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A new record of *Linaria genistifolia* (Plantaginaceae) in Poland

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Abstract: In this paper, a new Polish record of *Linaria genistifolia* is presented. It was found on 27 August 2017 in Zabrze, Silesia Province, growing at the foot of the reclaimed slag heap. The updated map of its distribution in Poland is provided using the ATPOL cartogram method.

Key words: alien species, biological recording, geographical distribution, *Linaria*.

Introduction

Linaria genistifolia (L.) Mill., a member of the family Plantaginaceae, is a perennial plant native to the Mediterranean area in South-Eastern Europe and South-Western Asia (Niketić & Tomović 2008). It was introduced as contaminant, herbal or ornamental plant to Western, Central and Northern Europe, North America, Africa, Australia and New Zealand where is considered as established alien or casual alien (Randall 2017 and the literature cited therein). It is a species typical of grassland communities of the class *Festuco-Brometea* (Mucina 1997). In its secondary range, it occurs mostly in anthropogenic habitats such as arable fields, roadsides, and railway embankments (Randall 2017 and the literature cited therein).

In Poland, *L. genistifolia* is a rare species distributed in the western, central and southeastern parts of the country. A majority of its localities is concentrated in Lower Silesia, south-western Poland (Zając & Zając 2001, 2015). It is treated as an established alien species (Tokarska-Guzik *et al*. 2012) and occurs on roadsides, railway embankments and in sand pits (Bróż *et al*. 2003, Święs & Majkut 2006, Nowak & Nowak 2007). Moreover, it was recorded as a casual alien (ergasiophygophyte) from roadsides in some botanical gardens in Poland (Galera 2003). In this paper, a new record of the spontaneous occurrence of *L. genistifolia* in Poland is presented.

Material and methods

Identification of *Linaria genistifolia* followed morphological characters provided by Rutkowski (2004). Distribution map was prepared based on the ATPOL cartogram method (Zając 1978) involving 10 km square cartogram units. Voucher specimens of *L. genistifolia* are deposited in the Herbarium of the Institute of Botany of the Jagiellonian University in Kraków (KRA).

Results and discussion

Linaria genistifolia was found on 27 August 2017 in Zabrze, near Bytomska and Hagera streets, Silesia Province, southern Poland (GPS coordinates: 50°18.763′N/18°47.881′E; altitude: 240 m a.s.l.). This new locality is situated within the unit DF31 of the ATPOL cartogram grid (Fig. 1). Considering previously published data (Zając & Zając 2001, 2015, Bróż *et al*. 2003, Święs & Majkut 2006, Nowak & Nowak 2007), currently, *L. genistifolia* is known from 47 cartogram units (10 km squares) of the ATPOL grid (Fig. 1) and its status of rare species remains unchanged. A small population of *L. genistifolia* consisting of 7 clusters

of flowering shoots was found growing at the foot of the reclaimed slag heap. It was accompanied by *Achillea millefolium* L., *Calamagrostis epigejos* (L.) Roth, *Coronilla varia* L., *Daucus carota* L., *Erigeron canadensis* L., *Tanacetum vulgare* L., and *Verbascum densiflorum* Bertol. The habitat in which *L. genistifolia* was recorded suggests that it has a tolerance to disturbed areas and soil pollution. According to Matuszkiewicz (2008), *L. genistifolia* is one of the distinctive species of the ruderal plant community of *Berteroetum incanae* Siss. et Tideman in Siss. which occurs usually on roadsides and balks.

Due to its negative influence on crops (cereals, sunflowers) and ornamental plants, in some countries, *L. genistifolia* is considered as a pest of agriculture and horticulture or a noxious weed which should be controlled, for example in the United States of America (Randall 2017 and the literature cited therein). In Poland, there is no report on its invasive potential (Tokarska-Guzik *et al*. 2012, Zając & Zając 2015). However, a further spread of *L. genistifolia* is expected, especially in the southern part of the country and its impact on native flora should be monitored.

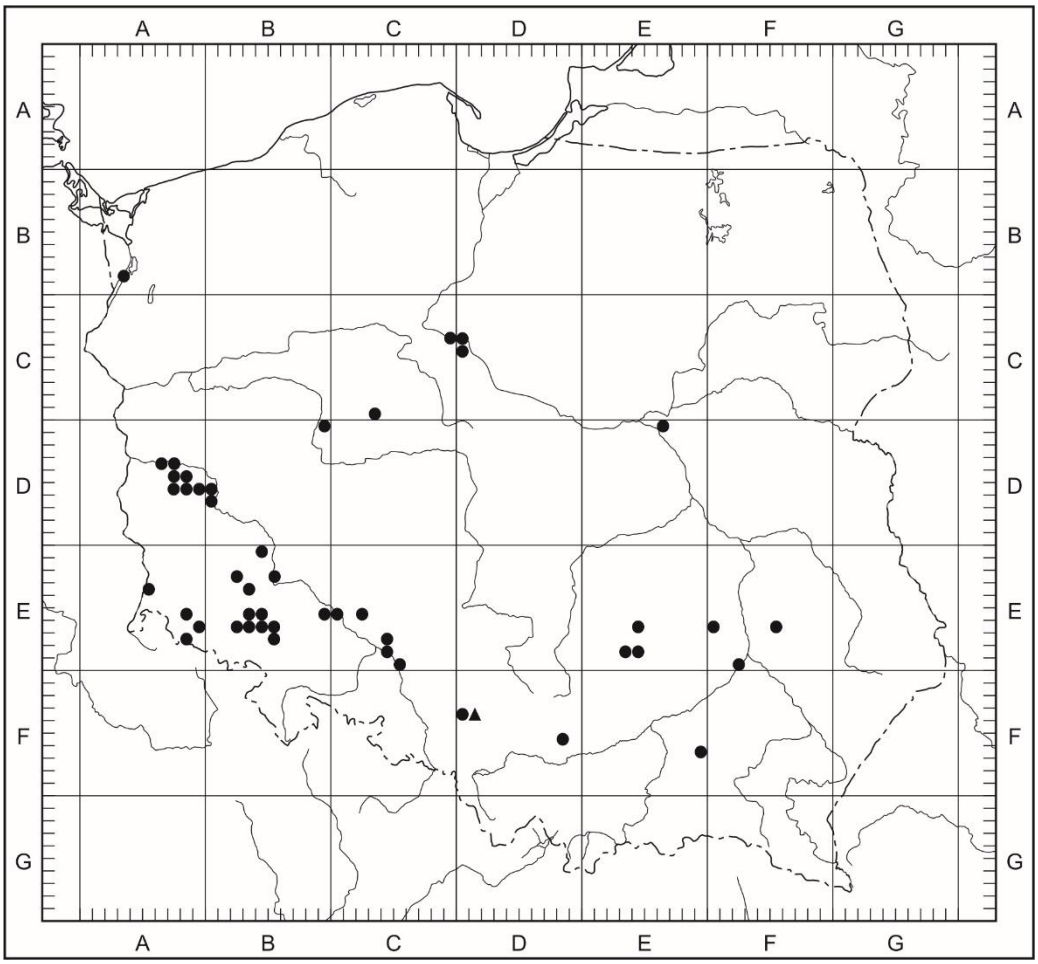

Fig 1: Updated distribution map of *Linaria genistifolia* in Poland (● – known localities, after Zając & Zając 2001, Bróż *et al*. 2003, Święs & Majkut 2006; ▲ – new locality).

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