A new data to distribution of *Epilobium pseudorubescens* A.K. Skvortsov (Onagraceae) in Poland

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Abstract: Herbarium revision resulted in the finding of five new records of *Epilobium pseudorubescens* in Poland. The distribution map of the species is provided.

Key words: Epilobium pseudorubescens, distribution, Poland

Introduction

Epilobium pseudorubescens A. Skvortsov (Onagraceae) was described from Finland (with paratypes from Sweden and Russia) by Skvortsov (1995), and now is regarded as an invasive alien species in Eurasia. It probably has North American origin and it is closely related to *E. adenocaulon* Hausskn., an invasive alien species widely distributed in Eurasia (Skvortsov 1995). *Epilobium pseudorubescens* is usually treated as a synonym of *E. ciliatum* s. lato, but at least two separate taxa from this group are known to occur in Eastern Europe, namely *E. adenocaulon* and *E. pseudorubescens*. Although some authors find Finland to be a starting point of *E. pseudorubescens* spread into other areas of the Old World (Vinogradova *et al.* 2009), it is not excluded that it could be accidentally introduced to other areas of Europe and Asia at more or less the same time, from which it could spread further. Seed propagation by anemochory probably contributed to a wide and relatively rapid dispersal of *E. pseudorubescens* in Eurasia. This species is invading not only various anthropogenic communities, but also quite successfully penetrates some natural phytocenosis (Ebel 2013). To date, *Epilobium pseudorubescens* has been recorded from Sweden, Finland, Russia, Ukraine, Belarus, Poland and some other Baltic countries (Seregin 2012).

The most evident characteristic that differs *E. pseudorubescens* from *E. adenocaulon* is the colour of corolla petals, that are white vs. pink, respectively. Furthermore, *E. pseudorubescens* usually has light green leaves with well-defined petioles (instead of darker green leaves with red pigmentation) and the leaf blade is the widest in the middle part, whereas in *E. adenocaulon* it is closer to the base of the leaf. The differences between these two species are particularly noticeable when they grow together within the same area (Ebel 2013).

Tzvelev (2007) relates *E. pseudorubescens* to the section *Glandulosa* Tzvel. In appearance, *E. pseudorubescens* is also somewhat similar to the less related species *E. roseum* Schreb. (section *Synstigma* Hausskn. ex Raimann), however differs from the latter by the distribution and density of trichomes on stem, inflorescence axes, calyx and ovaries and on spindle-shaped seeds, as well as by seed micromorphology (presence of an appendage on the tip of the seed, surface of the seed with conspicuous longitudinal white stripes, which are rows of laterally compressed and fused ridges of epidermal cells; Seavey *et al.* 1977).

First records of *Epilobium pseudorubescens* from Poland have been given by Seregin (2012), based on the herbarium specimens preserved in the herbarium of the Warmia-Mazury University in Olsztyn. The aim of our study was to update the distribution map of *E. pseudo-rubescens* in Poland, based on our findings from the revision of herbarium materials preserved at the Herbarium of the Institute of Botany of the Jagiellonian University in Kraków.

Materials and methods

The herbarium material of *Epilobium* deposited in the Herbarium of the Institute of Botany, Jagiellonian University in Kraków (KRA) was revised in 2018. Altogether, around 500 herbarium sheets of *Epilobium* were revised and among them, five specimens corresponding with the description of *E. pseudorubescens* have been found. Information about previously known records of this species in Poland was obtained from Seregin (2012), and these localities were presented on the distribution map (Fig. 1).

Results and Discussion

Herbarium revision revealed five new localities of *E. pseudorubescens* in Poland (Fig. 1).

- 1. Poland, sad wiśniowy [cherry orchard near Sienno], FE4021 (2.5 x 2.5 km), 1 Jul 2002, R. Piwowarczyk (KRA 355089) [determined originally as *E. ciliatum*];
- Poland, Kaszuba, przydroże [Kaszuba vill., roadside], 53°56'38"N/17°39'03"E, CB34, 26 Jul 2006, K. Kozłowska (KRA 302889) [determined originally as *E. ciliatum*];
- 3. Poland, Niecka Połaniecka (Wyżyna Małopolska), Granicznik, nieużytek porolny [Polaniecka Basin, Granicznik, fallow], EF0933 (2.5 x 2.5 km), 10 Aug 2009, A. Pieścinska (KRA 436645) [determined originally as *E. ciliatum*];
- Poland, Biała, rów przy szosie [Biala, dich by the road], FF7403 (2 x 2 km), K. Oklejewicz, 23 Sept 2011, (KRA 451081) [determined originally as *E. ciliatum*];
- 5. Poland, Lubienia, forests roadside, ca 5 km NE of the village, 51°04'28"N/21°15'28"E, EE5803 (2.5 x 2.5 km), 25 Jul 2015, M. Nobis (KRA) [determined originally as *E. pseudorubescens*].



Fig 1: Distribution of *Epilobium pseudorubescens* in Poland, • - previously known locality, • - new record.

Although the colour of corolla is mentioned as the most distinct character that differs *E. pseudorubescens* and *E. adenocaulon*, morphologically they are very similar. It cannot be excluded that specimens with white corolla may represent only a variability of E. adenocaulon. Thus, for establish the relationship between these two, mentioned above taxa, further studies employing both morphological and molecular methods are needed.

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Fig 2: Herbarium sheet with specimen of *Epilobium ciliatum* collected by K. Oklejewicz in 2011 (KRA 451081).

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