

## Occurrence and distribution of *Centaurea jacea* subsp. *angustifolia* Gremlí (Asteraceae) in Poland

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Abstract: In the present study, abundant new localities of *Centaurea jacea* subsp. *angustifolia* Gremlí have been found in the southern part of Nida river Basin, belonging to Małopolska Upland region of Poland. Distribution of this subspecies in Poland has been not elaborated so far. Revision of specimens from Polish herbaria revealed that this subspecies was collected previously in Wały reserve, situated close to the present findings. Moreover, the species was found in the past in Silesia region, as well as at two localities in the north-west of Poland. Probably, all the localities outside Nida Basin were of synanthropic origin. The distribution map of *C. jacea* subsp. *angustifolia* in Poland is presented.

Keywords: *Centaurea*, Asteraceae, vegetative characters, distribution, Poland.

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### Introduction

*Centaurea jacea* subsp. *angustifolia* Gremlí [*Centaurea pannonica* (Heuff.) Simonk.] is an European taxon of wide distribution range spreading from southern France in the West to Ukraine in the East and from southern Germany to Greece in the north-south direction (MEUSEL & JÄGER 1992). Especially at the northern limit of its range, *C. jacea* subsp. *angustifolia* is also found at synanthropic localities (MEUSEL & JÄGER 1992). The species is bound to various thermophilic communities.

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According to Flora Europea (DOSTÁL 1976), *C. jacea* subsp. *angustifolia* belongs to section *Jacea* (Mill.) DC. comprising numerous taxa, frequently of uncertain position. Occurrence of populations of intermediate (hybrid) character between *C. jacea* subsp. *angustifolia* and taxa of this and other sections (DOSTÁL 1976; HAEUPLER & MUER 2007) makes systematics of this group even more complicated. In the recent treatment of genus *Centaurea* L. in German flora given by G.H. Loos (HAEUPLER & MUER 2007), there were two subspecies of *C. pannonica* (Heuff.) Simonk. distinguished: *C. pannonica* subsp. *pannonica*, with leaves more or less arachnose, the lower leaves nearly always undivided, and *C. pannonica* subsp. *approximata* (Rouy) G. H. Loos, with pronounced arachnose coating, the upper leaves narrower (1-2 mm width) and the lower leaves usually lobed. Moreover, all the possible intermediate forms between these subspecies were observed (HAEUPLER & MUER 2007). On the other hand, Flora Europaea (DOSTÁL 1976) mentions *C. jacea* subsp. *jungens* Gugler from E. C. Europe as intermediate between two taxa *C. jacea* subsp. *angustifolia* and *C. jacea* L., as well as *C. pannonica* subsp. *substituta* (Czerep.) Dostál from S.W. part of U.S.S.R.

Although the occurrence of *C. jacea* subsp. *angustifolia* in Małopolska Upland of Poland was suggested by Mađalski in Flora of Poland (MAĐALSKI & CIACIURA 1972), this suggestion was not supported by herbarium material at that time (Ciaciura, personal commun.) These data probably reasoned the inclusion of the subspecies in the checklist of Polish flora (MIREK et al. 2002) and most probably also on the distribution map in Meusel's chorology (MEUSEL & JÄGER 1992). The later findings of Jasiewicz, dated 1974 and 1989 (herbarium specimens in KRAM) from Wały reserve near Miechów, have never been published or cited in the literature so far.

Typical *C. jacea* subsp. *angustifolia* differs from *C. jacea* subsp. *jacea* mainly by narrow (ca. 0.5 cm), lanceolate leaves, especially in the upper part of the stem, by broom-like branched stem and by smaller heads (8-10 mm width and 13-16 mm length vs. 12-15 mm width and 15-18 mm length for subsp. *jacea*) (ŠTĚPÁNEK & KOUTECKÝ 2004) with bracts having dark interior and wide, whitish and transparent margins that can be entire, lacerate or irregularly denticulate and muticous (Fig. 1). Moreover, the leaves and stems are usually arachnoid-hairy. Nevertheless, examination of herbarium specimens of *C. jacea* subsp. *angustifolia* deposited in KRA and KRAM from different regions (Croatia, Ukraine, Czech Republic, Hungary, Slovenia, Transylvania) revealed that the species shows high variability in respect to the described morphological characters even among specimens collected from the same localities. For example, some of them have non-branched stems, broader (up to 2 cm wide) and glabrous leaves, and the heads are round shaped and bigger (1.5 cm wide or more). This indicates that within the whole range of its occurrence, there exist intermediate forms between *C. jacea* subsp. *angustifolia* and subsp. *jacea*, as mentioned before. Among the mentioned characters, the appearance of bracts seems to be the most important diagnostic feature differentiating both species in such cases.



