (Cook 1966) or *R. aquatilis* (Czerepanov 2007). Examined *Batrachium triphyllum* individuals expressed several characters consistently different from the features of *R. peltatus* and *R. aquatilis* and have been identified as *R. mongolicus*. Other specimens of *Batrachium triphyllum* recorded in the Issyk-kul region in Kyrgyzstan (Lazkov and Sultanova 2011) require revision. *Ranunculus mongolicus* is new and native to the flora of Kyrgyzstan (Lazkov and Sultanova 2011).

Taxonomic notes

Ranunculus mongolicus belongs to the section *Batrachium* (DC.) A.Gray, taxonomically one of the most challenging aquatic groups of plants (Bobrov et al. 2015). Due to common polyploidization, hybridization and extreme morphological variation, the taxonomic borders of the *Batrachium* taxa are still unclear (Zalewska-Gałosz, Jopek, and Ilnicki 2015).

Ranunculus mongolicus is similar to *R. aquatilis*, but it is smaller in all parts and its nectar pits are lunate whereas nectar pits formed by *R. aquatilis* and *R. peltatus* are circular and pyriform, respectively. Phylogenetically *R. mongolicus* is most closely related with *R. trichophyllum* Chaix and *Ranunculus ashibetsuensis* Wiegand (Bobrov et al. 2015). Distribution, morphology and phylogenetic relations of *R. mongolicus* are still insufficiently known.

Individuals from Kyrgyzstan are heterophyllous and generative, with developed flowers and fruits. Floating leaves are up to 12 mm long and 15 mm wide, five-lobed, with up to 15 secondary lobes and basal sinus lamina 30–45°. Submersed, capillary leaves are alternate, c. 20 mm long, obconical. Intermediate leaves are also present, with apical capillary segments. Peduncles in fruit are up to 20–30 mm long. Petals are 5–8 mm long with one lunate nectar pit per petal. Receptacles are subglobose and pubescent.

Examined specimen (new record)

KYRGYZSTAN: Terskei Alatau, brackish lake on the high mountains plains near Phisical Observatory, 3600 m a.s.l., 8 August 1947, L. Sobolev s.n. (FRU).

Ranunculus pseudomonophyllus Timokhina (Ranunculaceae)

Contributors – Andrey Erst, Dmitry Shaulo

Distribution and habitat

The species was originally described from the Eastern Sayan Mountains. *Ranunculus pseudomonophyllus* is distributed in Russia: Altai Republic, Krasnoyarsk Territory Tuva Republic, Irkutsk Region, Buryatia Republic, Trans-Baikal Territory and Yakutia (Timokhina, Friesen, and Vlasova 1993). It grows in mossy tundra, on muddy banks of rivers and streams, and in boggy larch and larch–spruce forests. *Ranunculus pseudomonophyllus* is a new native species to the flora of Mongolia.

Taxonomic notes

In the flora of Mongolia, the broad genus *Ranunculus* L., including the genus *Batrachium* (DC.) Gray, is represented by 25 species (Gubanov 1996). *Ranunculus pseudomonophyllus* belongs to Sect. *Auricomus* Schur. This section consists of 45–60 species [additionally c. 600 agamospecies in the Eurasian *Ranunculus auricomus* complex (Hörandl et al. 2009), and several taxa of uncertain taxonomic status (Hörandl and Emadzade 2012)]. Representatives of the subsection *Auricomus* are distinguished from species of the subsection *Cassubici* Tzvel. (for example, *Ranunculus monophyllum* Ovcz.) by the lack of filmy scale-like leaves at the shoot base (Tzvelev 1994). *Ranunculus pseudomonophyllus* differs from the closely related *R. auricomus* in having round-cordate or reniform, three-lobed, with sharp-toothed edges with a narrow exerted average lobe (versus dissected into oblong-cuneate segments expanding towards the apex, three to six segments), blades of rosette leaves. In addition, the species exhibits a slightly pubescent receptacle, but after flowering hairs fall. *Ranunculus auricomus* has a puberulent receptacle.

Examined specimens (new records)

MONGOLIA: Selenge Province, Mandal Sum, valley Shivriyn-Gol River, 22 km northeast from Dzunhara mount, forb-grass wet meadow, 48°59' N, 106°33' E, 1160 m, 16 May 2012, D. Shaulo DS8 (NS); Mongolia. Khövsgöl Province, Tsetserleg Sum, Zurhen-uul, Tesijn-gol, bushes (*Ribes procumbens*) in the Larix forest, 49°41' N, 97°49' E, 07 August 1983, W. Hilbig 147/83 (HAL-55,616).

Ranunculus smirnovii Ovcz. (Ranunculaceae)

Contributors – Andrey Erst, Dmitry Shaulo, Kun-Li Xiang

Distribution and habitat

Ranunculus smirnovii was described from the Barun-Burin-Khan Mountain located 50 km from Mongolia (Ovchinnikov 1937). This species is distributed mainly in the Eastern Siberia (Russia): Buryatia Republic (locus classicus), Irkutsk Region, Trans-Baikal Territory, Krasnoyarsk Territory, the Republics of Altai, Khakassia, Yakutia and Tuva (Timokhina, Friesen, and Vlasova 1993).

The species is also found in China, namely Nei Mongol (Wang and Gilbert 2001). *Ranunculus smirnovii* is a new native species to the flora of Mongolia.

