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New findings of adventive plants in the Tomsk Region

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Summary. The article contains new data on localities of new and rare adventive plants in the Tomsk Region. *Hypochaeris radicata* L. is not only a new species but a representative of a new genus for the flora of Siberia; *Geranium pusillum* L. is reported here for the first time for the Tomsk Region and constitutes the first record within the forest zone of Siberia; for 4 rare adventive species (*Bidens frondosa* L., *Impatiens parviflora* DC., *Cynoglossum officinale* L., *Hesperis pycnotricha* Borbás et Degen), new localities were noted, indicating their further distribution in the southern regions of the Tomsk Region and extending the distribution range of the species.

Находки адвентивных растений в Томской области

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Ключевые слова: адвентивные растения, биоразнообразие, Сибирь, Томская область, флористические находки.

Аннотация. В статье приведены новые сведения о местонахождениях новых и редких адвентивных растений в Томской области. В том числе: *Hypochaeris radicata* L. является не только новым видом, но представителем нового рода для флоры Сибири в целом; *Geranium pusillum* L. – новый вид для Томской области и первая находка в пределах лесной зоны Сибири; для 4 редких адвентивных видов (*Bidens frondosa* L., *Impatiens parviflora* DC., *Cynoglossum officinale* L., *Hesperis pycnotricha* Borbás et Degen) отмечены новые местонахождения, свидетельствующие о дальнейшем их расселении в южных районах Томской области.

Introduction

The Tomsk Region is located in the southeastern part of the West Siberian Plain and occupies an area of 314 400 km². In most of the territory the relief is flat, heavily swamped, with elevations no higher than

200 m a. s. l. Only the southeastern part characterized by the presence of the spurs of the Kuznetsk Alatau is slightly elevated and increases the diversity of landscapes. The maximum height reaches 264 m a. s. l. The systematic study of flora began with the opening of the first university in Tomsk and the

arrival of P. N. Krylov in 1885. According to the latest identification guide, the flora of the Tomsk Region includes 1170 species of vascular plants (Opredeletel rasteniy ..., 2014). Despite the relatively well studied regional flora, regular observations related mainly to field research and field training practices of students allow to identify quickly those changes that occur in the composition of the flora, associated with the development of the region and especially its most dynamic component – the territory of the city of Tomsk and other settlements. The present work is based on the authors' material collected during the floristic research of the Tomsk Region in different years (2019–2022). After the authorship of the taxon, the data of the herbarium label indicating the place of storage of the specimen are given. Herbarium materials are stored in the Herbarium of P. N. Krylov of Tomsk State University (TK, Tomsk, Russia), duplicates of the species new to the region were sent to the Herbarium of Altai State University (ALTU, Barnaul, Russia). The family names within the sections are listed in alphabetical order.

Results and discussion

New species and genus in the flora of Siberia

Asteraceae Bercht. et J. Presl

Hypochaeris radicata L.: "Russia. Tomsk Region, Tomsk, Kirovsky urban district. Lawns. 56°28'11.8"N, 84°57'03.0"E. 21 VI 2022. A. I. Pyak, E. A. Pyak / Россия, Томская область, г. Томск, Кировский район. Газоны, 56°28'11.8" с. ш. 84°57'03.0" в. д. 21 VI 2022. А. И. Пяк, Е. А. Пяк" (TK [TK004600]). – Within the natural European-South-West Asian range, this psammophilous edge-pine forest species occurs in regions with a temperate warm climate (Tzvelev, 2000; POWO, 2022). It is currently widely distributed in almost all continents in areas with a predominantly warm temperate climate. It occurs as a weed along roadsides, in the outskirts of fields and mainly on lawns. The ubiquitous wide distribution of the lawns in populated areas contributes to the further active spread and to its inclusion in the list of invasive species in many countries (Ortiz et



Fig. 1. *Hypochaeris radicata*, Tomsk: A – Habit; B – Basal rosette of leaves; C – Achenes with pappus; D – Capitula and involucre (photos by A. I. Pyak).

al., 2008; Ng, Driscoll, 2015). In the Tomsk Region, it was first found on lawns within the city of Tomsk in 2019 (Fig. 1). Further observations showed that *H. radicata* can quite successfully grow in already settled areas. This species successfully endures regular lawns mowing due to its morphological features: basal rosette of leaves of *H. radicata* is usually almost flattened over the soil surface or even tightly pressed against it in more open places. This allows to avoid critical damage and to restore quickly the lost parts, some individuals thereby have time to bloom and give seeds.