Fig. 1. *Centaurea jacea* subsp. *angustifolia* at the locality near Kostrzeszyn (No. 1 in Fig. 2) in Nida Basin (photo: J. Kruk, 8.09.2010).

## Material and methods

Field studies in the Nida River Basin were performed in the years 2009-2010. The specimens from the following Polish herbaria were revised in search of the taxon: KRA, KRAM, KTC, LBL, WA and WRSL. The specimens from the newly described localities were deposited in the herbarium of the Jagiellonian University (KRA). Nomenclature of the species was according to the checklist of Polish flora (MIREK et al. 2002).

## Results and Discussion

New localities of *C. jacea* subsp. *angustifolia* have been found in the southern part of Nida river Basin, belonging to Małopolska Upland region of Poland. The Nida Basin area is well known for the occurrence of many xerothermic, Pontic-Pannonic species, rare in Poland, such as *Carlina onopordifolia*, *Docrynium germanicum*, *Lathyrus pannonicus*, *Linum hirsutum*, *Serratula lycopifolia* or *Sisymbrium polymorphum* (KAŹMIERCZAKOWA & ZARZYCKI 2001). Some of these species reach there the northern limit of their entire distribution ranges.

Newly found localities of *C. jacea* subsp. *angustifolia* are located along dry slopes spreading between Byczów and Kostrzeszyn villages, located ca. 7 km apart (Fig. 2). The slopes have usually south, south-west or west exposition, inclination between 20-30 grades and are situated at 240-260 m a.s.l. Altogether, the population of *C. jacea* subsp. *angustifolia* numbers a few thousands of individuals. Most of the population show diagnostic characters typical for *C. jacea* subsp. *angustifolia* (Fig. 1), although some individuals with poorly branched stems, broader leaves and less pronounced arachnose coating can be also found. The subspecies blooms in the second part of August and in the beginning of September.

In the first locality (No. 1 in Fig. 2) (N50°23'1.1", E20°32'10.7"), *C. jacea* subsp. *angustifolia* occurs together with various species of Festuco-Brometea class and other thermophilous species, such as: *Brachypodium pinnatum*, *Aster amellus*, *Inula ensifolia*, *Salvia verticillata*, *Anthericum ramosum*, *Euphorbia cyparissias*, *Thalictrum minus*, *Pimpinella saxifraga*, *Asperula cynanchica*, *Medicago falcata*, and sporadically *Agrimonia eupatoria*, *Achillea millefolium*, *Adonis vernalis*, *Anthyllis vulneraria*, *Anemone sylvestris*, *Echium vulgare*, *Filipendula vulgaris*, *Ononis spinosa*, *Thymus kosteleckyanus*, *Helianthemum nummularium*. In the second locality (No. 2, Fig. 2) (N50°24'9.4", E20°31'3.3"), also other species occur - *Linosyris vulgaris*, *Orthanta lutea* and *Carlina acaulis*.

Revision of specimens deposited in KRA and KRAM herbaria originating from the present territory of Poland revealed that *C. jacea* subsp. *angustifolia* was already found in the Nida Basin area in Wały reserve by Jasiewicz. Numerous specimens deposited in KRAM herbarium from this locality show high variability in appearance and often morphological characters not typical for *C. jacea* subsp. *angustifolia*, such as broad leaves even in the upper stem parts, scarce arachnose coating of leaves, non-branched stems and relatively large heads. Other records are from the Silesia area and from north-western part of the

country. The specimens from the latter localities show intermediate character between *C. jacea* subsp. *angustifolia* and subsp. *jacea*. Moreover, Mađalski found in the Silesia region several individuals of hybrid origin between *C. jacea* subsp. *angustifolia* and other *Centaurea* species, based on the appearance of the bracts. Taking into account the general distribution *C. jacea* subsp.

