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CAREX STENOPHYLLA WAHLENB. (CYPERACEAE) A NEW SPECIES FOR THE FLORA OF LATVIA

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Carex stenophylla Wahlenb. (Cyperaceae) is recorded as a new species for Latvia and the Baltic States flora on the basis of herbarium material first collected by P. Evarts-Bunders, in Daugavpils (Latvia). In Latvia the species has been identified in their typical habitat - xeric sandy grassland. Current locality identified far northward of the main natural areal has, most probably, an anthropogenic origin.

Key words: *Carex stenophylla*, Latvia, Baltic States, Daugavpils, flora.

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INTRODUCTION

Carex subg. Vignea is a subgenus of the sedge genus *Carex*, containing around 300 of the 2000 species in the genus (Ball & Reznicek 2002; Ford et al. 2006). Its members are characterised by having bisexual, sessile spikes, where the female flowers have two stigmas each (Ford et al. 2006; 2012). Sedge species are distributed across all continents (except for Antarctic), mainly in temperate and cold zones. There are 70 species of sedge occurring in the wild in Latvia (Baroniņa 2001), in Estonia - 73 (Kusk & Kukk 1998; Toom et al. 2016), in Lithuania - 72, six of which are of uncertain distribution (Gudžinskis 1999). The list of Lithuanian flora mentions that *C. stenophylla* is potentially possible in Lithuania (Gudžinskis 1999), and in the Baltic flora it is noted that there is no herbarium material that confirms the species (Baroniņa et al. 2003).

In summer of 2011, an unknown species of the genus *Carex* was found in the environs of Daugavpils (South East Latvia). The study of specimens revealed that it is *C. stenophylla* Wahlenb., a species neither recorded previously in Latvia nor in the Baltic States.

MATERIAL AND METODS

The local research was carried out within the mapping of Daugavpils flora, which started in 2009 (Evarts-Bunders et al. 2012, 2015). The species was first collected on 17th Jun 2011 (leg. P. Evarts-Bunders), then again on 25^{h} April 2014 (leg. P. Evarts-Bunders), repeatedly in 2017 and 2019 (Fig.1). The collected herbarium material is deposited in DAU (Herbarium of Institute of Life Sciences and Technology, Daugavpils University) (Evarte-Bundere et al. 2019). Since morphological characters of *C. stenophylla* have not been described in the scientific literature of the Baltic States, it requires publishing it here.

The present description of the species is based on the morphometric analysis of the material collected in Latvia.

RESULTS

Carex stenophylla Wahlenb., 1803, Kungl. Svenska Vetenskapsakad. Handl. N. S. 24: 142. Lectotype: "Frequens in pratis aridis des Brigithenau Viennae, Hedwig 1798. (HAL, Herb. Schkuhr) selected by Norlindh, l.c.: 5. 1960.

Morphology. Perennial, grayish-green sparsely cespitous plant up to 10-30 cm, forms prostrate stolons that function in vegetative spread. Rhizomes thin, 1-1.5 (2) mm, covered with grey to dark brown scales, which disintegrate into fibres. Stem obtusely trigonous, smooth or sometimes slightly scabrous above. Leaves distinctly shorter as stem length or neary equalling; sheaths 15-30 mm, dark brown, glossy, margin often slightly divided into thin fibres. Leafblades 1-2.5 mm, erect, slightly falcate, flat or conduplicate, long-attenuate, smooth or margins scabrous towards apex.

Inflorescence dense, 10-20 mm long, globose or elongate, compact group of (5) 8-10 spikes. Spikes androgynous, globular. Each spike 5-8 mm long. Bracts sheath-less, acute, glume-like or the lowest as long as its spike. Female glumes 3-4.5 x 1-2.2 mm, dark brown, acute or mucronate, apex and margins as a rule scarious, with whitish, membranous margins. Stigmas 2. Utricles 3-5 x 1.5-2.4 mm, widely ovoid, plano-convex, light brown, glossy, distinctly nerved, basal parts whitish, upper parts later suberous, with narrow, scabrous margin, which long remain green, and with a stipe to 0.7 mm, beak 0-0.9 mm, conical, brown to dark brown, smooth or slightly scabrous, ostiole obscurely bifid. Nut 1.6-2.0 x 1.4-1.6 mm, ovoid, plano-convex, yellowish - brown, finally glossy, from obscurely reticulate to papillose.