New species in the flora of the Tomsk Region

Geraniaceae Juss.

Geranium pusillum L.: "Russia. Tomsk Region, Tomsk, Kirovsky urban district. Shaded roadside areas under maple trees (*Acer negundo* L.). 56°28'17.8"N, 84°57'51.0"E. 17 IX 2022. A. I. Pyak, E. A. Pyak / Россия, Томская область, г. Томск, Ки-

ровский район. Затененные придорожные участки под кленами, 56°28'17.8" с. ш. 84°57'51.0" в. д. 17 IX 2022. А. И. Пяк, Е. А. Пяк" (ТК [ТК004599]). – The native range of this species is Europe to W. Himalaya (POWO, 2022). *G. pusillum* is currently widely settled in Europe and North America, where it is weedy in fields, settlements, along roadsides. In Siberia, it grows in the Altai Territory, Omsk and Kurgan Regions (Peshkova, 1996; Silantjeva, 2006; Troshkina, 2019; daria99915, 2023). In 2022, the species was found within the city of Tomsk on a shaded roadside site (Fig. 2D, E). The observed population includes numerous individuals of all age states. Around the generative individuals at a distance of up to 0.5 (near single individuals up to 1) m, a large number of sprouts was observed, which suggests their further active dispersal. In the flora of the Tomsk Region, there is another alien species of the section *Batrachioides* Koch. – *G. pyrenaicum* Burm. f., which was noted within the city of Tomsk in the microdistrict of Stepanovka and in the park of