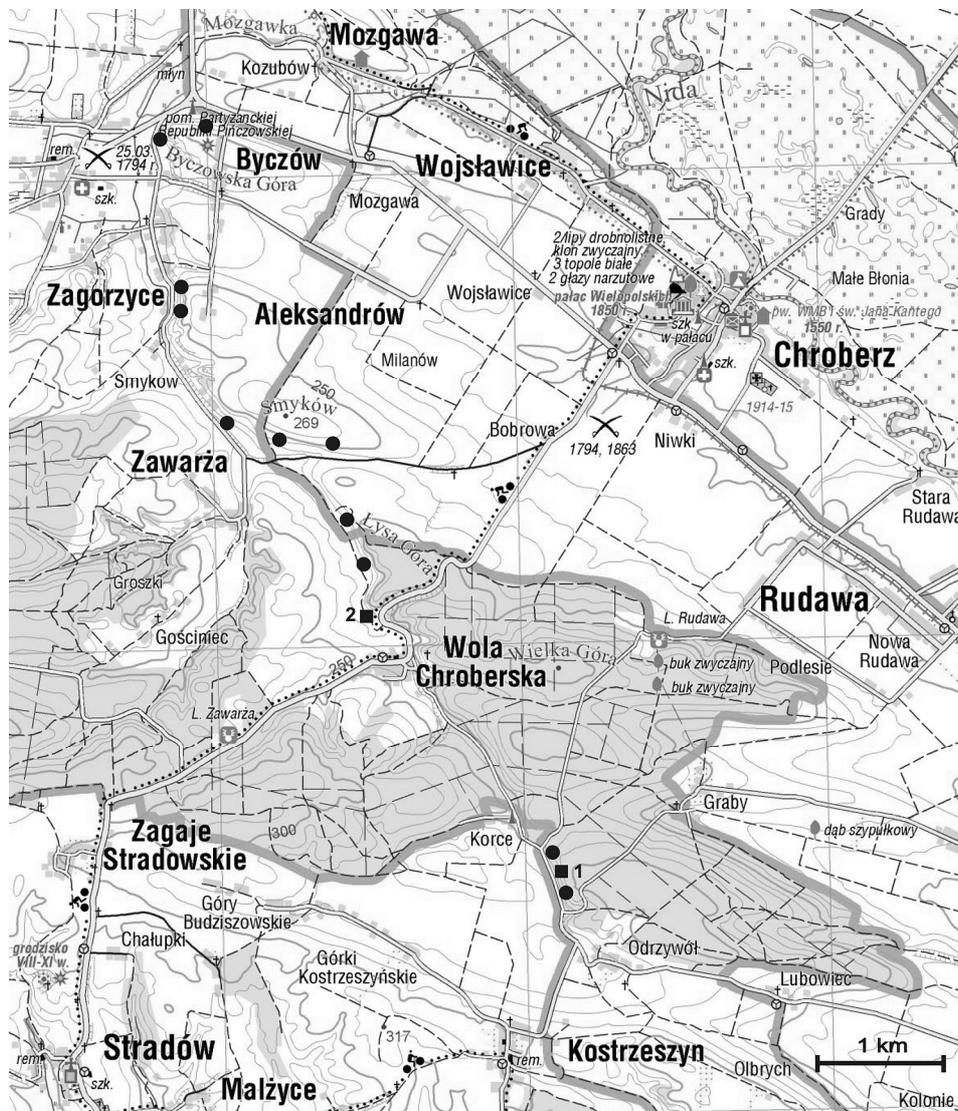


Fig. 2. New localities of *Centaurea jacea* subsp. *angustifolia* in Nida Basin. All the stations are in EF23 square of the ATPOL grid. Squares in the map (No. 1 and 2) denote most abundant localities described more in detail in the text.

*angustifolia* and phytosociological data accompanying the herbarium specimens (antropogenic sites, such as roadsides, level crossing, etc.), it is likely that most if not all localities of *C. jacea* subsp. *angustifolia* outside Nida Basin area are of synanthropic origin.

Distribution of the studied subspecies in Poland in the ATPOL grid, based on the present findings and herbarium data, is shown in Fig. 3.

