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RESOURCES OF *ORCHIDACEAE* IN THE XEROTHERMIC GRASSLANDS IN THE PIŃCZÓW HUMP AND ADJACENT AREAS

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SUMMARY

In the Pińczów Hump and the adjacent mesoregions (Solec Basin, the eastern part of Wodzisław Hump, the northern part of Połaniec Basin) 10 orchid species at the different succession stages of xerothermic communities were found. The strongest affiliation with the open association of the *Cirsio-Brachypodion* alliance appears in *Orchis ustulata* and *Ophrys insectifera*. These species grow in the associations: *Inuletum ensifoliae, Scorzonero-Seslerietum uliginosae, Adonido-Brachypodietum pinnati, Origano-Brachypodietum*. In the differently developed succession stages of the xerothermic communities of the *Cirsio-Brachypodion* alliance there are *Orchis militaris* and *O. purpurea*. An important role play the foliage shrubs overshading xerothermic communities as well as the pine plantings. In the ecotone zone between the grasslands and the deciduous forests grow mostly the dry-ground forests (*Tilio-Carpinetum*) such as: *Cypripedium calceolus, Cephalanthera damasonium, Platanthera bifolia, P. chlorantha, Epipactis atrorubens, E. helleborine*. They mostly grow a few meters from the forest margin. These species emerge only sporadically in the open grasslands of the *Cirsio-Brachypodion* alliance (Table 1).

INTRODUCTION

The full list of Polish orchids together with the maps of their distribution is included in the "Distribution atlas of vascular plants in Poland" (Zając, Zając 2001). In the area of Małopolska Upland there are 37 orchid species in danger of extinction. Information regarding the *Orchidaceae* family has been published in many floristic and phytosociological studies characterising the plant cover of the Nida Basin: Bróż (1985); Szeląg (1997); Łuszczyńska (1998, 2000a,b); Łuszczyńska, Łuszczyński (1989); The occurrence of some orchid species in the Małopolska Upland was the subject of several papers for example: Bzdon (1998); Ciosek, Bzdon (2000); Kaźmierczakowa, Zarzycki (2001); Medwecka-Kornaś, Kornaś (1954).

The aim of this work is to present resources of the *Orchidaceae* family in the xerothermic communities within the Pińczów Hump and adjacent mesoregions.

MATERIALS AND METHODS

The list of orchids and their distribution in the investigated mesoregions of the Nida Basin was based on the author`s own studies, literature data and unpublished results (mss. dissertations, personal information). The investigations were carried out using the field-cartogram method. The investigation area, according to the generally accepted ATPOL grid, is located in the following squares: EF 03-05; EF 13-16, 23-26. The large squares were divided into smaller squares 2 x 2 km, in order to investigate the area more thoroughly. The plant localities were plotted on the 1: 25.000 map. For each species the following information was provided: category of endangerement species (Głowaciński 1997; Zarzycki, Szeląg 1992; Kaźmierczakowa, Zarzycki 2001), syntaxonomical position of plant communities (Matuszkiewicz 2001). Nomenclature of species is given according to Mirek et al. (2002).

RESULTS

Amongst 10 identified species of orchids growing in the xerothermic communities in the investigated area, the strongest affiliation with

Table 1. List of the Orchidaceae family species on the Pińczów Hump and adjacent areas

