



## Taxonomic revision and distribution of *Erigeron acris* s. l. (Asteraceae) in Poland

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### Abstract

The species *Erigeron acris* L. s. l. is revised in Poland. Three subspecies are recognized (*E. acris* subsp. *acris*, *E. acris* subsp. *droebachiensis* (O.F. Müll.) Arcang., and *E. acris* subsp. *serotinus* (Weihe) Greuter), a diagnostic key is provided, syntypes of two synonyms are discovered. Cauline leaves, capitula, and achenes are studied under scanning electron microscope. The updated distribution of the subspecies in Poland are presented using the ATPOL cartogram method. The distribution and hybridization are discussed.

**Key words:** ATPOL cartogram method, Central Europe, *Erigeron* sect. *Trimorpha*, herbarium specimen, infraspecific taxa, SEM micrographs

### Introduction

The species *Erigeron acris* Linnaeus (1753: 863) s. l. (Asteraceae, Astereae, Conyzinae) belongs to *Erigeron* sect. *Trimorpha* (Cassini 1817: 137) Candolle (1836: 290) which consists of annual, biennial or perennial plants with trimorphic flowers within each capitulum, i.e. outer female ray flowers with an erect filiform lamina, inner female ray flowers without a lamina, and typical inner bisexual disc flowers (Nesom 2008). It is morphologically very variable, especially in indumentum, number of cauline leaves, and arrangement of capitula (Halliday 1976, Šída 1998, 2000, 2004). The species is widely distributed in temperate regions of Europe, Northwest Africa, Asia, and North America (Fernald & Wiegand 1910, Hara 1939, Halliday 1976, Šída 1998, Nesom 2008). Representatives of this species complex are treated at different taxonomic ranks; some authors accept subspecies (Rechinger 1951, 1982, Halliday 1976, Greuter 2003, Greuter & Raab-Straube 2005), and the others favour species (Šída 1998, 2000, Nesom 2008). Apart from the various considerations, I think that the recognition of subspecies is a good way to define the complex because its members are morphologically very similar to each other, and they are more or less geographically isolated. Therefore, my understanding of *E. acris* s. l. is analogous to the taxonomic treatment proposed by Greuter (2003, 2006–2014) who recognized 10 accepted subspecies and three preliminary accepted species within this complex occurring in Europe and Northwest Africa. The European and Asian representatives of the *E. acris* complex are diploids ( $2n = 18$ ) (Huber & Leuchtman 1992, Nesom 2006, 2008, Song *et al.* 2010).

In Poland, members of *E. acris* s. l. used to be treated as separate species, i.e. *E. acris*, *E. droebachiensis* Müller (1782: 4), and *E. macrophyllus* Herbich (1853: 57) (Pawłowski 1970b, 1971, Mirek *et al.* 2002). National distribution maps have been provided for *E. acris* and *E. macrophyllus* (Zajac & Zajac 2001). Interestingly, Šída (1998) in his taxonomic study on the *Erigeron* sect. *Trimorpha* in Eurasia listed three species of the *E. acris* complex which occur in Poland, i.e. *E. acris*, *E. serotinus* Weihe (1830: 258), and *E. macrophyllus*, suggesting, at the same time, that *E. droebachiensis* is probably conspecific with *E. macrophyllus*. Regrettably, the *E. acris* species complex has not been extensively studied in Poland, thus, existing keys, descriptions, floristic lists, and distribution maps (Zajac & Zajac 2001, Mirek *et al.* 2002) are inadequate for a number of taxa of this group. The aim of this study is to perform a new approach to the taxonomy and distribution of *E. acris* s. l. in Poland.