Bloom during first half of May, fruits in June.

SPECIMENS EXAMINED (Estimated geographic coordinates for localities are given in square brackets) Latvia, Daugavpils county, Daugavpils city, Vecā Forštate housing estate, about 300 m southeast of railway, sands in the area of residential detached houses,

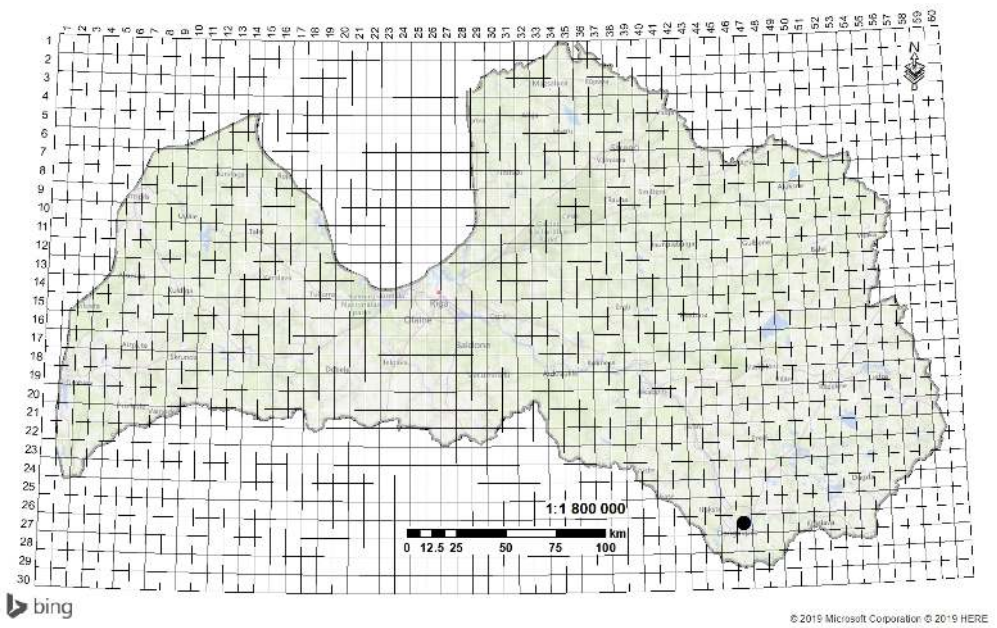


Fig. 1. Map showing distribution of *Carex stenophylla* Wahlenb. in Latvia.

[55°53'48.3648"N, 26°31'32.1708"E], 17th Jun 2011, P. Evarts-Bunders, 114071006 (DAU) (Fig. 3). The locality was repeatedly inspected on 25th April 2014, P. Evarts-Bunders 114108001 (DAU). All collected *C. stenophylla* herbaria material was revised and re-identified by A. Skuratovich from The Institute of Experimental Botany of Belarus, Minsk.

Distribution. Main areal in dry grasslands and steppe zone - Central and Eastern Europe (mosltly in Sothern part), Caucasus, Central Asia (Kazakhstan), Western Siberia to Mongolia, China and Pakistan (Egorova 1999). Nearest localities – Belarus, Orsha city, on railway as alien plant (Skuratovich 2017), and SE Russia, St.-Petersburg, near park as alien plant (Tzvelev 2000).

The species was found in Latvia in 2011 in Daugavpils city, collected in athropogenic xeric sandy biotope as a monodominant (Fig. 2). The locality is found outside areas of high-rise houses and industrial territories, which is mainly characterized by residential areas of detached houses dating to the end of the 19th century and first decade of 20th century. It should be emphasized that this part of the city is characterized by sandy habitats formed on anthropogenic inland dunes with fragmentary vegetation characteristic of inland dunes. The identified population is vital, abundant (Fig. 2), with an average number of individuals of appr. 3-5 thousands. The site is characterized by rare traffic, at the same time, there is one of the busiest railway tracks nearby. The nearest one is 350 m away - St. Petersburg - Daugavpils - Warsaw railway line, it is also relatively close to Daugavpils marshalling yard - the largest centre of its kind in Eastern Latvia.



Fig. 2. *Carex stenophylla* Wahlenb. in newly discovered locality in Vecā Forštate, Daugavpils, Latvia (Photo: G. Evarte-Bundere).

