Androsace elongata L. (Primulaceae), a new species for the Baltic States

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Abstract: Androsace elongata L. (Primulaceae) is recorded as a new species for 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 natural habitat - xeric sand calcareous grasslands, where other grassland flora elements are encountered, although the origin of the species in this locality is not clear. A locality identified far northward of the main natural areal has, most probably, an ancient anthropogenic origin.

Keywords: Androsace elongata, distribution, Latvia, Daugavpils, flora.

Introduction

Androsace sect. Androsace (syn. sect. Andraspis) comprises approximately 20 species, mostly annuals and biennials or, rarely, short-lived perennials distributed over the whole of the Holarctic, from the Artic regions of Eurasia and North America extending towards the warm and arid regions of the Mediterranean, Asia Minor, Iran and Afghanistan (e.g. PAX & KNUTH 1905; STEVANOVIĆ et al. 2005). The centre of diversity is Caucasus, mainly Armenia (SHISHKIN & BOBROV 1952; GROSSHEIM 1967; STEVANOVIĆ et al. 2005). Only two native species of sect. Androsace (A. filiformis Retz. and A. septentrionalis L.) were found in Latvia (GAVRILOVA & ŠULCS 1999) and Lithuania (GUDŽINKAS 1999), while in Estonia only A. septentrionalis (KUUSK & KUKK 1998) was found. Another two Androsace species from Latvia - with unclear floristic status, most

believable – adventive and ephemerophyte, are *A. maxima* L. (1907, Riga) and *A. raddeana* Sommier et Levier (1904, Riga) (SINKEVIČIENÉ et al. 1996; GAVRILOVA & ŠULCS 1999).

In the spring of 2012, an unknown species of the genus *Androsace* was found in the environs of Daugavpils (South East Latvia). The study of specimens revealed that it is *A. elongata* L., a species not recorded previously in Latvia and neither in the Baltic States.

Material and methods

The local research was carried out within the mapping of Daugavpils flora, and started in 2009 (EVARTS-BUNDERS et al. 2012; EVARTS-BUNDERS et al. 2015). The species was first collected on 24th April 2012 (leg. P. Evarts-Bunders), then again on 22nd April 2014 (leg. G. Evarte-Bundere & D. Krasnopoļska). The collected herbarium material is deposited in DAU (Herbarium of Institute of Life Sciences and Technology, Daugavpils University). Since morphological characters of *A. elongata* 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.



Fig. 1. Androsace elongata L. distribution map (European part) (MEUSEL et al. 1978).





Results

Androsace elongata L., Sp. Pl. ed. 2, App.: 1668 (1763)

GEOGRAPHIC AND ECOLOGIC DATA. The species was found in Latvia in 2012 (Fig. 2) in Daugavpils city, were collected in low quality xeric sand calcareous grasslands (6210*). Dominant and characteristic plant species identified here are: Achillea millefolium L., Artemisia absinthium L., Cerastium semidecandrum L., Festuca ovina L., Festuca rubra L., Jasione montana L., Koeleria glauca (Schrad.) DC., Poa angustifolia L., Potentilla argentea L., Rumex acetosella L., Scleranthus perennis L., Sedum acre L. Senecio jacobaea L., Thymus serpyllum L. and Veronica spicata L. The locality is found near the city border, which is, mostly, characterized by farmstead housing estates dating to the end of the 19th century alongside with low-load roads that present low cover. Numerous poor arenaceous types of grassland not cultivated for the last 30 years at least are present in this area (orthophoto dated by 1994) (ANONYMOUS 2018); besides, for over 100 years this site has been plotted on maps as unwooded land (ANONYMOUS 1916). The identified population is vital, abundant (Fig. 3), with an average number of individuals is 3-4 thousand. The site is characterized by rare traffic and has long been populated by a community of old-believers whose traditional lifestyle has not dramatically influenced the environment and has, most probably, allowed for a long-term existence of the species in the area. Furthermore, there are no railway

tracks nearby. The nearest one is 3.5 km away, St. Petersburg - Daugavpils - Warsaw railway line, but it is separated from the locality by the Laucese River and by wide natural flood-land grassland zones.

There are numerous similar thermophile habitats with arid, open vegetation and arid, calcareous soil in Daugavpils vicinity, therefore other populations of this species might be found.

