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Current distribution of *Orchis ustulata* L. in the southern part of the Świętokrzyskie Mts.

Aktualne rozmieszczenie *Orchis ustulata* L. w południowej części Gór Świętokrzyskich

SUMMARY

The paper presents the distribution and current state of *Orchis ustulata* in the southern part of the Świętokrzyskie Mts. All localities of the species, given from this area, have been verified. Four sites, out of seven, have been confirmed. A new site of *O. ustulata* near Chęciny – Mt. Sosnówka, was found and described. The threat to and need of implementation of effective protection measures for maintenance of the species is also discussed.

STRESZCZENIE

Praca przedstawia rozmieszczenie i aktualny stan populacji *Orchis ustulata* w południowej części Gór Świętokrzyskich. Wszystkie stanowiska podane z tego terenu zostały zweryfikowane. Z siedmiu znanych stanowisk potwierdzono występowanie populacji *O. ustulata* na czterech. Opisano nowe stanowisko storczyka drobnokwiatowego na górze Sosnówka w pobliżu Chęcin. W pracy przedyskutowano również zagrożenia i konieczność wprowadzenie efektywnych form ochrony tego gatunku.

Key words: *Orchis ustulata*, threatened species, species protection, Świętokrzyskie Mts.

INTRODUCTION

Orchis ustulata L. (Orchidaceae) is a European – Western Asian species. It is distributed in most of Europe, in the Caucasus and in West Siberian Plain (Hultén, Fries 1986). In Poland two subspecies of *O. ustulata* occur: typical one – subsp. *ustulata* and late flowering one – subsp.

aestivalis (Kümpel) Kümpel & Mrkvicka. The species has been reported from approximately 130 localities in Poland, of which only about 20 still existed at the end of the last century (Bernacki, Krukowski 2001, Mirek et al. 2008). *O. ustulata* subsp. *aestivalis* occurs at present only on one certain site in Lower Silesia, and probably on one site in Tatra Mts. The remaining localities represent typical subspecies (Bernacki, Krukowski 2001). Piękoś-Mirkowa and Mirek (2006) report that the range of existing localities of *O. ustulata* in Poland is limited to uplands and mountains. Populations from the northern part of lowlands are mostly historical (Żukowski 1976). The species occurs mainly in Lubelszczyzna [Lublin Region], in Małopolska and in Silesia regions (Bróż, Przemyski 1987; 1989; Fijałkowski 1994; Hereźniak 2002; Urbisz 2008; Mirek et al. 2008). According to the literature, the majority of current populations of *O. ustulata* are composed of several to several dozen individuals, and cover small areas (Bróż, Przemyski 1988; 1989). The plant most often grows in grasslands and dry meadows of the class *Festuco-Brometea*.

Orchis ustulata is considered to be an endangered species of the Polish vascular flora (Bernacki, Krukowski 2001), while Zarzycki and Szeląg (2006) classified it as a rare species. *O. ustulata* is also included in the regional red list of Świętokrzyski Region and in the neighbouring regions as a vulnerable species (Bróż 1990). In the Małopolska Upland it is classified as an endangered species (Bróż, Przemyski 2009); in Lubelska Upland, Roztocze, Western Volhynia and Polesie Lubelskie as a critically endangered one (Kucharczyk, Wójciak 1995). In the former Kraków Province the species was rereconized as missing or extinct (Zając, Zając 1998).

The aim of the study was to present the current distribution and state of *Orchis ustulata* populations from the southern part of the Świętokrzyskie Mts.

MATERIAL AND METHODS

Field observations were carried out in the years 2005–2010. The localities were assigned to a square (2.5 km x 2.5 km) according to ATPOL grid (Zając 1978). At selected localities phytosociological relevés were made according to the method of Braun-Blanquet. Names of vascular plants follow Mirek et al. (2002), while names of syntaxa follow Matuszkiewicz (2008). The regional division used in the description of the study area is based on the Polish geobotanical classification (Szafer 1977) and physicogeographical classification (Kondracki 2001).