Taxa	The red data book categories in Poland	Habitat and syntaxonomic membership	Localities	Frequency of occurrence
Orchis militaris L.	V*	Xerothermic communities from the *C-B* all. (*S.-S.* ul.; *A.-B.* var. with *Pinus sylvestris*)	**G. P.**: Łagiewniki, Pińczów **G. W.**: Góry, Polana Polichno Res. **N. P.**: Stawiany	Rare, few speciments
Orchis ustulata L.	E* EN**	Xerothermic communities from the *C-B* all. (In. ens., *A-B., S-S. ul.*)	**G. P.**: Czesławice, Pińczów, Skowronno Dln. Res. **N. S.**: Krzyżanowice Dln. Res. **N. P.**: Stawiany	Not rare, singly and in a smaller gregarious
Ophrys insectifera L.	R* Vu**	Xerothermic communities from the *C-B* all. (*In. ens., O-B.*)	**G. W.**: Wroni Dół Res.	Very rare, singly
Epipactis atrorubens (Hoffm.) Besser s.str.	Vu***	Xerothermic communities from the *C-B* all. with *Pinus sylvestris*	**G. W.**: Góry, Polana Polichno Res.	Very rare, singly
Epipactis helleborine (L.) Crantz	NE***	Xerothermic communities from the *C-B* all. with *Pinus sylvestris* and also on non xerothermic habitats	**G. P.**: between Widuchowa and Zbrodzice, Zbrodzice **D. N.**: Motkowice, Wiślica **G. W.**: Lubcza, Polana Polichno Res., Polichno **N. S.**: near Wełecz	Frequently, singly and small gregarious
Orchis purpurea Huds.	R* Vu**	Xerothermic communities from the *C-B* all. with *Pinus sylvestris*	**G. W.**: Polana Polichno Res.	Very rare, singly
Platanthera bifolia (L.) Rich.	LR***	Xerothermic communities from the *C-B* all. with *Pinus sylvestris* but mainly in deciduous forests	**G. P.**: Nowy Folwark, Solec Zdrój **G. W.**: Kozubów, Polana Polichno, Góry, Polichno **N. S.**: Zborów, Grabowiec Res., Wełecz, Krzyżanowice Dln.	Frequently
Platanthera chlorantha (Custer) Rchb.	LR***	Xerothermic communities from the *C-B* all. with *Pinus sylvestris* but mainly in deciduous forests	**G. W.**: Polana Polichno Res.	Very rare
Cephalanthera damasonium (Mill.) Druce	R*	Xerothermic bushes but mainly in deciduous forests	**G. P.**: Gogucice **G. W.**: Polana Polichno Res.	Rare
Cypripedium calceolus	L.V* Vu**	Xerothermic bushes but mainly in deciduous forests	**G. P.**: Nowy Folwark **G. W.**: Młodzawy Duże, Wodzisław, Góry, near Polichno, Kołków **N. S.**: Grabowiec Res., Bogucice	Frequently, in a smaller gregarious

Abreviations: * according to Zarzycki, Szeląg (1992) and **Kaźmierczakowa, Zarzycki (2001); *** Głowaciński (1997); G-P – Pińczów Hump; G. W. – Wodzisław Hump; N. P. – Pałaniec Basin; N. S. – Solec Basin; *C-B* all. – *Cirsio-Brachypodion alliance; A-B – Adonido-Brachypodietum; In. ens. – Inuletum ensifoliae; S-S. ul. – Scorzonero-Seslerietum uliginosae; O-B – Origano-Brachypodietum*.

the open plant associations of the *Cirsio-Brachypodion* alliance show *Orchis ustulata* and *Ophrys insectifera*. The remaining species were found in differently developed succession stages of these plant associations. An important role play the foliage shrubs overshading these xerothermic communities as well as the pine plantings. In the xerothermic plant patches *Orchis militaris* and *O. purpurea* are developed. The other species of orchids (*Cypripedium calceolus, Cephalanthera damasonium, Platanthera bifolia, P. chlorantha, Epipactis atrorubens, E. helleborine*) grow in the ecotone zone between the grasslands and the deciduous forests mostly in the dry-ground forests. These species emerge only sporadically in the open grasslands of the *Cirsio-Brachypodion* alliance. They mostly grow a few meters from the forest margin. A detailed description of the above mentioned orchid species is presented in Table 1. This Table contains red data book categories, the habitats, the syntaxonomic membership of xerothermic communities, localities and frequency of species occurrence.

DISCUSSION

The area of the Pińczów Hump and adjacent areas constitute the important refuge for the calciphilous orchid species connected with the xerothermic habitats. *Orchis purpurea* and *Ophrys insectifera* can be regarded as the floristic peculiarities of this area. These two species grow in the solitary localities and their populations are sparse, therefore they have high level of species extinction (Kaźmierczakowa, Zarzycki 2001; Medwecka-Kornaś, Kornaś 1954; Zarzycki 2001). The main factors influencing the endangerment of these species are the processes of secondary succession within the xerothermic grassland. The following orchid species (*Epipactis atrorubens, E. helleborine and Orchis militaris*) tolerate or even prefer shaded conditions created by the shrubs entering the xerothermic grasslands. The other orchid species (*Cypripedium calceolus*) find the optimal conditions for their development in the ecotone zone between the dry-ground forests (*Tilio-Carpinetum*) and the grasslands belonging to the *Cirsio-Brachypodion* alliance (Bąba, Kucharczyk 2001). Remaining calciphilous orchid species such as *Cephalanthera damasonium, Platanthera chlorantha, P. bifolia*, are characterized by the relatively wider amplitude of the light and humidity. Therefore they can be encountered in different types of vegetations such as: the dry-ground forests, clear oak forests or in the meadow communities.

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