Taxonomic notes

Ranunculus smirnovii belongs to the section *Ranunculus*, which includes about 30 species (Hörandl and Emadzade 2012), and it is characterized by three- to five-lobed partite or dissected rosette and cauline leaves; pedicels with no grooves; glabrous receptacle (Luferov 2004); smooth, glabrous, margined, laterally compressed, thick-walled, obovate achenes (Erst 2008); a smooth cuticle; parenchymal outer and sclerenchymous inner parts of the mesocarp, and sclerenchymous endocarp of transversely oriented achene fibres (Devyatov and Erst 2013). *Ranunculus smirnovii* differs from the closely related *Ranunculus grandifolius* C.A.Mey in having smaller flowers and the lack of creeping rhizomes. From closely related species from the section *Ranunculus*, for example *Ranunculus propinquus* C.A.Mey, this species is well distinguished by long red, often downward-directed hairs (especially dense in the lower part of the plant). The section *Ranunculus* is morphologically similar to the section *Polyanthemos* (Luferov) Malacha, but can be distinguished in having a glabrous receptacle (versus hairless).

Examined specimens (new record)

MONGOLIA: Selenge Province, Mandal Sum, valley Shivriyn-Gol River, 22 km northeast from Dzunhara mount, forb-grass wet meadow, 48°59' N, 106°33' E, 1160 m, 16 May 2012, D. Shaulo DS7 (NS).

Ranunculus turczaninovii (Luferov) Vorosch. (Ranunculaceae)

Ranunculus pedatifidus Hook. subsp. *turczaninovii* Luferov

Contributors – Andrey Erst, Dmitry Shaulo

Distribution and habitat

Ranunculus turczaninovii occurs in Eastern Siberia and the Russian Far East (Luferov 2004). This species is indicated for Mongolia, Central Asia, and China, but without specifying the locations (Voroshilov 1994; Luferov 2004). A floristic overview of the flora of China does not cover this species (Wang and Gilbert 2001). A new location of *R. turczaninovii* is reported for the first time for the flora of Mongolia.

Taxonomic notes

Ranunculus turczaninovii belongs to the section *Auricomus* Schur (Hörandl and Emadzade 2012), subsection *Pedatifidi* Tzvel. (Tzvelev 1994). This subsection is characterized by smooth-edged segments of stem leaves; the lack of scale-like leaves at the base (Luferov 2004), achenes covered with short hairs at the apex or

glabrous; a folded cuticle; parenchymal exocarp, parenchymal outer and sclerenchymous inner parts of the mesocarp; and sclerenchymous endocarp (Devyatov and Erst 2013). *Ranunculus turczaninovii* is morphologically close to *Ranunculus pedatifidus* Smith, but differs from the latter in having anisophylly: slightly cut or palmately five- to nine-lobed blades of rosette leaves and sessile, deeply palmately lobed or dissected by three to seven linear segmented stem leaves (Luferov 2004). *Ranunculus turczaninovii* grows in low hills and plains, but not in the alpine highlands (Voroshilov 1994).

Examined specimens (new record)

MONGOLIA: Selenge Province, Mandal Sum, valley Shivriyn-Gol River, 22 km northeast from Dzunhara mount, forb-grass wet meadow, 48°59' N, 106°33' E, 1160 m, 16 May 2012, D. Shaulo DS6 (NS).

Sternbergia lutea (L.) Ker Gawl. ex Spreng. (Amaryllidaceae)

Contributors – Arkadiusz Nowak, Marcin Nobis

Distribution and habitat

Sternbergia lutea is a species native to southern Europe and southwestern Asia. It is known from Spain, through the south of France, Italy, the Balkans, Greece and across North Africa east from Morocco extending into Asia as far as the Caucasus and Iran (Gorshkova 1935; Wendelbo 1970; Webb 1980; Davis and Stuart 1984; Gage and Wilkin 2008). This range is somehow artificially extended by cultivation and introduction as an ornamental plant.

In the former Soviet Union the species was reported from the eastern foreland of the Caucasus range and Middle Asia, but without an exact indication of the former republic or country. The species has been assigned as a native species to Pamir Alai and Turkmenistan (Gorshkova 1935). In the *Flora of Tajik's SSR*, *Sternbergia lutea* was mentioned as known from 'Buchara orientalis' (most probably in Uzbekistan; specimens collected by Regel in LE). Additionally it was found in the western section of the Hissar and Zeravshan ranges just a few kilometres from the Tajik's border (Ovchinnikov 1963).

Sternbergia lutea is a plant with relatively narrow ecological amplitude. In its native range it prefers woodlands and scrublands in Mediterranean-like climates. It was rarely found in open habitats not shaded by thickets or coppices. It is found from near sea level to c. 1800 m in elevation in stony habitats on limestone or in scrubland in the open where it receives full sun (Wendelbo 1970; Webb 1980; Guarino and Napolitano 2006).

The population of *Sternbergia lutea* was found in one location, within the steppe-forest formation of *Juniperus turkestanica* on the northern slopes of the side hills in Okhtangi (Akhtengi) River Valley near to Imeni Kalinina village. The population consists of dozens of individuals

and grows in loose coppices with *Juniperus turkestanica* dominating.

Taxonomic notes

Sternbergia lutea is the only species representing this genus in Tajikistan. The flora of the former Soviet Union consists of three out of seven known species of the genus (Gorshkova 1935; Mathew 1983). *Sternbergia lutea* was divided into two subspecies according to the width of leaves and perianth segments: *S. lutea* subsp. *lutea* having 4 to 15 mm wide leaves and 7 to 15 mm wide perianth segments and *S. lutea* subsp. *sicula* (Tineo ex Guss.) K.Ritch with 3 to 5 mm wide leaves and 4 to 8 mm wide perianth segments (Webb 1980). The specimens found in Tajikistan belong to *S. lutea* subsp. *lutea*.