DISCUSSION

Carex stenophylla Wahlenb. is a hard to identify drylands species found in Daugavpils far in the north outside the continuous range. It is very similar to other common for Latvia dry sedges flowering in spring and early summer, *Carex supina, C. praecox*, etc., but which differs by having very narrow leaves and by the arrangement of the male-female flowers in the spike. Similarly, the species is very similar to another representative of the sedge family, i.e. *Blysmus rufus*, which is also a long-stemmed

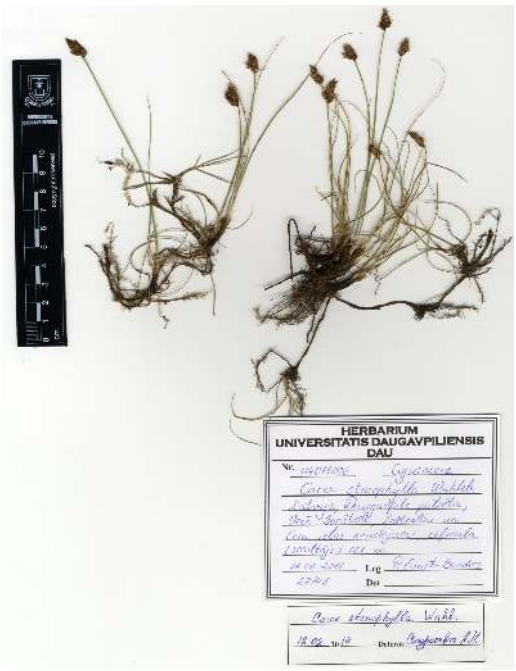


Fig. 3. Herbarium specimen of *Carex stenophylla* Wahleb. from newly discovered locality in Vecā Forštate, Daugavpils, Latvia. (DAU 114071006).

stolon, narrow reniform leaves and small, dark brown inflorescences. It differs from *Blysmus rufius* by having a different habitat - in Latvia it is only encountered on the sandy beaches as halophytes, the flowers are bisexual., female glumes obtusulous, without whitish, membranous margin, whereas *Carex stenoplylla*, like other *Carex* species – with monoecious flowers (each flower is either male (staminate) or female (pistillate)), is a gynecandric sedge species having male flowers at the top, female at the bottom of spike, female glumes acute or mucronate, with whitish, membranous margin.

C. stenophylla is encountered across Eurasia, and is a typical representative of the steppe flora. In central parts of European Russia, the species is mainly related with arid, sandy plains, steppes, anthropogenic steppes, etc. (Chater 1980, Egorova 1999).

Newly identified locality of *C. stenophylla* in Latvia is a very far and isolated from the nearest natural localities and main part of the whole area, the closest disjunct localities in Belarus and Russia are also of well-defined anthropogenic origins. This suggests that in Latvia this is also a case of an adventi species. Nevertheless, it must be remembered that the Latvian locality is situated in Daugavpils, where earlier and then lately some off-type steppe plants have been frequently encountered (*Carex supina* Willd. ex Wahlemb., *Draba nemorosa* L., *Silene chlorantha* (Willd.) Ehrh., *Silene otites* (L.) Wibel, *Androsace elongata* L.) (Gavrilova & Tabaka 1985; Evarts-Bunders et al. 2015; Evarts-Bunders & Evarte-Bundere 2018). Steppe species has been searched for in typical habitats - arid sunny slopes with southern exposition, which is a very typical habitat for all steppe species northward of the main range (Evarts-Bunders 2009), as well as in xerophytic grasslands. There are numerous similar thermophile habitats with arid, open vegetation and sandy soil in Daugavpils vicinity, therefore other populations of different steppe species might be found.

The description of Latvian plants makes it obvious that in the Latvian locality, virtually all typical morphometric features of the species are on average smaller (shorter, smaller) by one third or even nearly half than provided in the descriptions of the species from the main part of the range (Egorova 1999; Skuratovich 2017), which cannot be explained solely by seasonal measurements - early collection of the herbarium specimens. The specimens have been collected in the locality during several years, within various phenological phases, through which it has been stated that the sizes have not changed significantly. In this case we could speak about the decrease of sizes most likely related to the growth under stress outside the species' natural areal.

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