

***AIRETUM PRAECOCIS* KRAUSCH 1967 IN OPOLE SILESIA**

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ABSTRACT: In 2013 a new locality of rare and withdrawing plant association built by *Aira praecox* L. was found in Opole Silesia. The newly discovered plots of the phytocoenosis occupy small areas on ground road verges in pine forest complex near Osowiec Śląski in the eastern part of the region. Ecological details of newly discovered plots with short description of their habitats and vegetation structure are given. A list of locations based on the literature data of *Aira praecox* in the Opole Silesia region is also presented.

KEY WORDS: vegetation, threatened association, distribution, flora conservation, SW Poland.

Introduction

Aira praecox is a small annual, forming low and small tufts. The species has smooth and filiform leaf-sheaths, not rough, mainly located at the base. Culms are erect, 2–25 cm long (typically 5-10), 2–3 -noded. Inflorescence a very narrow panicle, bearing spikelets on branches little longer than themselves. Spikes are hidden in silvery sheaths before flowering. The two awns often cross. Awn arises at about 1/3 way up back of lemma. The two spikelets arise about 1/8 of their length apart. Spikelets are oblong to ovate, laterally compressed, 3–3.5 mm long, breaking up at maturity. Rhachilla internodes is suppressed between florets (florets arising at about the same level). Floret callus pubescent. Glumes persistent, similar, exceeding apex of florets, thinner than fertile lemma, shiny. Lower glume ovate, 3–3.5 mm long, keeled above, 1–3 -veined with acute apex. Upper glume ovate, 3–3.5 mm long, membranous, 1-keeled, 1–3 -veined also with acute apex. Fruit caryopsis with

adherent pericarp, fusiform, isodiametric, biconvex, estipitate, without sulcus, smooth with unappendaged apex.

The species grows in western, northern and central Europe and also in North America, Australasia and north-west Africa as an introduced alien species. There quite frequent in bare dry ground, including gravelly road verges and walls.

It blooms from April to June (Tutin et al. 2005; Rutkowski 2008).

Aira praecox grows well in dry, sandy or rocky, acid or neutral soils. It occurs in open habitats, in unfertile swards, on rocks, road verges and embankments (Oberdorfer 1994; Tutin et al. 2005). According to Chytrý (2010), it is a characteristic taxon of the *Airetum praecocis* Krausch 1967 association within the *Thero-Airion* Tüxen ex Oberdorfer 1957 alliance.

Aira praecox belongs to the European-temperate sub-element, European-temperate-lowland group, Sub-Atlantic distributional type (Zajac and Zajac 2009). In Poland, it is a sporadically appearing taxon, occurring in western part of the country from Pomerania to Silesia (Czeczottowa 1928; Kępczyński and Peplińska 1993; Frey 1994; Zajac and Zajac 2001; Rosadziński 2007; Truchan and Sobisz 2008). In Opole Silesia, *Aira praecox* was reported from only seven locations at the beginning of the XX century: Osowiec Śląski (Fiek 1881; Schube 1903; leg. Bialucha 30.05.1939 according to Nowak and Nowak 2005); Mechnice, Ujazd, Węgry near Opole (Fiek 1881; Schube 1903), Kamień Śląski, Zarzyska k. Olesna (Schube 1903), Praszka (Frey 1994) (Fig. 1).

Aira praecox is presently a red-listed species, regarded as an extinct (RE category) in the Opole Silesia region (Nowak et al. 2008). In neighbouring regions the threat status of this taxon is assessed differently, obtaining lower categories; NT (near threatened) in Lower Silesia (Kącki et al. 2003) and LC (least concern) in Wielkopolska (Jackowiak et al. 2007). *Aira praecox* was also given a high threat category (EN) in the Czech Republic (Procházka 2001) and category VU in Saxony – Germany (Korneck et al. 1996).

Methods

Geobotanical investigations aimed at finding new sites of *Aira praecox* and checking the literature ones were carried out within the territory of Opole Silesia in 2013. Relevés were made using the Braun-Blanquet method (Braun-Blanquet 1964). The syntaxonomical classification is given due to Matuszkiewicz (2007) and Chytrý (2010). The nomenclature of plants follows Mirek et al. (2002).