Examined specimens (new record)

TAJIKISTAN: *Juniperus turkestanica* woods in Okhtangi River Valley, to the SE from Imeni Kalinina village, (Turkestanian Region), 39°37'30.3" N, 68°44'54.9" E, 2195 m, 26 May 2015, A. Nowak, M. Nobis s.n. (OPUN!).

New records for European countries

Bolboschoenus yagara (Ohwi) Y.C. Yang (Cyperaceae)

Contributors – Filip Verloove, Philippe Werner, Jean-François Burri

Distribution and habitat

Bolboschoenus yagara was originally described from Kyoto, Japan (Ohwi 1944). For quite a long time it was believed to be restricted to eastern Asia. Browning et al. (1996) were the first to report its occurrence in Europe (a single, historical record from Germany). However, soon afterwards *B. yagara* was discovered in several additional countries, mainly in Central Europe. Hroudová et al. (2001) emphasized the species' occurrence in the Czech Republic; subsequently, Hroudová et al. (2005) and Hroudová, Marhold, and Jarolímová (2006) reported its presence in Poland and Austria, respectively. Also from Germany numerous new records came to light (Hroudová, Gregor, and Zákavský 2009). A thorough revision of European herbaria finally yielded additional records from France, Sweden, Ukraine and the European part of Russia, although the species' distribution in Europe was obviously concentrated in the centre of the continent, mainly in Austria, the Czech Republic, Germany and Poland (Hroudová et al. 2007). At least in this part of Europe, *B. yagara* is considered a native but long overlooked species.

In August 2015 a population of *B. yagara* was discovered by one of us (Ph. Werner) and visited a second time with J.-F. Burri, who transmitted the material for identification to the first author. It was observed, apparently for the first time in Switzerland, in shallow water

on the margins of a semi-artificial water reservoir of the Monthey chemical site in the canton of Valais. This reservoir was constructed adjacent to river Rhône in 1934. In 2013 contaminated sediments were removed and the species subsequently appeared on the exposed natural substratum that is inundated by emerging groundwater.

The Swiss national floristic database (www.infoflora.ch/fr/flore) only mentions *Bolboschoenus maritimus* (L.) Palla, a rare species with few recent records in the western part of the country and Tessin. In Valais, where *B. yagara* was found, the two last natural occurrences of *B. maritimus* were recorded near Sion around 1996 (Desfayes 1996) but it is extinct now. However, the genus is probably insufficiently understood in Switzerland. Ciardo et al. (2011) recently reported the discovery of *Bolboschoenus laticarpus* Marhold & al., another species that was hitherto overlooked.

In Monthey at least 100 individuals of *B. yagara* were counted (on c. 30–35 m²) on the verge of a *Typha latifolia* L. stand. Its residence status in this locality is uncertain. Monthey (and Switzerland as a whole) lies disjunct from the species' main distribution area in Central Europe (see Hroudová et al. 2007 for a map). Moreover, in its single Swiss locality the species grows in a semi-artificial water reservoir that hardly matches its preferable habitat (see below). The area is frequented by migratory birds and these may have been responsible for the inadvertent introduction of this species. Water birds are known to play an important role in the dispersal of *B. yagara* over great distances (e.g. Hroudová et al. 2007). However, it cannot be excluded that the species emerged from a long-lived seed bank that was exposed in 2013, although this seems less likely since historical records of *B. maritimus* (s.l.) are lacking in Valais.

In Central Europe *B. yagara* usually occupies a rather narrow ecological niche. Contrary to the more widespread Central European species *B. laticarpus* Marhold, Hroudová, Ducháček & Zákavský and *Bolboschoenus planiculmis* (F.Schmidt) T.V.Egorova, both with a wide ecological amplitude and sometimes even seen as weeds of agricultural fields, *B. yagara* is mostly observed on oligotrophic, acidophilous substrates. It is often associated with fishpond basins and other inland reservoirs with standing water. Within the *B. maritimus* aggregate, it is regarded as the most sensitive species to increasing trophic levels (Hroudová et al. 2007).

Taxonomic notes

Bolboschoenus yagara has long been confused with *B. maritimus* and other members of this species complex. In Europe this group is represented by *Bolboschoenus affinis* (Roth) Dobrow (with a very limited distribution), *Bolboschoenus glaucus* (Lam.) S.G.Smith, *B. laticarpus*, *B. maritimus*, *B. planiculmis* and *B. yagara* (Euro+Med Plantbase 2016). *Bolboschoenus yagara* is in fact fairly distinct: its mature achenes are blackish, trigonous in cross-section, with three equilateral sides, and are

remarkably narrow (c. 1.6–1.8 mm wide). The outer layer of the pericarp (exocarp) is thinner than the mesocarp and formed of isodiametric cells (for illustrations see Hroudová et al. 2007). Also, the perianth bristles persist at maturity. A combination of these features is not encountered in any of the other species currently found in Europe.

Examined specimens (new record)

SWITZERLAND: Monthey, étang de la STEP des usines de Monthey [lake of the STEP chemical plant of Monthey], 46.26180 N/6.97020 E, 30 September 2015, J.F. Burri s.n. (BR).

Cenchrus spinifex Cav. (Poaceae)

Contributors – Danijela Stešević, Danka Caković, Nejc Jogan, Urban Šilc, Filip Verloove

Distribution and habitat

Cenchrus spinifex is considered to be a native of the southern United States, Mexico, Central and South America and the West Indies (Verloove and Sánchez Gullón 2012). In the Mediterranean area it is more or less widely naturalized as a noxious weed (Verloove and Sánchez Gullón 2012). Since 2012 the species has been registered on the EPPO Observation list of invasive alien plants (EPPO 2016). To date it is reported as an invasive alien species in Spain (Sanz-Elorza, Dana, and Sobrino 2001), Greece (Arianoutsou et al. 2010), Italy (Celesti-Grapo et al. 2009) and Hungary (Botta-Dukát and Balogh 2008).