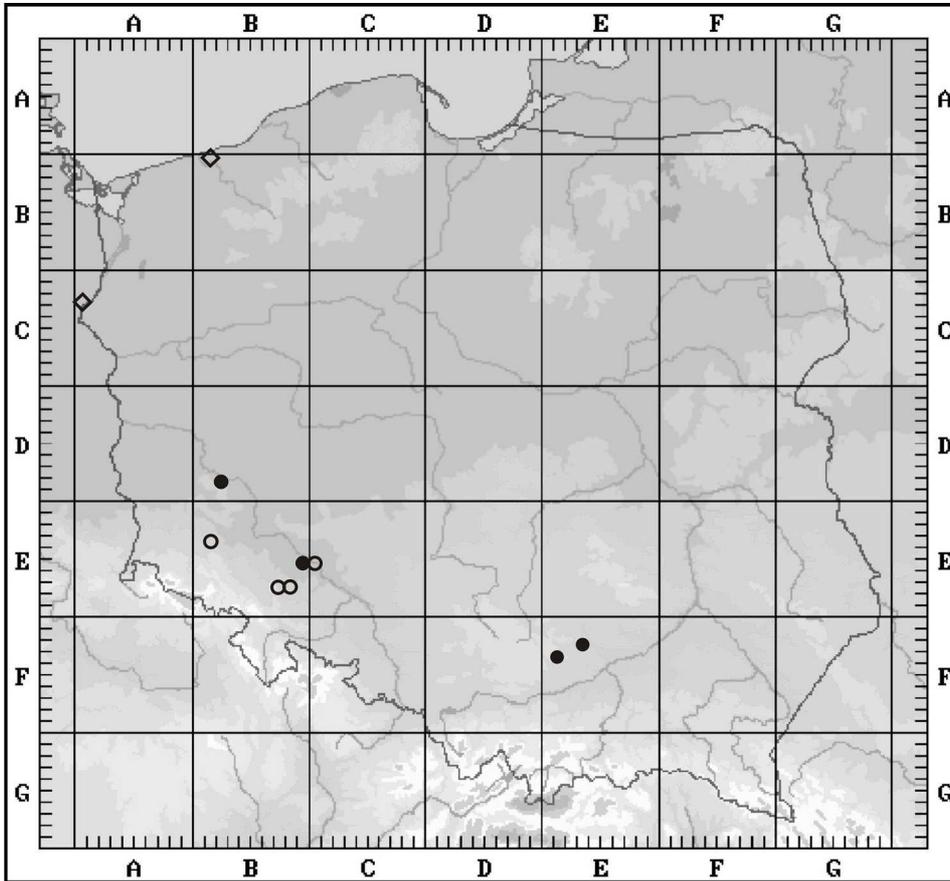


Fig. 3. Distribution map of *Centaurea jacea* subsp. *angustifolia* in Poland in the ATPOL grid, based on herbarium materials and present findings. Empty dots denote records from before 1970, full dots – after 1970; diamonds - intermediate forms (*C. jacea* subsp. *angustifolia* > subsp. *jacea*).

The data presented in this article indicate that *C. jacea* subsp. *angustifolia* is a native species in the Polish flora having only few natural localities in the small area in the Nida Basin region. This confirms the earlier assumption of Mađalski regarding the occurrence of the investigated subspecies in Małopolska Upland. Moreover, *C. jacea* subsp. *angustifolia* was also found in other regions of Poland, mainly in Lower Silesia, but most probably only as a synanthropic taxon.