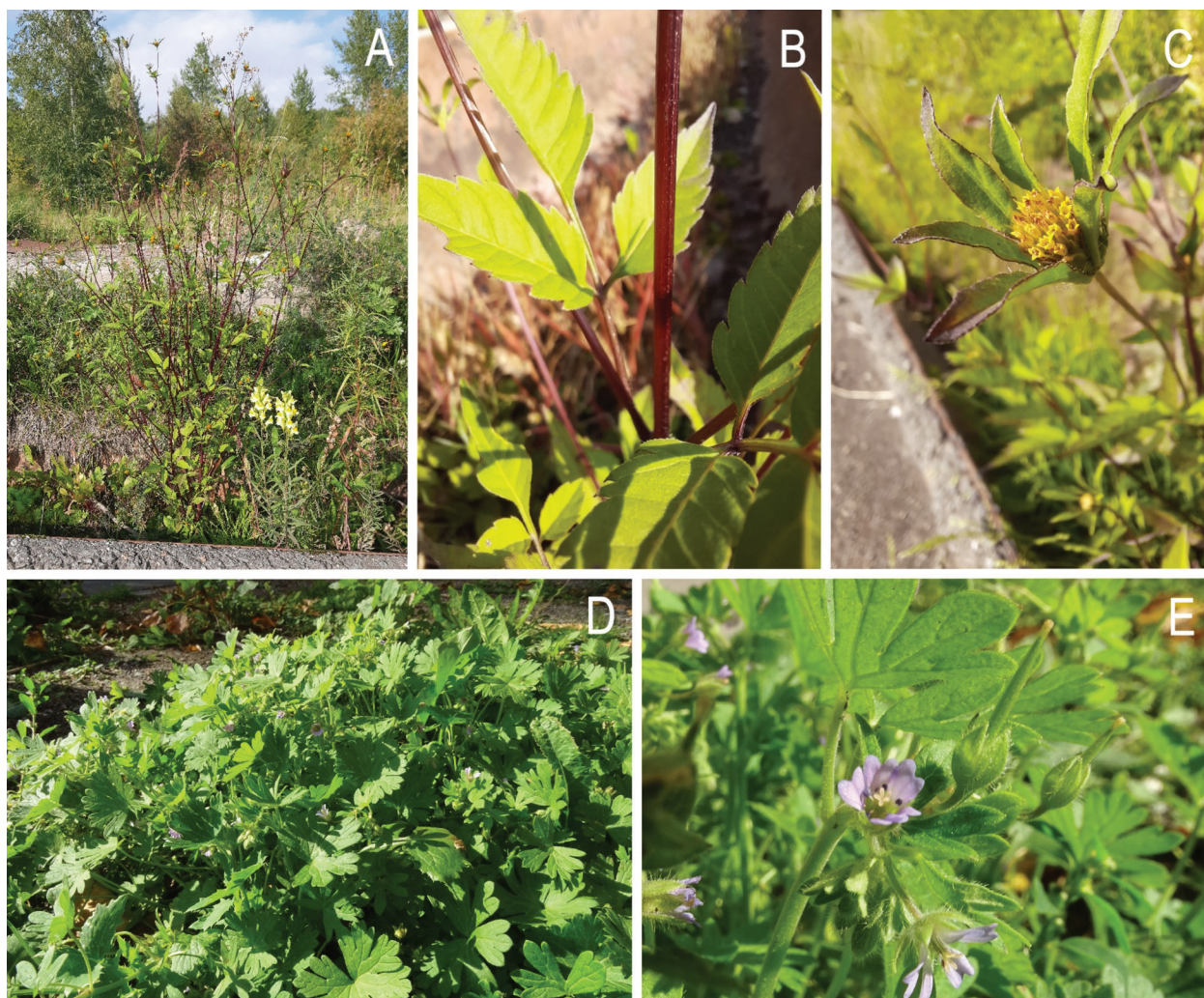


Fig. 2. New and rare adventive species in the Tomsk Region: A–C – *Bidens frondosa*, Tomsk (A – Habit, B – Lower stem leaves, C – Capitula); D–E – *Geranium pusillum*, Tomsk (D – Habit, E – Flowers and fruits) (photos by A. I. Pyak).

the Siberian Botanical Garden (Amelchenko, 2000). *G. pusillum* well differs from *G. pyrenaicum* by the shape of the leaves, the size of the petals, and the type of mericarp pubescence.

New localities of rare species

Asteraceae Bercht. et J. Presl

***Bidens frondosa* L.:** “Russia. Tomsk Region, Tomsk, Kirovsky urban district, Lagerny Garden Lawns. Storm drain. 56°26'50.8"N, 84°57'49.2"E. 30 VIII 2022. A. I. Pyak, E. A. Pyak / Россия, Томская область, г. Томск, Кировский район, Лагерный сад. Водосточные канавы, 56°26'50.8" с. ш. 84°57'49.2" в. д. 30 VIII 2022. А. И. Пяк, Е. А. Пяк” (ТК [ТК004598]). – *B. frondosa* is a species originated in North America and currently widely distributed in Europe and East Asia (POWO, 2022). In Siberia, it occurs in the Altai Territory, as well as in the Omsk, Kemerovo and Tyumen Regions (Efremov et al., 2017; Sheremetova, Sheremetov, 2019; Ebel et al., 2020; Glazunov, 2023; Kharugin, 2023). In the Tomsk Region, the species was previously known only from the right bank of the Tom River in the territory of an abandoned gravel quarry near the village of Kazanka, from the valley of the Tom River for about 15 km (from the settlement of Shelomok to the mouth of the Ushaika River) (Ebel et al., 2022; Pyak, 2023) and in the vicinity of the village of Bāsandaika (Shestakov, 2023). In 2022, on the bank of the Tom River within the city of Tomsk, we found a large population of the species, which included individuals of different age states from juvenile to generative (Fig. 2A, B, C). From *B. tripartita* L., which is morphologically similar to *B. frondosa* and widespread in Siberia, it can be easily distinguished by 3–5-dissected rather than lobed leaves, the lower leaflets of which sit on well-defined petioles.

Balsaminaceae A. Rich.

