

Occurrence and distribution of *Senecio erucifolius* L. (Asteraceae) in Poland

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Abstract: Three new stands of *Senecio erucifolius* L., situated close to each other, have been found in the Nida River Basin, in the area from where it was not reported before. Each of the stations numbered about a few dozen of individuals, and were located in scrub and wastelands surrounding the Owczary reserve, on a roadside close to fishponds south of Gadawa and in fields north of this village. Since distribution of *Senecio erucifolius* in Poland is not known, therefore, revision of herbarium materials of this species, as well as extensive search of the available literature data has been performed. The obtained data indicate that besides the Nida River Basin, this species was found mainly along the Middle Vistula River, in the Lublin Upland region, around Warsaw and in Lower Silesia. The species is presently a rare taxon in the scale of the country and deserves special protection.

Keywords: *Senecio erucifolius*, Asteraceae, distribution, Nida River Basin, Poland.

Introduction

Senecio erucifolius L. is an Euroasiatic species (HULTÉN & FRIES 1986, MEUSEL & JÄGER 1992), however most of its records concentrate in Western Europe (England, France, Germany) and east of Germany it seems to be a rare

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species with scattered distribution (<http://eol.org/pages/468433/maps>). In Poland, distribution of this species is poorly known, with several old data mostly given from Lower Silesia (FIEK 1881; SCHUBE 1903) and more recent from the area of Middle Vistula River (KUCHARCZYK 2001) and Lublin Upland (FIJAŁKOWSKI 1994). The species grows in such habitats as thermophilous grasslands, lagg communities, scrub, roadsides, wastelands, as well as wet meadows. *Senecio erucifolius* L. is a complex of several infraspecific taxons, whose delimitation and general distribution requires thorough study.

Senecio erucifolius s.l. is a perennial plant (30-120 cm in height) forming rhizomes, with basal and lower cauline leaves petiolate, more or less pinnatifid. Middle and upper leaves are pinnatifid with linear or lanceolate, more or less acute lobes. The terminal leaf lobe is usually not bigger than the others, even in the lowest cauline leaves. The leaves are non-auriculate at base. The outer, usually protruding, 3-8 supplementary involucral bracts are ca. $\frac{1}{2}$ as long as the ovate-lanceolate, acute involucral bracts. Achenes are all shortly hairy and pappus is persisting. The leaves are variable especially as regards to the width of leaf segments (Fig. 1A and B). In this respect, *Senecio erucifolius* subsp. *tenuifolius* (Jacq.) DC is mentioned in the literature (KUCOWA 1971; ROTHMALER 1994; HAEUPLER & MUER 2007) that is characterized mainly by narrow (2-3 mm) leaf segments, usually glabrous above, downy beneath and with revolute margins (Fig. 1B).

Senecio jacobaea L., the most similar species, forms no rhizomes, with basal and lower cauline leaves petiolate, lyrate-pinnatifid. Middle and upper leaves are 1-2-pinnatifid. The lobes of middle and lower leaves usually broaden towards the end and the lobes are irregularly dentate and blunt. The leaves are auriculate at base, i.e. having small, numerous leaflets half-clasping the stem (Fig. 1C). The terminal leaf lobe is usually bigger than the others, especially in the lowest cauline leaves. The outer, usually adhering, 2-5 supplementary involucral bracts are ca. $\frac{1}{4}$ as long as the narrowly-ovate, acute involucral bracts. The outer achenes are glabrous, the inner shortly hairy. Pappus is caduceus.

Comparison of both species is given in the key below:

1. Plants without rhizome, middle and lower leaves auriculate at base, with leaf segments broadening towards the end, blunt at the top.....*Senecio jacobaea* L.
- 1*. Plants with rhizome, middle and lower leaves non-auriculate at base, with leaf segments linear, \pm acute at the top.....*Senecio erucifolius* L.

Material and methods

Field studies in the Nida River Basin were performed in 2010. The following Polish herbaria were revised in search of the taxon: DRAPN, KRA, KRAM, KTC, KTU, LBL, POZ, SLTC, SPNH, SZUB, SZCZ, TRN, UGDA, WA and WRSL. Besides, extensive literature studies were accomplished. When possible, only original literature data were cited. The literature data were treated as reliable when the data were given by authors who deposited correctly determined herbarium materials or the cited area is a place of collection of herbarium materials of other authors.