In July 2015 *C. spinifex* was recorded for the first time in Montenegro. The species grows along the paved path in front of the Hotel Olympic Beach at the Velika Plaža in Ulcinj. The population counted c. 30 individuals in a rather small area of c. 150 m². Up to now, the plant is known only from this single locality. Due to the spiny seeds that enable the plant to spread over long distances, and to anchor seeds in vegetated areas (Forbes 2004), we expect that the population size will increase rapidly. Colonization of the area might also cause an inconvenience to tourists and visitors (Szigetvári 2006). To prevent the spread of this invasive species and to avoid negative impacts, both on native biodiversity and tourism, urgent measures of eradication should be undertaken.

The pathway of introduction of this species in Montenegro is uncertain but might be associated with tourism. In recent years the number of foreign visitors has rapidly increased (Bošković 2014). They usually reach Montenegro via Albania. Up to now *C. spinifex* is not reported yet from Albania, but it is known from Greece, where it has the status of an invasive alien plant (Arianoutsou et al. 2010). Before the critical revision of herbarium material collected in Croatia (Verloove and Sánchez Gullón 2012) *C. spinifex* was also considered as an invasive alien species in that country (Boršić et al.

2008). However, Verloove and Sánchez Gullón (2012) proved that all alien *Cenchrus* specimens from Croatia should be ascribed to *Cenchrus longispinus* (Hack.) Fernald. In the Pannonian part of Serbia (Anačkov et al. 2013) *C. spinifex* was reported, but it is possible that part of the reports is also ascribable to *C. longispinus* (Verloove and Sánchez Gullón 2012). Distinction of these two species was shown to be problematic in the whole Mediterranean region (Verloove and Sánchez Gullón 2012).

In its native range *Cenchrus spinifex* inhabits open sandy soils and coastal plains (Hitchcock 1971). It grows in tufts or dense mats and is well-adapted to dry sandy and sandy loam soils (Magee 2002). Hence, the Velika Plaža in Ulcinj perfectly fits its ecological requirements. On this ruderalized site, the species was accompanied by *Cynodon dactylon* (L.) Pers., *Medicago littoralis* Loisel., *Euphorbia peplus* L., *Elymus farctus* (Viv.) Melderis, *Xanthium italicum* Moretti, *Citrullus lanatus* (Thunb.) Matsum. & Nakai, *Medicago marina* L., *Pancreatium maritimum* L., *Phleum arenarium* L. and *Salsola kali* L. It penetrates into the annual vegetation of the drift line up to 80 m from the sea.

Taxonomic notes

Cenchrus spinifex (syn.: *Cenchrus incertus* M.A.Curtis, *Cenchrus carolinianus* Walter, *Cenchrus pauciflorus* Benth., ?*Cenchrus bambusoides* Caro & E.A.Sánchez) is very similar to *C. longispinus* and both have long been confused in the Mediterranean (Verloove and Sánchez Gullón 2012). The latter, however, always has more spines, the inner being terete to slightly flattened and the outer often bristle-like and relatively slender. The differences between these two species are thoroughly discussed and illustrated by Verloove and Sánchez Gullón (2012).

Examined specimens (new record)

MONTENEGRO: Velika plaža (the Long Beach in Ulcinj), strand of the Hotel Olympic, 41°54'36" N, 19°14'50" E, sand dune, near the paved path, July 2015, D. Stešević s.n. (TGU 927,210).

Orobanche baumanniorum Greuter (Orobanchaceae)

Contributors – Golshan Zare, Asli Doğru-Koca, Ali A. Dönmez

Distribution and habitat

Orobanche baumanniorum is known as an endemic species from Greece (Greuter and Thomas 1987; Uhlich 1994). During revision of the genus *Orobanche* L. in Turkey, we found that this species is distributed through various parts of the Middle Taurus, from Antalya to Mersin. This species grows in sunny, dry slopes in open woodland mostly *Pinus* and *Abies* forests, and we expect

this species to have continued distribution along the whole coastline of the Mediterranean Sea in Turkey. *Orobancha baumanniorum* is a new, native species to the flora of this country, and parasitizes *Cephalaria* sp.

Taxonomic notes

Orobancha baumanniorum was described by Greuter and Thomas (1987) based on specimens from Greece. These authors believe that this species is closely related with *Orobancha pancici* Beck, one of the Balkan endemics. Because of the presence of dark glandular hairs, Uhlich (1994) accordingly placed this taxon in the subsection *Glandulosae* (Beck) Teryokhin. Based on calyx and corolla length, character of bracts as well as calyx segments, Uhlich (1994) described also a new variety, *O. baumanniorum* var. *longebracteata* H. Uhlich. In the results of our morphological studies on different populations of *O. baumanniorum*, we find that all these characters are variable within and among populations. Specimens from Turkey have bract as long as the corolla or longer, calyx 10–16 mm long, two-segmented, each segment entire or rarely two-toothed, corolla 15–20 mm long. In accordance with our micromorphological research, its perforate seeds and inaperturate pollen grains place this taxon in the section *Orobancha*.