***Impatiens parviflora* DC.:** “Russia. Tomsk Region, Kozhevnikovsky district, neighborhood of the village of Kireevsk. The edge of the birch-pine forb forest, along the path. 56°23'56.3"N, 84°04'38.0"E. 01 VII 2022. A. V. Rudyev, N. E. Tolkanjuk, D. V. Yusupovsky, E. A. Pyak / Россия. Томская область, Кожевниковский р-н, окр. с. Киреевск. Опушка березово-соснового разнотравного леса, по краю тропинки, 56°23'56.3" с. ш. 84°04'38.0" в. д. 01 VII 2022. А. В. Рудьев, Н. Е. Толканюк, Д. В. Юсуповский, Е. А. Пяк” (ТК [ТК004601]). – *I. parviflora* is native to Central Asia and widely naturalized in temperate zone throughout Eurasia and North America

(POWO, 2022). Its invasive range in Siberia includes the Novosibirsk, Kemerovo, Tyumen, and Tomsk Regions, Republic of Altai, and Altai Territory (Baikov, 1996; Silant'yeva, 2006; Ebel, 2007; Shaulo et al., 2010; Verkhozina et al., 2022). In the Tomsk Region, the species was previously found only in the administrative center of the region, within the city of Tomsk (Fig. 3A, B).

Boraginaceae Juss.

***Cynoglossum officinale* L.:** “Russia. Tomsk Region, Kozhevnikovsky District, the village of Kireevsk. Along the shore of the pond. 56°22'24.0"N, 84°05'46.0"E. 04 VII 2022. A. V. Rudyev, N. E. Tolkanjuk, D. V. Yusupovsky, E. A. Pyak / Россия. Томская область, Кожевниковский р-н, с. Киреевск. По берегу пруда, 56°22'24.0" с. ш. 84°05'46.0" в. д. 04 VII 2022. А. В. Рудьев, Н. Е. Толканюк, Д. В. Юсуповский, Е. А. Пяк” (ТК [ТК004604; ТК004602]). – The native range of *C. officinale* is Europe to W. and S. Siberia and Iran (POWO, 2022). Despite the fact that the species is widespread throughout southern Siberia, in the territory of the Tomsk Region it has so far been known only within the city of Tomsk (Opredelitel rasteniy ..., 2014), the city of Asino (Asinovskiy District) (Samodurov, 2023) and within the village of Baturino (Kozhevnikovskiy District) (Ebel, 2023). The new locality of *C. officinale* indicated in this study is about 80 km away from the village of Baturino, on the other bank of the Ob River (Fig. 3C, D).

Brassicaceae Burnett

***Hesperis pycnotricha* Borbás et Degen:** “Russia. Tomsk Region, Kozhevnikovskiy District, the village of Kireevsk. Side of a country road. 56°22'09.8"N, 84°05'18.1"E. 28 VI 2022. A. V. Rudyev, N. E. Tolkanjuk, D. V. Yusupovsky, E. A. Pyak / Россия. Томская область, Кожевниковский р-н, с. Киреевск. Обочина проселочной дороги, 56°22'09.8" с. ш. 84°05'18.1" в. д. 28 VI 2022. А. В. Рудьев, Н. Е. Толканюк, Д. В. Юсуповский, Е. А. Пяк” (ТК [ТК004603]). – The native range of *H. pycnotricha* is Balkans to Western Asia (Tzvelev, 2000). In Siberia, it was indicated for the Altai Territory, Tomsk, Tyumen and Kemerovo Regions, as well as for Republic of Buryatia (Dorofeyev et al., 2000; Ebel, 2002; Ebel et al., 2009; Sutkin et al., 2016; Glazunov et al., 2017). In the territory of the Tomsk Region, the species was previously known only within the city of Tomsk, where it occurs in wastelands, near houses in the private sector and along the railway (Fig. 3E, F).