Fig. 1. Variability of leaf shape of *Senecio erucifolius* L.: (A) herbarium specimen collected in Lublin - Zimne Doły, 2.09.1887, leg. F. Karo (KRA121410), (B) a plant on the locality near the Owczary reserve and (C) leaves of *Senecio jacobaea*.

Results and Disussion

In 2010, three stands of *Senecio erucifolius* have been found in the area of Nida River Basin (Małopolska Upland), situated south-east of Busko-Zdrój. The first new locality was found around the Owczary floristic reserve, in dry scrub and wastelands areas (N 50°26'48.3", E 20°45'22.9"), the second in the neighborhood of fish ponds south of Gadawa (50°23'40.4", 20°48'18.1"), and the third in the fields north of this village (50°24'02.7", 20°48'30.3") All the 3 localities are situated in EF25 square of the ATPOL grid (Fig. 2). Each of the stands

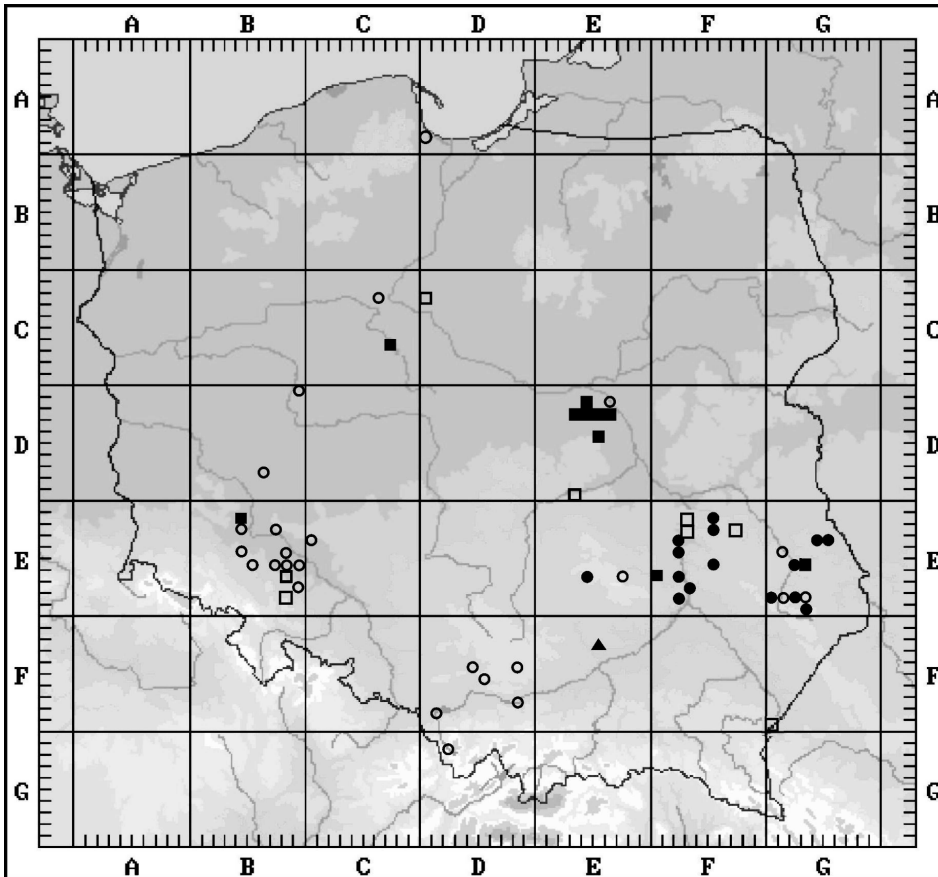


Fig. 2. Distribution map of *Senecio erucifolius* L. based on herbarium materials (□, ■) and on literature data (○, ●) in Poland shown in the ATPOL grid. The empty symbols refer to localities reported before 1945 and full symbols – after that year. The triangle (▲) indicates the presently found locality in the Nida Basin. When herbarium materials and literature data refer to the same square, the priority was given to the herbarium specimens.

numbered a few dozens of individuals. In the second locality, on the roadsides, the investigated species was found together with various meadow and other species such as: *Achillea millefolium*, *Daucus carota*, *Deschampsia caespitosa*, *Dipsacus sylvestris*, *Erigeron annuus*, *Eryngium planum*, *Galium verum*, *Geranium pratense*, *Inula britannica*, *Odontites serotina* and *Prunella vulgaris*.