RESULTS

The study area is situated within the boundaries of the geobotanical region of Świętokrzyska Land, and physicogeographical region of Świętokrzyskie Mountains. Seven localities of *Orchis ustulata* known from this area were verified. Specimens of *O. ustulata* were found in four sites, whereas three localities were not confirmed. A new locality of the species – Mt. Sosnówka was found in 2010 (Fig. 1.). The descriptions of all sites are given below.

EE 7230 Mt. Milechowska. This historical site (Massalski 1962) was located near the village Milechowy, in the area of the present nature reserve ‘Milechowy’.

EE 8201 Mt. Czubatka. This is a historical site (Massalski 1962), not confirmed at present.

EE 8202 Podpolichno. This locality, described by Głazek (1976), is situated 0.5 km to the south of the village Podpolichno. Single specimens of *O. ustulata* grow

here on the lime hill in the community of loose xerothermic thicket, with *Juniperus communis*.

EE 8300 Mt. Sosnówka. This is a new locality of *O. ustulata,* which we found in 2010. The site is situated near the town of Chęciny, about 0.5 km to the west from the boundaries of the housing-estate named Góra Sosnówka. Nine specimens of the burnt orchid were observed on the north-eastern slope of the mountain (319 m a.s.l.), in grassland community representing the association *Thalictro-Salvietum pratensis*. The phytosociological relevé from the site is given below.

Mt. Sosnówka 5.06. 2010, area 25 m², exposure NE, inclination 20°, cover of layer C – 100%; *Orchis ustulata* 1.2, *Campanula glomerata* 1.1*, Filipendula vulgaris* 1.2*, Trifolium montanum* 2.2*, Prunella grandiflora* 1.2*, Aster amellus* +.2*, Plantago media* +*, Anthericum ramosum* 1.1*, Brachpodium pinnatum* 2.2*, Festuca ovina* 3.3*, Festuca sulcata* 1.1*, Achillea pannonica* 1.1*, Scabiosa ochroleuca* 1.1*, Thesium linophyllon* +*, Salvia verticillata* 1.1, *Thymus marschallianus* 1.1*, Seseli annaum 1.1, Pimpinella saxifaga* 1.1*, Medicago sativa* 2.2*, Euphorbia cyparissias* 1.1*, Anthyllis vulneraria* 2.2*, Carlina vulgaris* 1.1*, Centaurea rhenana* 1.1*, Origanum vulgare* 1.2*, Fragaria viridis* 1.2*, Silene otites* +*, Vincetoxicum officinale* +.2*, Anemone sylvestris* 1.1*, Peucedanum cervaria* 1.1*, Briza media* 1.2.

EE 8301 Mt. Zelejowa. This locality of *O. ustulata* was found in the late 1980s. Since then, the burnt orchid population has increased from three to several dozen of specimens (Bzdon 1998; Ciosek, Bzdon 2000). At present it still grows in the blackthorn thicket and in greenswards, overgrown with pine, at the edge of nature reserve 'Mt. Zelejowa', in its southern part. Unfortunately, we have observed only few individuals of *O. ustulata*.

EE 8311 Mt. Rzepka and Mt. Zamkowa. The site on Mt. Rzepka was described by Bróż and Przemyski (1988). *O. ustulata* grows here on the southern slope, in bright birch-pine thicket, and in short greenswards on lime soils. The local reserve 'Mt. Rzepka' does not fully safeguard the population of the studied species. The population from Mt. Zamkowa comprising about occurs in greenswards on the south-eastern slope of the elevation. It is surrounded by pine monocultures and by blackthorn thicket. Encroachment of pine on the site has been observed lately.

EE 8302 Mt. Berberysówka and Mt. Czerwona. *O. ustulata* was reported from Mt. Berberysówka by Bróż and Przemyski (1988, 1989) from xerothermic thicket and greenswards, but unfortunately the locality was not confirmed. Mt. Czerwona is a historical site (Massalski 1962).