Examined specimens (new records)

TURKEY: C3 Antalya: Kemer, Kesme boğazı, limestone valley, *Pinus brutia*, *Cupressus sempervirens* forest, alt. 150–300 m, 12 May 1978, H. Peşmen 3869 (HUB); Antalya: Manavgat, around Oymapınar dam, alt. 600–700 m, *Quercus* sp. and *Pinus brutia* forest openings, 17 March 1995, A.A. Dönmez 4366 (HUB); C4 Antalya: Gündoğmuş, Alıkbazı, roadside, 36°43.40' N, 32°04.15' E, alt. 978 m, 04 April 2014, A.D. Koca, H. Öz & G. Zare 944 (HUB). Antalya: Gazipaşa, Sugözü village, south side of Toros Mountain, Sumakaltı area, Ziftçi stream, alt. 777 m, 36°22.30' N, 32°27.10' E, 4 April 2014, A.D. Koca, O. Aktaş & G. Zare 962 (HUB). Antalya: Alanya, Demirtaş, from Beydibi village to Çiğdem Da. *Pinus brutia* & *Quercus cerris* forest, 36°28.15' N, 32°20.55' E, alt. 954 m, 20 May 2006, A.A. Dönmez 13,072 (HUB). C5 Mersin: Işıktepe (Sedichig) to Çukurkeşlik 4 km, Efrenk valley (Güzeldere), 36°53.66' N, 34°32.41' E, alt. 355 m, 30 May 2015, E. Çilden & G. Zare 1038 (HUB).

Orobancha kotschyi Reut. (Orobanchaceae)

Contributors – Golshan Zare, Asli Doğru-Koca, Ali A. Dönmez

Distribution and habitat

Orobancha kotschyi is holoparasitic species, occurring from Armenia, through Iran, Afghanistan, Pakistan and Turkmenistan to the Pamir Alai Mountains in Middle Asia (Schiman-Czeika 1964). New localities of *O. kotschyi* parasitizing *Ferula* sp. have been found in

Turkey, and it is a new, native species to the flora of this country. It grows in subalpine grassland in grassy, herbaceous vegetation. However, other genera, like *Prangos* L., *Zozimia* Hoffm. and *Eryngium* L. have also been reported as hosts of this taxon (Novopokrovskij and Tzvelev 1958).

The Mediterranean region is one of the centres of diversity for the genus *Orobancha*, and Turkey's flora hosts around 33% of the species (Gilli 1982; Zare and Dönmez 2013, 2014). According to the recent studies, the genus *Orobancha* s.str. comprises 27 species in Turkey.

Taxonomic notes

This species belongs to section *Inflatae* (Beck) Tzvel. with heteromorphic pollen and stamen insertion near the middle of the corolla. Whereas the majority of *Orobancha* have homogeneous pollen, all members of the *Orobancha* section *Inflatae* (except *Orobancha stocksii* Boiss.) have heteromorphic pollen grains. These taxa produce inaperturate, tricolpate, bi- or trisyncolpate pollen grains in the same anther. Morphologically, these taxa also show a large range of variation in size of the corolla.

Orobancha kotschyi is closely related to *Orobancha gigantea* (G.Beck) Gontsch. and *Orobancha clavata* Schiman-Czeika, both distributed in Central and East Asia. *Orobancha gigantea* was first recognized by Beck (1890) as a variety of *O. kotschyi*, however, later it was increased to species level. According to Schiman-Czeika (1964) *O. clavata* is also morphologically close to *O. kotschyi*, but it differs from it by having long bracts and pale brown corolla.

Examined specimens (new records)

TURKEY: B9 Van: Gevaş, Artos Mountain to Aşağı Narlıca, roadside, steppe, 38°8.50' N, 43°6.16' E, alt. 2350 m, 24 June 2015, M. Armağan, M. Fidan A.D. Koca & G. Zare 1106 (HUB). Van: Muradiye, 15. km from Yumaklı village to Radar, steppe, 38°54.98' N, 43°49.53' E, alt. 2300 m, 25 June 2015, A.D. Koca & G. Zare 1109 (HUB).

Panicum barbipulvinatum Nash (Poaceae)

Panicum riparium H.Scholz

Contributors – Marcin Nobis, Elżbieta Jędrzejczak

Distribution and habitat

In the flora of Poland, there are three cultivated species of *Panicum*, namely *Panicum capillare* L., *Panicum miliaceum* L. and *Panicum virgatum* F.Muell., and two casual alien species (ephemerophytes), namely *Panicum dichotomiflorum* Michx. and *Panicum implicatum* Scribn. ex Britton. (Mirek et al. 2002). In the course of revision of herbarium materials of the *P. capillare* in Poland, we found another species of this genus,

Panicum barbipulvinatum Nash, which is a new, alien taxon for Poland. *Pannicum barbipulvinatum* is a species native to North America, but it has been found in many European countries (as *Panicum riparium* H.Scholz as well): Germany (Scholz 2002), Austria (Hohla 2006), Hungary (Király et al. 2009), Switzerland (Ciardo et al. 2011; Amarell, Hoffer-Massard, and Röthlisberger 2014), Italy (Wilhelm 2011; Verloove and Ardenghi 2015), France and Great Britain (Amarell 2013), Belgium (Verloove 2014), Croatia (Király and Alegro 2015), the Netherlands (Dirkse and Holverda 2016), Bosnia and Herzegovina, Romania and Sweden (Király in Nobis, Nowak, et al. 2016). It grows in ruderal habitats (roadsides and railway areas) and on exposed sandy and gravelly banks of rivers (Verloove and Ardenghi 2015). In Europe, its occurrences in agricultural habitats are much less frequent (Király and Alegro 2015). Although, our record of *P. barbipulvinatum* comes from herbarium material, other stands in Poland are possible, especially as it was frequently noted on the western bank of the Oder river, which is the border between Poland and Germany (<http://www.flora-deutschlands.de>).

Taxonomic notes

Panicum barbipulvinatum is known from Europe under the name of *P. riparium*, which was described by Scholz (2002). However, according to Amarell (2013), *P. riparium* should be synonymized with *P. barbipulvinatum*, which was described earlier from America. This older name was already adopted by other authors (Verloove and Ardenghi 2015; Dirkse and Holverda 2016).