### Herbarium specimens of *C. jacea* subsp. *angustifolia*:

**AC30**, Bielinek (distr. Chojna), on a grassy, diluvial, right Odra bank, E of the village, 7.09.1956, leg. J. Mađalski, KRAM500203 (JM18911), (*C. jacea* subsp. *angustifolia* > subsp. *jacea*); **BB01**, Miechęcino (distr. Kołobrzeg), on a small peat-bog, N of the village, 12.07.1947, leg. J. Mađalski, KRAM500207 (JM13867), (*C. jacea* subsp. *angustifolia* > subsp. *jacea*); **BD82**, ditch, near a road, surroundings of Głogów, 6.08.1992, leg. B. Balul, WRSL85663; **BE31**, Wojciechów (distr. Złotoryja), near the motorway, 23.08.1967, leg. J. Mađalski, JM30062 (KRAM); **BE59**, dry slope, Siechnice, road to bridge on Szalona river, 1990-96, leg. I. Sawicka, WRSL85486; **BE77**, Strzegomiany, near the road to Sobótka, ca. 0.5 km N of the village, 2.10.1964, leg. J. Mađalski, KRAM500197 (JM27474) and KRAM500196 (JM27474); **BE78**, Uniszów (distr. Strzelin, near a field road, 7.09.1965, leg. J. Serwatka, KRAM344141 and 344142; **CE50**, Zakrzów (distr. Oława), on the right bank of an oxbow lake going from the village to dunes located NW of the village, 28.07.1957, leg. J. Mađalski, KRAM500205 (JM19357); **EF23**, Nida Basin, ca. 1.5 km N of Kostrzeszyn, dry slope, leg. J. Kruk, 8.09.2010, KRA; **EF31**, Raclawice (distr. Miechów), Wały reserve, leg. A. Jasiewicz, KRAM400886 (2.09.1974), KRAM416455 (2.09.1974), KRAM416456 (2.09.1974), KRAM395056 (Sept. 1989), KRAM454252 (7.09.1989), KRAM416309 (1989), KRAM416310 (1989),

**Hybrids: BE48**, Marszowice-Wrocław (distr. Środa Śląska), in scrub near a field road at N end of the village, 22.09.1965, leg. J. Mađalski, KRAM498960 (JM28049), (*C. jacea* subsp. *jacea* x *C. jacea* subsp. *angustifolia*); Turów (distr. Wrocław), **BE59**, near a ditch crossing meadows, ca. 0.4 km NE of the village, 1.10.1969, leg. J. Mađalski, KRAM498961 (JM31285), (*C. jacea* subsp. *jacea* x *C. jacea* subsp. *angustifolia*); **CF12**, Budziszowice (distr. Niemodlin), close to level crossing, ca. 2 km W of the village, 19.07.1963, leg. J. Mađalski, KRAM500179 and 500180 (JM25827), (*C. jacea* subsp. *angustifolia* x *C. oxylepis* (Wimm et Grab.) Hayek); **CF04**, Polska Nowa Wieś (distr. Opole), near the road to Wawelno, 20.07.1963, leg. J. Mađalski, KRAM500178 (JM25834), (*C. jacea* subsp. *angustifolia* x *C. oxylepis* (Wimm et Grab.) Hayek)

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### References

- DOSTÁL J. (1976): *Centaurea* L. In: TUTIN T. G. et al. (eds), *Flora Europaea*, vol. 4, pp. 254-301, Cambridge University Press, Cambridge.
- HAEUPLER H. & MUER T. (2007): *Bildatlas der Farn- und Blütenpflanzen Deutschlands*. Ulmer. Stuttgart.

- KAŹMIERCZAKOWA R. & ZARZYCKI K. (eds) (2001): Polish Red Data Book of Plants. Pteridophytes and Flowering Plants. W. Szafer Institute of Botany, Polish Academy of Science, Kraków.
- MAŁDASKI J. & CIACIURA M. (1972): *Centaurea* L. In: PAWŁOWSKI B. & JASIEWICZ A.(eds), Flora Polska, vol. 13, pp. 35–94. Państwowe Wydawnictwo Naukowe, Warszawa–Kraków.
- MEUSEL H. & JÄGER E. (1992): Vergleichende Chorologie der Zentraleuropäischen Flora, Bd. III. Gustav Fischer Verlag, Jena-Stuttgart-New York.
- MIREK Z., PIĘKOŚ-MIRKOWA H., ZAJĄC A. & ZAJĄC M. (2002): Flowering Plants and Pteridophytes of Poland – a Checklist. W. Szafer Institute of Botany, Polish Academy of Science, Kraków.
- ŠTĚPÁNEK J. & KOUTECKÝ P. (2004): *Centaurea* L. In: SLAVÍK B. & ŠTĚPÁNKOVÁ J. (eds), Květena České republiky, vol. 7, pp. 426-449. Academia, Praha.

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