EE 8400 Kowala. This locality is situated about 1 km to the north of the village Kowala (Bróż, Maciejczak 1991). Few specimens of *O. ustulata* grow here on a lime hill in the xerothermic grassland and thicket. The locality is threatened, as it is located in the immediate vicinity of cement plant.

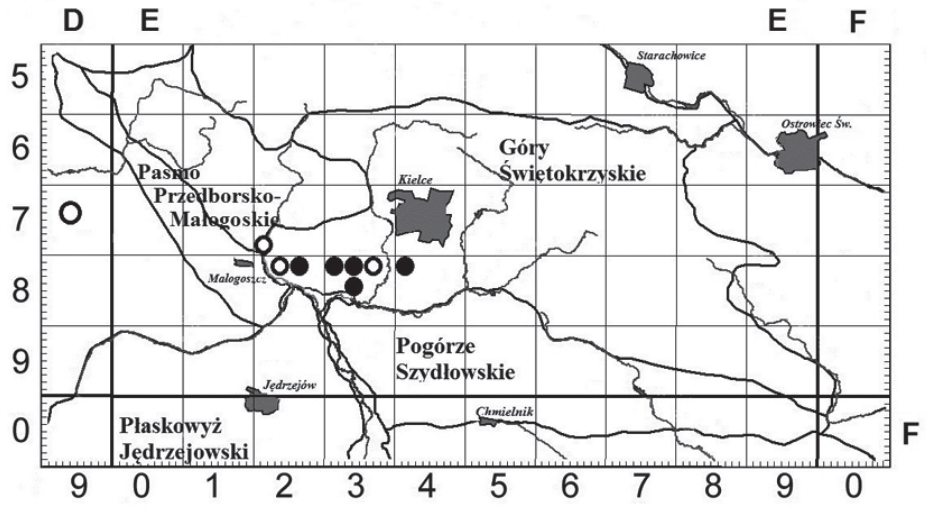

Fig. 1. Localities of *Orchis ustulata* L. in the southern part of the Świętokrzyskie Mts.; ● – confirmed localities, **o** – localities not confirmed

DISCUSSION

Orchis ustulata was recognized as an endangered species of the Polish flora. Out of approximately 130 localities of the species, only about 20 have remained (Bernacki, Krukowski 2001, Mirek et al. 2008). The problem of the decline of the species in Poland has been discussed from since 1970s. Żukowski (1976) reported that *O. ustulata* became nearly extinct in northern Poland with the exception of one site, whereas Michalik (1975) wrote about the pernicious influence of alteration of methods and intensification of meadow-pasture management on resources of this orchid. Also Bernacki and Krukowski (2001) showed the changes in the management of areas where the species once occurred as the main cause of the decline of *O. ustulata*. First of all, it was the cessation of irregular grazing and mowing, which led to the overgrowth of grasslands by shrubs and trees. In the studied area, out of a total of seven known localities, only four still exist. It is important that a new population of *O. ustulata* comprising nine individuals has been found near Chęciny. The majority of Polish sites of *O. ustulata* are encountered in greensward communities, but also in thicket ones. In the Świętokrzyskie Mts. it grows in patches of phytocoenoses representing classes *Festuco-Brometea* and *Trifolio-Geranietea*. On the Mt. Milechowska and Mt. Czubatka *O. ustulata* populations became extinct due to succession of forests, as well as the introduction of pine monocultures to summits of lime elevations. The numerical abundance of the existing populations numbered from several to

only a dozen-odd specimens. Most of current localities of *O. ustulata* are located within the Chęcińsko-Kielecki Landscape Park, but this form of protection will not stop the decline of the species. According to Bernacki and Krukowski (2001) all larger populations of *O. ustulata* should be subject to active protection in sites of ecological interest or partial nature reserves. Of the five existing sites of the species in the southern part of the Świętokrzyskie Mts. two – Mt. Zelejowa and Mt. Rzepka – are located within nature reserves, but as far as we know no active protection treatments are conducted there. To protect the remaining populations of *O. ustulata* we would suggest establishing new ecological sites encompassing the localities. All populations should be monitored and active conservation measures should be introduced if needed.

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