Panicum barbipulvinatum is most similar to *P. capillare*, but it can be easily distinguished from the latter in having shorter pedicels and longer spikelets with acuminate apex (for more details see Amarell 2013; Király and Alegro 2015; or Dirkse and Holverda 2016).

Examined specimens (new record)

POLAND: Ruderal places close to Chmielów railway station, near Tarnobrzeg, 15 September 2004, A. Michalewska, M. Nobis s.n. (KRA 0,359,650, KRA 0,359,651, KRA 0,359,653, KRA 0,359,652, KRA 0,359,654, KRA 0,359,655; as '*Panicum capillare* L.', rev. M. Nobis 2016 as '*Panicum barbipulvinatum* Nash').

Rubus canadensis L. (Rosaceae)

Contributor – Gergely Király

Distribution and habitat

Rubus canadensis is native to Atlantic North America where it is cultivated for its fruits and has been regionally naturalized for a long time in Central and Northern Europe. However, the species has not been reported yet south of the Alps and the Carpathians, accordingly, it is

not reported from the flora of Slovenia (Martinčič 2007). Throughout its secondary European range it is found in open forests, clearings, often in the neighbourhood of nurseries (Weber 1995; Zieliński 2004; Kurtto et al. 2010). In Slovenia, *R. canadensis* was collected in 1989, but it was misidentified as a presumed hybrid between two native bramble species. Only recently, the specimens were re-found and revised in the course of a taxonomic assessment of the *Rubus* collection in GJO. This “old-new” locality is separated by a distance of 300 km from the nearest known stands in southern Czechia.

Taxonomic notes

Rubus canadensis is a representative of *Rubus* sect. *Rubus* ser. *Canadenses* (L.H.Bailey) H.E.Weber, nevertheless, some older publications (e.g. Weber 1995) included it in the ser. *Rubus*. From the similar native European species of ser. *Rubus* with erect stem it can be separated by the lack of prickles of the primocane. *Rubus allegheniensis* Porter, another introduced species of American origin, has few prickles on the first-year stem and numerous stalked glands in the inflorescence, whereas the inflorescence of *R. canadensis* is completely glabrous.

Examined specimens (new record)

SLOVENIA: “N von Gomilsko, Wald in der Ebene” (north of Gomilsko, lowland forest), 28 October 1989, W. Maurer s.n. (GJO 26,337/1, 26,337/2; as “*R. graecensis* × *nessensis*”; rev. G. Király as “*R. canadensis*”).

Rubus slavonicus Király, Trávn. & Žila (Rosaceae)

Contributor – Gergely Király

Distribution and habitat

Rubus slavonicus is a widespread bramble species in the southwestern part of the Pannonian Basin, especially abundant in some regions of the Bilogora Hills and Papuk Mountains (northern Croatia) and Somogy County (southwest Hungary), respectively. Its northernmost known localities are situated northwest of Lake Balaton near Sümeg in Central Hungary. The species grows mainly in lowlands and hilly regions, usually in sunny locations (forest fringes and clearings). It typically occurs in oak–hornbeam forests with several sub-Mediterranean elements (Király, Trávníček, and Žila 2015). It can be treated as a regional bramble species with the tendency to a wide distribution (terms are used according to Kurtto et al. 2010).

The origin of the stand in Bavaria is not known; both the introduction of fruits by human trade or transport, and a natural colonization would be possible. However, the stand is widely isolated (lying approx. 400 km northwest of the previously known area), and no other specimens were found in the course of herbarium revisions and field excursions in this region. Hence, the occurrence is probably of anthropogenic origin.

Taxonomic notes

Rubus slavonicus is a recently described apomictic species of *Rubus* sect. *Rubus* ser. *Micantes* Sudre. It differs from the widespread Central European *Rubus clusii* Borbás by the lack of stalked glands on the primocane, the lower number of prickles on the inflorescence axis and the often reflexed sepals. The diagnostic features against *Rubus ambulans* Matzk. are the presence of stalked glands on inflorescence axis and pedicels, and the position of sepals after anthesis. There are further smaller differences among *R. slavonicus* and the related species mentioned in the dimensions of the leaf, petioles and serration (Matzke-Hajek 2004; Király, Trávníček, and Žíla 2015).

Examined specimens (new record)

GERMANY: Bavaria, 11 km E of Chiemseepark Felden, parking place of the highway nr. 8, shrubbery at the lake-shore, alt. 520 m, 47°50'02" N, 12°24'16" E, 5 August 2014, G. Király s.n. (BP, OL).

Stipa eriocaulis Borbás (Poaceae)

Contributors – Marcin Nobis, Ewelina Klichowska, Arkadiusz Nowak

Distribution and habitat

Stipa L. is one of the largest genera in the family Poaceae, with approximately 150 species distributed in steppes and open grassland habitats of Eurasia and North Africa (Tzvelev 1976; Martinovský 1980; Freitag 1985; Nobis 2013; Nobis, Nowak, and Nobis 2013; Nobis, Klichowska et al. 2016). In Poland, *Stipa* is represented by four species: *Stipa capillata* L., *Stipa pennata* L., *Stipa pulcherrima* K.Koch and *Stipa borystenica* Klokov ex Prokudin. All of these species are strictly protected and (except *S. capillata*) treated as endangered and included in the Polish red data book of plants (Ceynowa-Giełdon, Nobis, and Barańska 2014; Ceynowa-Giełdon, Nobis, and Rutkowski 2014; Nobis 2014). During revision of the herbarium materials from the genus *Stipa* deposited in the Opole Silesia Museum, we came across herbarium sheets with three interesting specimens of *Stipa* collected by Dziaczko in June 1889. They were determined as *Stipa pennata*, but careful examination of these specimens showed that two of them belong to *S. pennata*, whereas the third specimen represents *Stipa eriocaulis*. This species is widespread in a few Central and East European countries, namely in Germany, Czech Republic, Slovakia, Austria, Hungary, Slovenia, Switzerland and Ukraine (Martinovský 1980; Ludwig and Schnittler 1996; Marhold and Hindák 1998; Danihelka et al. 2000; Gonzalo, Aedo, and García 2013); however, it has not been reported to date from Poland (Ceynowa-Giełdon 1976; Mirek et al. 2002). The Polish stand of *S. eriocaulis* is the northernmost locality of the species in Central Europe.