Although the species was found presently at three localities, it is probably more widespread in the investigated region. Nevertheless, *Senecio erucifolius* has been not reported from the Nida Basin area before. Within the country, taking into account numerous localities of this species from the area of lower Odra River on the German side (BENKERT et al.1996), it should be also found in the neighbouring territory on the Polish side. However, no reliable specimens were found in herbaria collections from north-eastern part of Poland (DRAPN, SLTC, SPNH, SZUB, SZCZ). Based on the revision of herbarium materials from numerous herbaria and search of the available literature, the distribution map of the species was drawn (Fig. 2). The map shows that the species occurs in Poland mainly in Lublin Upland region and the Middle Vistula River, around Warsaw and in Lower Silesia. In other parts of the country the species is rare and scattered. Regarding the morphological variability of leaves of the investigated herbarium materials, great majority of the investigated specimens could be ascribed to *S. erucifolius* subsp. *tenuifolius*, while only specimens from the following squares: BE88, CC67, EF25, FE13 (WA018101), FE27 (KRA121410), GE53 (POZ57584), GF90, to *S. erucifolius* s. str.

The presented data indicate that nowadays *S. erucifolius* is a rare taxon in Poland, it is found usually outside protected areas and certainly deserve special protection.

Herbarium materials:

KRA and KRAM: BE88, Peterwitzer Mergelgruben (Piotrowice k/ Strzelina), 25.09.1886, leg. ? (KRA149052); BE88, Peterwitzer Mergelgruben (Piotrowice k/ Strzelina), 3.08.1887, leg. ? (KRA149051); FE13, Puławy, leg. F. Berdau (KRA149044); FE23, Kazimierz, 1829, leg. ? (KRA149026); FE27, scrub, Lublin - Zimne Doły, 2.09.1887, leg. F. Karo (KRA121410); FE60, dry meadow, former mining field, Krzemionki Opatowkie, 20.08.2001, leg. R. Piwowarczyk, E. Bróz, det. R. Piwowarczyk (KRA313076); ED93, Nowe Miasto nad Pilicą, 1861, leg. F. Berdau (KRAM168005, 168006); GE53, on the wet meadow near the road, Brzeźno k. Chełma, 6.08.1972, leg. H. Piękoś, det. Z. Mirek (KRAM205573); GF90, łąka, Długie Łozy, Krówniki-Jaksmanice, Przemyśl, 1876/77, leg. B. Kotuła (KRAM168014, 168015, 168016).

POZ: CC67, dry pasture and meadow on Noteć River, Węgierce – 2 km E of Pakość (pow. Inowrocław), 27.08.1985, leg. J. Chmiel; GE53, Brzeźno reserve, 13.09.1980, leg. et det. S. Lisowski (57584).

TRN: GE53, meadow in Brzeźno reserve, 13.09.1980, leg. M. Giełdoń; DC20, Lulkowo (Lulkau) k. Torunia, 3.08.1853, leg. J. v. Novicki.

WA: FE13, Parchatka k/Puław, Aug. 1864, leg. F. Berdau (WA018101); FE13, Parchatka k/Puław, leg. F. Berdau (WA018111); ED23, ditch, Wola