MORPHOLOGY. *Androsace elongata* is an annual plant with one or few scapes, 2-6 cm long, densely pubescent with simple and forked hairs. The leaves are sessile, 4-10 mm long and 1.5-3 mm wide, lanceolate, leaf margin entite, ciliate. The inflorescence presents 2-5 (8) flowers while the pedicels are thin, unequal, 2-16 mm long, and densely pubescent with forked hairs. Involucral bracts are 2-4 mm long, linear-lanceolate or lanceolate, 3-5 times shorter as pedicels. The calyx is bell-shaped, yellowish green, densely hairy with simple and glandular hairs, 3-4 mm long, with the calyx divided to half of its length. The corolla is white, 2-2.5 mm long, and approximately half-long as the calyx. The blooming occurs in late April-May.

SPECIMENS EXAMINED (Estimated geographic coordinates for localities are given in square brackets) Latvia, Daugavpils county, Daugavpils city, Liginišķi housing estate, about 250 m southwest of cemetery of Lignišķi, xeric sand calcareous grasslands, [55°50'49.42674"N, 26°32'23.99994"E], 24. Apr. 2012, P. Evarts-Bunders, 64019001 (DAU) (Fig. 4). The locality was repeatedly inspected on 22nd April 2014, Gunta Evarte-Bundere & Dana Krasnopoļska, 64019002 (DAU).



Fig. 3. *Androsace elongata* L. in the newly discovered locality of Liginišķi, Daugavpils, Latvia. Photo: G. Evarte-Bundere.

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Fig. 4. Herbarium specimen of *Androsace elongata* L. from the newly discovered locality of Liginišķi, Daugavpils, Latvia. (DAU 64019001).

Discussion

DISTRIBUTION. *A. elongata* occurs across Eurasia, in Europe mostly in its central, south-eastern and eastern part (MEUSEL et al. 1978). In central parts of European Russia the species is mainly encountered in the river valley habitats - arid, sandy slopes, steppes, more rarely - anthropogenic steppes, etc. (MAEVSKY 2006). In Poland the species was repeatedly identified in the 19th century as ephemerophyte (MIREK et al. 2002). Certain authors consider it having a dualistic status in Czech Republic and Slovakia: threatened species and anthropophyte (KROPÁČ 2006; MÁJEKOVÁ et al. 2014). The species was first identified in Kosovo in 2008 (KRIVOŠEJ et al. 2008). The plant is considered an alien species (unknown status) in Finland, in Ahvenanmaa near Turku (HÄMET-AHTI et al. 1998), Sweden (KROK & ALMQUIST, 1994; KARLSSON 1998) and Germany (ROTHMALER 2000) (Fig. 1).

A. elongata subsp. *acuta* (Greene) G. T. Robbins can be found in the Western part of North America and differs only slightly from European plants, primarily in its narrower calyx lobes. Molecular analyses may determine if the California taxon represents a disjunct population of the Eurasiatic *A. elongata* complex or, more likely, is a variant of the North American *A. septentrionalis* or *A. occidentalis*, showing morphology parallel to that of the Eurasian entity (KELSO 2009).

Newly identified locality of *A. elongata* in Latvia is a very far and isolate form nearest localities, which is typical for species with a disjunctive type of distribution. Since the locality is very far from the main distribution area of the species, it is hard to say whether this plant can be considered native or having an anthropophytic origin.

HABITATS. The main habitats are represented by cliffs and outcrops, dry meadows (xerophytes grasslands), querries with pioneer vegetation, arable lands (TOMIN 1955; GROSSHEIM 1967; FERGUSON 1972), railway yards or platforms (MÁJEKOVÁ et al. 2014). *A. elongata* grows in steppes, in great abundance, even though its coverage is not large. The termophilous habitat and direct exposure to sunlight makes the phenophase of this thermophyte very short and soon finished. The blooming period of the species lasts approximately 20 days, after which the species quickly gets unidentified (KRIVOŠEJ et al. 2008). Latvian plants booms earlier (late April-May.) than in central part of the species distribution area.

The Latvian locality is situated in Daugavpils and its vicinity, 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) (GAVRILOVA & TABAKA 1985; EVARTS-BUNDERS et al. 2015). 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.

The typical characteristics of these natural sandy grasslands in *A. elongata* locality make an additional argument for the natural origin of this particular locality. MORPHOLOGY. 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 three quarters than provided in the descriptions of the species from the main part of the range (TOMIN 1955; GROSSHEIM 1967; FERGUSON 1972), which cannot be explained solely by seasonal measurements - early collection of the herbarium specimens. The specimens were has been collected in the locality during two 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 in the north-eastern border of the species' distribution range.

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