During the field research carried out by us in the vicinity of Szprotawa in 2012, the mentioned locality of *S. eriocaulis* has not been confirmed. Moreover, the revision of herbarium materials as well as field research carried out in almost all of the contemporary known localities of *S. pennata* and *S. pulcherrima* in Poland have not brought the expected results in the form of finding other localities of this species. It is possible that more detailed studies could lead to find this quite generally indicated by Dziaczko locality. However, taking into account that it has not been confirmed since the end of the nineteenth century, *S. eriocaulis* should be considered as an extinct species in Poland.

Taxonomic notes

Stipa eriocaulis was described by Borbás (1883) from Croatia. However, it is still misidentified with other members of *Stipa*, especially from the section *Stipa*, and its taxonomic position has undergone numerous changes. For instance, Martinovský proposed the new combination *S. pennata* subsp. *eriocaulis* (Martinovský and Skalický 1969; Martinovský 1980) and synonymized *S. eriocaulis* subsp. *lutetiana* H.Scholz with *S. pennata* L. On the other hand, Mansfeld (1939), and later Rauschert (1970) and Tzvelev (1974, 1976) claimed that the name "*Stipa pennata*" must be used for *Stipa joannis* Čelak. It was also confirmed by Freitag (1985), who chose a lectotype from original material studied by Linneaus. Also some modern scholars as Danihelka et al. (2000) or Gonzalo, Aedo, and García (2013) concluded that *S. eriocaulis* exhibits some diagnostic features, which make this species distinguishable from *S. pennata* as well as other *Stipa* taxa.

Because of the ventral line of hairs reaching the top of the lemma as well as short hairs between ribs on adaxial surface of vegetative leaves, *S. eriocaulis* is most similar to *S. pulcherrima*. However, it differs from the aforementioned species by having shorter antherium (15.0–20.7 versus 19.3–23.8 mm), shorter awn (218–312 versus 285–438 mm) and shorter hairless part of awn (column) (47–81 versus 75–112 mm). Some previous authors (Scholz 1968; Martinovský 1977, 1980; Danihelka et al. 2000) stressed that *S. eriocaulis* is also characterized by having glabrous and smooth abaxial surfaces of the vegetative leaves, while *S. pulcherrima* have generally scabrous vegetative leaves. During our study we found that the roughness of the abaxial surface of the vegetative leaves is quite variable in case of *S. eriocaulis*, the leaves can be glabrous and smooth or slightly scabrous (especially in the lower part or on older leaves). Because of the strong similarity of these two taxa they are often misidentified. For example, the presence of *S. eriocaulis* in the Czech Republic was confirmed in the late 1990s (Danihelka et al. 2000) but was earlier confused with *S. pulcherrima*. *Stipa eriocaulis* is also somewhat similar to the other species of the section *Stipa* occurring in

Poland, namely *S. pennata* and *S. borystenia*. However, the last two can be easily distinguished by the ventral line of hairs on the lemma, which terminate at one half to three-quarters (rarely four-fifths) of its length, adaxial surface of vegetative leaves covered only by very short spinules and awn 225–408 mm long. *Stipa eriocaulis* has a dorsal line of hairs totally fused with subdorsal ones while both *S. borysthenica* and *S. pennata* have dorsal and subdorsal lines slightly fused only at the bottom.

Examined specimen (new record)

POLAND: Śląsk, Szprotawa, on sandy fields by beech wood [Schlesien, Sprottau, Sandige ackern bei Buchenwald], June 1889, C. Dziaczko 2287 (Opole Silesia Museum).

Thymus callieri Borbás ex Velen. (Lamiaceae)

Contributors – Anton V. Popovich, Vladimir M. Vasjukov

Distribution and habitat

Thymus callieri Borbás ex Velen. s.str. is described and known only from the Crimea. The species occurs in northern and eastern foothills of the steppe zone (Klokov 1954, 1973). The species was found in 2014 in the north-western Caucasus, 200 km from the nearest localities in Crimea. *Thymus callieri* is a new species for the flora of the Krasnodar region and the Caucasus. The species is distributed in the Peninsula Abrau in petrophyte vegetation on gravelly or rocky slopes with southern aspect.

Thymus callieri was described from the northwestern Caucasus by Maleev (1931) “On the rocky southern slopes throughout the district. Often!! The Northern slope, in the meadow neighborhood Neberjaevskoye!!”. However, we did not find herbarium specimens of *T. callieri* collected by Maleev (1931).

Taxonomic notes

According to Velenovsky (1903), *T. callieri* occurs in Crimea (collection by Callier, Kaspar) and in the Balkan Peninsula. However, the Balkan plants differ from the typical Crimean specimens of *T. callieri* (Klokov and Desjatova-Schostenko 1936; Klokov, 1954; Markova 1989) and should be referred to *Thymus urumovii* (Velen.) Vasjukov.