Bieniewicka, pow. Pruszków, 30.08.1968, leg. K. Nowak (WA018112); ED14, broadleaf scrub, Zaborów, pow. Pruszków, 6.07.1971, leg. K. Nowak (WA018113); ED14, scrub, Zaborów, pow. Pruszków, 8.07.1971, leg. K. Nowak (WA018123); ED25, ditch, Kręczi, pow. Pruszków, 16.08.1967, leg. K. Nowak (WA018108); ED25, ditch, Kręczi, pow. Pruszków, 6.07.1971, leg. K. Nowak (WA018114); ED24, pasture, Koprki, pow. Pruszków, 20.07.1967, leg. K. Nowak (WA018115); ED24, pasture, Koprki, pow. Pruszków, 20.07.1967, leg. K. Nowak (WA018116); ED45, meadow, Rusiec, pow. Pruszków, 19.08.1968, leg. K. Nowak (WA018117 and 018118); ED25, meadow, Ołtarzew, pow. Pruszków, 18.07.1967, leg. K. Nowak (WA018119); FE27, Zimne Doły – Lublin, 21.09.1887, leg. F. Karo (WA018121); FE27, forest meadows, Zimne Doły – Lublin, 22.08.1883, leg. F. Karo (WA018104); ED26, scrub, wet meadow, scrub, Las Bemowski, Warszawa – Bemowo, 25.08.1984, leg. I. Kirpluk (WA018097); FE13, 'Z parowów przy Puławach', leg. F. Berdau (WA018102); GE41, 'Na wzgórkach wapienno-gliniastych', Łopiennik pod Krasnymstawem, leg. K. Łapczyński (WA018106); FE13, hills slopes, ok. Puław, Aug. 1887, leg. A.R. Siemionow (WA018109).

WRSL: BE68, Kobierzyce (Koberwitzer Park), Sept. 18, 53, leg. Uechtritz; BE14, near bushes on the wet meadow, at the Ścinawa-Parszowice road, Sitno, pow. Wołów, 21.09.1971, leg. et det. Z. Głowacki.

Literature data:

ABROMEIT et al. (1903): CC26, Bydgoszcz-Rynkowo (Bromberg b. Rinkau); DA80, Gdańsk-Westerplatte; DC20, Lulkowo (Lulkau) k. Torunia.

FIEK (1881): BE24, Wielowieś (Bielwiese); BD76, Czernina k/Góry (Gr. Thschirnau); BE27, Brzeg Dolny (Dyhrenfurth); BE55, ok. Dzwigórze (Neuteich b. Taubnitz); BE44, Gądków (Würchenteich b. Romnitz); BE48, m. Muchoborem Wielkim i Kębłowicami (zw. Gr. Mochbern u. Kammelwitz); BE58, Biskupice Podgórne (Bischwitz a. Berge); BE58, Smolec (Schmoltz); BE68, Kobierzyce (Koberwitzer Park); BE59, Wrocław-Brochów (Brocke, Brockau); CE30, m. Pruszwicami i Bąkowem (zw. Bruschwitz u. Bunkey, Bunkai); BE57, Kilianów (Landau); CE60, Lizawice (Leisewitz); BE79, Świnobród (Schweinbraten); BE88, Piotrowice k/Strzelina ((Peterwitzer Mergelgruben); DF81, Drogomyśl ((Drahomischl); DF81, Chybie (Chiby); DG12, Wisła (Weichsel).

SCHUBE (1903): BE44, m. Mierzcycami i Wądrożem Wielkim (zw. Merschütz u. Gr. Wandris); BE68, ok. Chrzanowa (geg. Zaumgarten); BE68, Wierzbice (Wirrwitz).

ROSTAFIŃSKI (1872): DF48, brzeg Prądnika; ED16, Warszawa; FE23, Kazimierz; FE27, Lublin; GE-81, Szczepreszyn; GE83, Zamość

BERDAU (1859): DF44, Jaworzno-Długoszyn, E part; DF55, Byczyna; DF78, Tyniec

JELEŃKIN (1901): DF48, Ojców

JACKOWIAK (1993): BD09, Poznań (citation of data from 19th century),

PURING (1899): EE67, Świślina

FIJAŁKOWSKI (1960): FE73, Opoka Duża k/Annopola

FIJAŁKOWSKI (1994): FE13, FE15, FE23, FE25, FE27, FE55, FE73, GE34, GE35, GE52, GE80, GE82, GE93, Lublin Upland, (probably most of the records given in the monograph originate from old literature data).

KUCHARCZYK (2001): FE13, FE23, FE32, FE42, FE62, FE73, FE82, Middle Vistula River Valley

BRÓZ & MACIEJCZAK (1991): EE64, Kielce

Doubtful localities (not shown on the map):

BAKOWSKI (1878): FF82, around Strzyżów;

URBISZ (2001): DF52, E of m. Wyry, kol. Ostrów (observation in 1996);

ZARZYKA (2001): FG11, FG20, FG21, Beskid Niski.

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