The description of a new plot of *Airetum praecocis* comprises exact stand location, population size, habitat conditions and threats on the new site.

Results

As a result of geobotanical studies conducted within the area of Opole Silesia, a new site of *Aira praecox* was found (Phot. 1). This species was noticed in several patches of *Airetum praecocis*, on ground, sandy roads at the fringe of pine forest and sand-pit lake.

The new location of *Airetum praecocis* (Fig. 1):

1. Osowiec Śląski (N 50° 45' 17,2"; E 18° 04' 03,3"; 174 m; ATPOL square: CE86).

The population grows on the ground road verge which is located in the vicinity of *Pinus sylvestris* tree stand, from western and northern side. To the east, the land is sloping down to the out of use sand-pit, presently filled with water. The road and the waste land alongside the sand-pit shore line is extensively used mainly by tourist and anglers as well as by forest administration during the thinning or clearance works. The association patches cover ca. 300 square meters. They are well developed with frequent contribution of the diagnostic species, mainly *Aira praecox*. Also species typical for the alliance *Thero-Airion*, the order *Corynephorretalia canescentis* and the class *Koelerio-Corynephoretea* have been presented within the researched plots (Tab. 1). The yellow hairgrass occurs in great number on the site. More than thousand specimens were counted in June 2013.

Discussion and conclusions

Aira praecox and its association is without any doubt one of the rarest plant species in Opole Silesia. Despite extensive area of suitable habitats in central and northern part of the province it was spotted only on few locations during the floristic surveys in 19th and 20th centuries. It is apparent, that the climatic conditions and continentality play the crucial role in species distribution. *Aira praecox* has the easternmost limits in Opole province (Zajac and Zajac 2001). It is also probably a cause that the association of *Airetum praecocis* has not been recorded till now in this area. The extreme and harsh habitat conditions do not allow the species to contribute with considerable abundance and create the phytocoenosis. In all researched periods the species had never been noted as forming the sward. As was suggested by Matuszkiewicz (2007), the viability of *Aira praecox* population in Poland is strongly influenced by winter severity and precipitation in several consecutive years, so the building up of the association could have ephemeral character within the range limit zone. Also the distance to the closest locations with great population size could have significant meaning.

Airetum praecoxis has been assigned as a frequent association only in "Bory Dolnośląskie" in Lower Silesia, ca. 200 km from Opole.

The conservation status of the species as well as its association has to be reconsidered. Till now both, *Aira praecox* (because of the lack of the new findings over the period of more than 50 years) and the *Airetum praecoxis* association have been assessed as extinct in Opole voivodeship (Nowak et al. 2008; Nowak and Nowak 2008). The presently existing population occupies very small area exposed to direct threat of man activities. The maintenance of the species depends on intensity of usage of anthropogenic habitats as road verges and artificial shore of the pit lake. Any kind of legal preservation of these sites is hardly possible in those circumstances. So, the effective conservation of *Airetum praecoxis* plots will depend on thorough monitoring and regulations of the angling and recreational activities to optimize the human caused impact and disturbance intensity. Despite the on site conservation measures, more than 500 seeds of several dozens of specimens were collected and stored in gene bank of the Polish Academy of Sciences in Warsaw.