Thymus roegneri K. Koch, which is endemic to the southern part of Crimea, whose stems and both sides of leaves are densely covered with short and long hairs, is sometimes also wrongly merged with *T. callieri*, whose leaves are glabrous on both sides and whose stems are covered with long hairs only below the inflorescence.

Examined specimens (new record)

RUSSIA: [the Russian Caucasus], Krasnodar region, the Abrau peninsula, around Novorossiysk City, near the village Vasilevka, gravelly slope of southern aspect, 7 May 2014, A. Popovich s.n. (LE, PVB; det. V. Vasjukov).

Tragopogon pratensis L. subsp. *minor* (Miller) Wahlenb. (Asteraceae)

Tragopogon minor Miller

Contributor – Marcin Nobis, Mateusz M. Wolanin, Magdalena N. Wolanin

Distribution and habitat

Tragopogon pratensis subsp. *minor* is a taxon native to West and Central Europe (Tutin et al. 1976). Its general range covers Great Britain, central part of Ireland, France, Switzerland, southern ends of Norway and Sweden, Denmark, Belgium, the Netherlands, north-western Germany and the western part of the Czech Republic (Meusel and Jäger 1992). In the Czech Republic most of its localities occur in the western and southern part of the country, where it is treated as a native species; however, in the eastern part of the country (Moravian Region) it is treated as an anthropophyte. It grows there on grassy roadsides, debris, railway embankments and in ruderal places (Slavík and Štěpánková 2004). In Poland, *T. pratensis* subsp. *minor* has been recorded only in two, near-positioned (50 km apart) localities, situated near Przemyśl (southeastern Poland). It was observed on grassy roadsides and on the flood embankment covered by meadow vegetation (Wolanin 2014). In recent years, new localities of *T. pratensis* subsp. *minor* have been found in the southern and southwestern parts of Poland.

The newly found localities of *Tragopogon pratensis* subsp. *minor* in Poland suggest that the species is established here in ruderal habitats.

Taxonomic notes

Tragopogon pratensis subsp. *minor* is most similar to *T. pratensis* subsp. *pratensis*; however, it is easily distinguishable by ligulate flowers about half as long as involucre bracts and involucre bracts often narrowly reddish margined.

Examined specimens (new records)

POLAND: Chyrów Plateau, Przemyśl city, flood embankment, 49°46'54" N, 22°49'18" E, alt. 192 m, 20 May 2016, M.M. Wolanin, M.N. Wolanin s.n. (KRA); Kraków-Częstochowa Upland, Klucze village near Olkusz, a gap in the concrete wall outside the fence, 50°20'06" N, 19°33'37" E, alt. 355 m, 5 June 2016, M.N. Wolanin, M.M. Wolanin s.n. (KRA), Kraków-Tyniec, roadside (grassland on the edge of forest) on the Bodzów hill, 50°01'54" N, 19°51'47" E; alt. 230 m a.s.l., 24 May 2015, M. Nobis s.n. (KRA); Kotła near Głogów, roadside/dry grassland, 15 June 2015, M. Nobis s.n. (KRA); Kraków-Opatkowice, grassland road side, 49°59'32" N, 19°54'39" E; alt. 233 m a.s.l., 4 June 2016, M. Nobis s.n. (KRA); Kraków-Zakrzówek, road side, 50°01'55" N, 19°54'39" E; alt. 210 m a.s.l., 6 June 2016, M. Nobis s.n. (KRA).

Acknowledgements

Andrey Erst thank the staff of the herbaria visited as well as Maria Mikhailova for consultation on the morphology and distribution of *Corydalis* (Sect. *Strictae*); Golshan Zare, Asli Doğru-Koca, Ali A. Dönmez are grateful to Hasan Öz and Oğuzhan Aktaş for their help during fieldwork and Tuğrul Tüzüner for his help with the Scanning Electron Microscopy at TPAO (Turkish Petroleum Corporation, Ankara). The research of Alexander P. Sukhorukov and M. Kushunina was supported by the Russian Science Foundation (grant no. 14-50-00029: revision in herbaria K, P, M, MSB) and the scientific programs of Lomonosov Moscow State University (AAAA-A16-116021660045-2 and AAAA-A16-116021660106-0: revision of the herbaria in Russia); research of Danijela Stešević was financially supported by the Rufford Foundation (project 14048-1); research of Marina Olonova has been carried out with a grant in accordance with Resolution of the Government of the Russian Federation No 220 dated 09 April 2010, under Agreement No 14, B 25.31.0001 with Ministry of Education and Science of the Russian Federation dated June 24, 2013 (BIO-GEO-CLIM) and a grants of RFBR (No 16-04 01605); research of Gergely Király was supported by the project 'Agrárklíma.2 VKSZ-12-1-2013-0034'; research of Golshan Zare, Asli Doğru-Koca, Ali A. Dönmez was supported by The Scientific and Technical Research Council of Turkey (TÜBİTAK BİDEB 2216) and Hacettepe University Scientific Research Project Coordination Unit [014 01 601 001]; research of Andrey Erst was supported by the Russian Foundation for Basic Research (grants no. 15-34-20513); research of Wang Wei was supported by National Natural Science Foundation of China (grant no. 31270269) and the Youth Innovation Promotion Association Foundation of CAS; research of A.L. Ebel was supported by the D.I. Mendelev Scientific Fund Program of Tomsk State University; research of Marcin Nobis were financially supported by the National Science Centre, Poland based on the decision no. DEC-2013/09/B/NZ8/03287.

Disclosure statement

No potential conflict of interest was reported by the authors.

Notes on contributors

Interests of all the authors lie in taxonomy, chorology and ecology of plants.

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