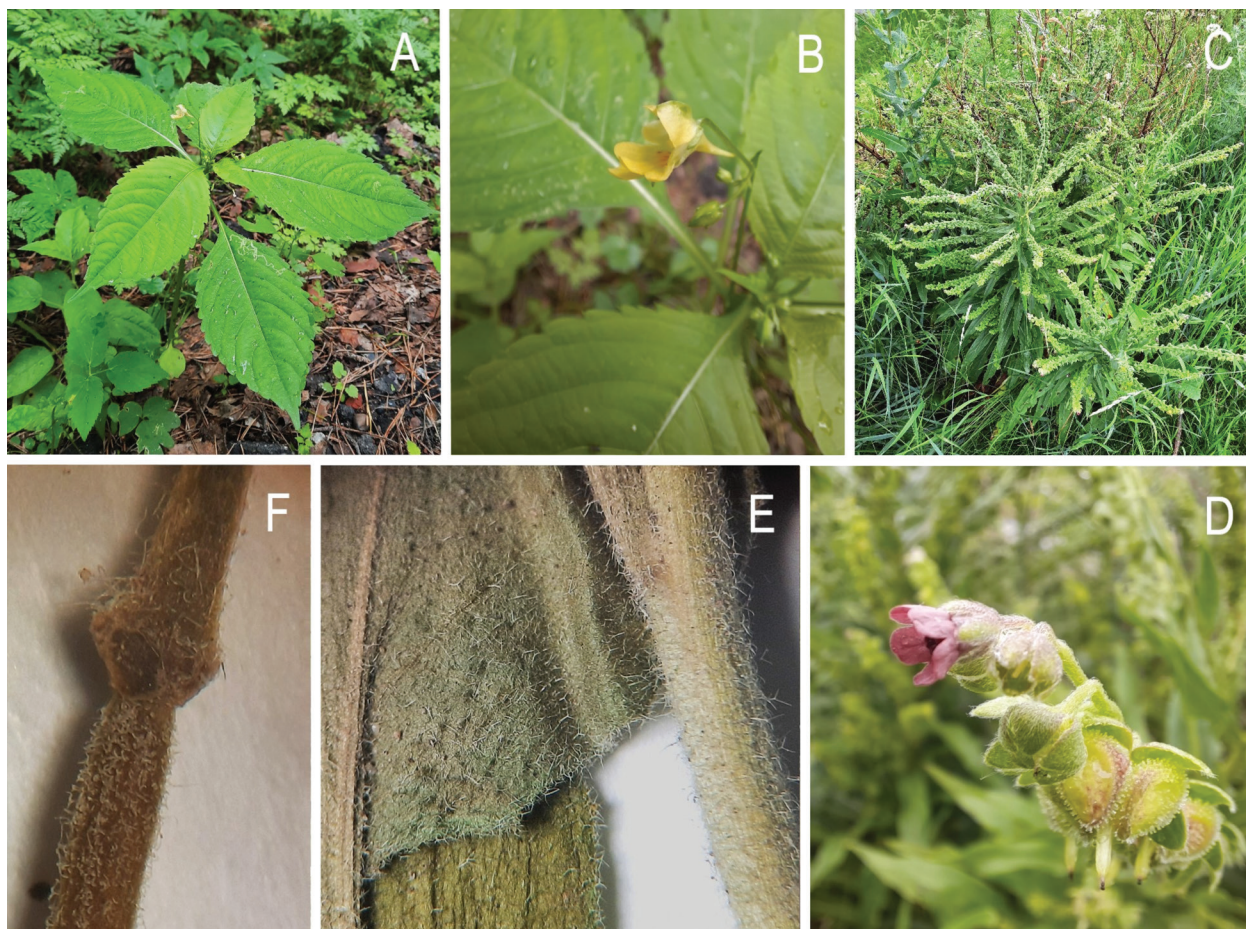


Fig. 3. Rare adventive species in the Tomsk Region: A–B – *Impatiens parviflora*, neighborhood of the village of Kireevsk (A – Habit, B – Flower); C–D – *Cynoglossum officinale*, the village of Kireevsk (C – habit, D – Flower and fruits); E–F – *Hesperis pycnotricha* (E – Pubescence of stem and lower stem leaves (enlarged part of the herbarium specimen [TK004603]), F – Pubescence of pod and pedicel (enlarged part of the herbarium specimen [TK004603])) (photos by E. A. Pyak).

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