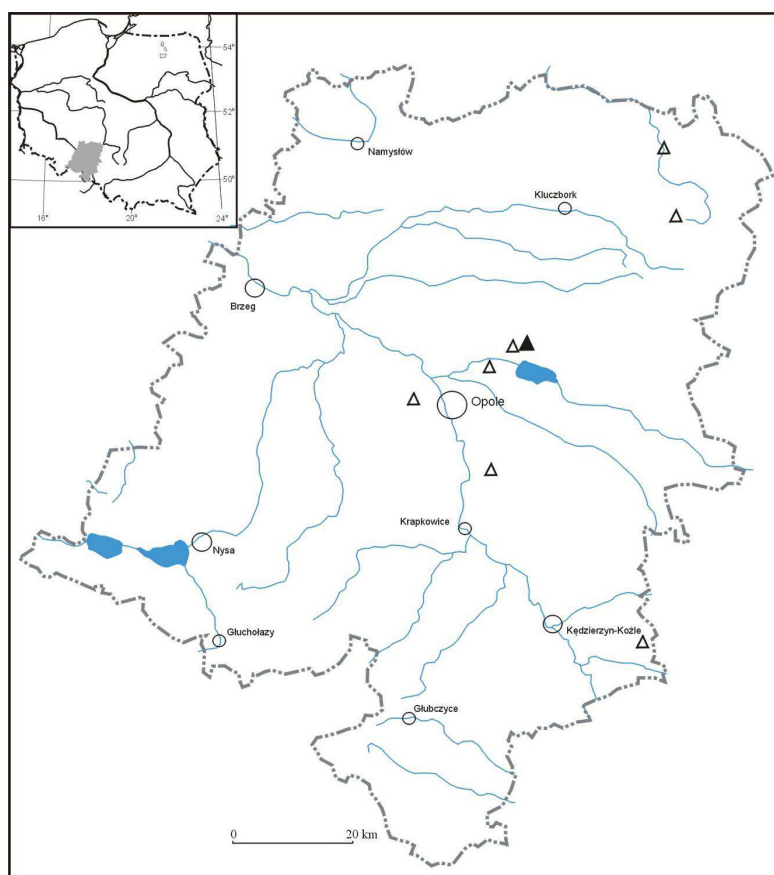


Fig. 1. Distribution map of *Airetum praecoxis* Krausch 1967 in Opole Silesia - ▲ .
Literature locations of *Aira praecox* L. - Δ .

Tab. 1. *Airetum praecocis* Krausch 1967 in Opole Silesia.

Successive number of relevé day	1	2	3	4	5	6	Number of occurrence
Date: month	30	30	30	30	30	30	
year	6	6	6	6	6	6	
East longitude	2013	2013	2013	2013	2013	2013	
North latitude	504517	504517	504517	504517	504517	504517	
Altitude (m)	180403	180403	180403	180403	180403	180403	
Cover of herb layer (%)	174	174	174	175	174	175	
Cover of moss layer (%)	30	55	40	15	40	45	
Relevé area (m ²)	10	5	15	-	-	-	
pH	2	2	2	2	2	2	
Locality	5.8	6	5.8	5.8	6	5.8	rel.
Number of species	O	O	O	O	O	O	1-6
Diagnostic species							
Ass. <i>Airetum praecocis</i>							
<i>Aira praecox</i>	2	2	1	1	2	3	6
All. <i>Therio-Airion</i>							
<i>Cerastium semidecandrum</i>	.	+	+	1	2	1	5
<i>Agrostis capillaris</i>	.	1	.	+	+	+	4
<i>Vulpia myuros</i>	+	2	+	.	.	.	3
Sporadic species: <i>Spergularia rubra</i> 3.							
O. <i>Corynephorretalia canescentis</i> et Cl. <i>Koelerio glaucae-Corynephorretea canescentis</i>							
<i>Teesdalea nudicaulis</i>	.	2	2	1	.	.	3
<i>Ceratodon purpureus</i> d	1	1	1	.	.	.	3
<i>Veronica dillenii</i>	+	+	.	+	.	.	3
<i>Rumex acetosella</i>	+	+	2
<i>Hieracium pilosella</i>	.	.	+	+	.	.	2
Sporadic species: <i>Agrostis vinealis</i> 5; <i>Festuca ovina</i> 3(1).							
Others							
<i>Betula pendula</i> c	+	+	.	+	+	.	4
<i>Scleranthus annuus</i>	.	+	+	.	+	+	4
<i>Festuca rubra</i>	1	+	1	.	.	.	3
<i>Rhynchospora squarrosus</i> d	1	+	1	.	.	.	3
<i>Poa compressa</i>	1	.	1	+	.	.	3
<i>Pinus sylvestris</i> c	+	1	+	.	.	.	3
<i>Melampyrum pratense</i>	.	.	.	+	1	+	3
<i>Pseudoscleropodium purum</i> d	.	+	1	.	.	.	2
<i>Luzula campestris</i>	+	.	.	+	.	.	2
<i>Veronica officinalis</i>	.	.	+	.	.	+	2
Sporadic species: <i>Hieracium piloselloides</i> 4; <i>Stellaria media</i> 6.							
Explanation: O - Osowiec Śląski.							



Phot. 1. *Aira praecox* in Osowiec Śląski in June 2013.

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