

## Microscopic phytopathogenic fungi rare and new for Poland

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The paper presents a list of 36 rare species of fungi with remarks about their morphology and distribution in Poland. Three of the species are new for Poland: *Ramularia asplenii* Jaap, *R. concomitans* Ell. et Holw. and *Ascochyta actaeae* (Bres.) J. J. Davis. Altogether, 13 parasitic species occur on the plants which have not been known as their hosts in Poland, so far; 19 are rare on the listed hosts. The fungi were collected in the area of projected Jurassic National Park, Częstochowa Upland.

**Key words:** parasitic microfungi, *Peronosporales*, *Erysiphales*, *Uredinales*, *Deuteromycotina*, distribution, S Poland.

### INTRODUCTION

Fungi parasites on vascular plants are classified into two ecological groups. First group of highly specialized parasites comprises obligatory parasites (*Erysiphales*, *Uredinales*) and facultative saprotrophs (*Ustilaginales*, *Peronosporales* and a few more). The second group contains facultative parasites, among other *Deuteromycotina* (Mułencko and Majewski 1996). The first group is relatively well known in Poland, mainly as a result of investigations carried out in some large, protected areas (e.g. the Białowieża National Park). However, it is still possible and probable to find species new for Poland, or new hosts for fungi already known from this country. This is of special concern to *Deuteromycotina*, as they are not so often referred to in mycological works. There are still no data on these fungi in many regions of Poland. One of them is the projected Jurassic National Park, situated in the Częstochowa Upland, southern Poland (Fig. 1). The aim of the establishment of this national park is to protect natural beech forests and seminatural xerothermic grasslands, which are formed on limestone (Hereźniak 1996).

In the years 1996–1999 the investigations on appearance of parasites of the mentioned groups were carried out in this area. In the field studies permanent observation plots were used. The plots were established in representative patches of xerothermic grasslands belonging to the *Festuco-Brometea* class and in beech forest associations: *Dentario enneaphyllidis-Fagetum*, *Melico-Fagetum*, *Luzulo pilosae-Fagetum* and *Carici-Fagetum* (Hereźniak 1993). Materials were collected from different anthropogenic localities (e.g. roadside, ruderal sites), too. The studies yielded rich herbarial material with some rare and interesting species of microscopic phytopathogenic fungi.

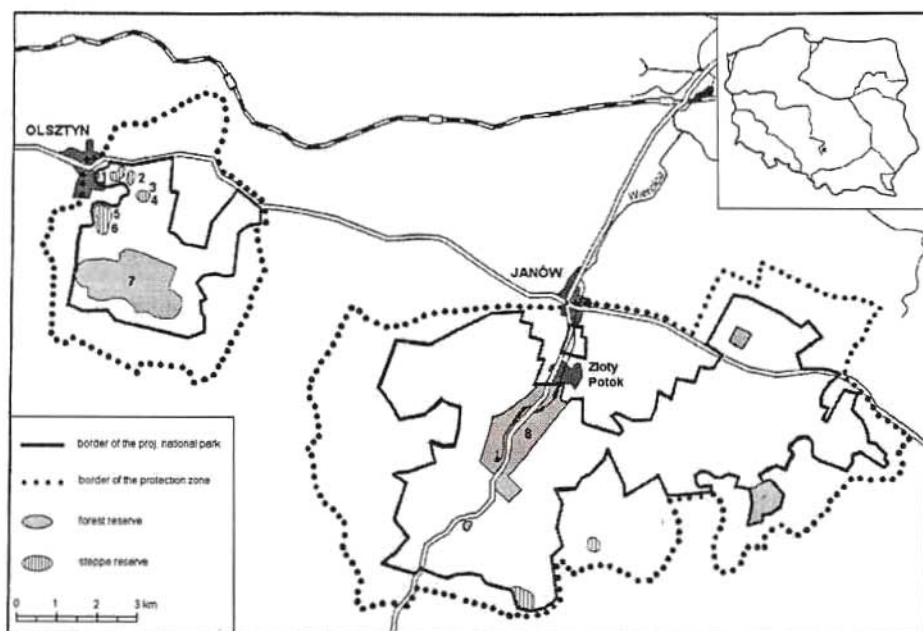


Fig. 1. Localities in the area of projected Jurassic National Park: the hills of: 1 – Góra Zamkowa, 2 – Góra Siatkowa, 3 – Góra Cegielnia, 4 – Góra Kielniki, 5 – Góra Bliskie Lipówki, 6 – Góra Brodło, 7 – the Sokole Góry reserve, 8 – the Parkowe reserve (according to Hereźniak (1996); modified)

## RESULTS

The paper presents a list of 36 species with remarks about their morphology and distribution in Poland. Three species are new to Poland: *Ramularia asplenii* Jaap (on *Asplenium trichomanes*), *R. concomitans* Ell. et Holw. (on *Bidens tripartita*) and *Ascochyta actaeae* (Bres.) J. J. Davis (on *Thalictrum minus*). Thirteen species were collected on new (for them) host plants in Poland. *Erysiphe galii* Fuck. ex Blumer (on *Cruciata glabra*),

*Podosphaera tridactyla* (Wall.) de Bary (on *Padus serotina*) and *Sphaerotheca fugax* Penz. et Sacc. (on *Geranium pusillum*) are reported from host species, which were not mentioned in Braun's (1987) world monograph of *Erysiphales*. Short descriptions of morphology of these fungi were made on the basis of studied herbarial materials. Nineteen taxa are known to appear rarely on presented hosts. The information about earlier distribution of these fungi in Poland is given according to the literature data. Short information about frequency of the fungi is given, too.

The names of fungi were updated according to monographs written by: Brandenburger (1985), Kochman and Majewski (1970), Majewski (1979) and Sałata (1985). The names of plants were given after Mirek et al. (1995).

The studied materials were deposited in the Herbarium Universitatis Lodzianis (LOD).

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## LIST OF FUNGI

### PERONOSPORALES

*Peronospora alta* Fuckel – on leaves of *Plantago intermedia* Gilib. [= *P. pauciflora* Gilib.; *P. major* L. subsp. *intermedia* (DC.) Arcangeli]: Olsztyn near Częstochowa, lawn (VII 1998); Parkowe reserve, sect. 270h, an edge of coniferous forest (VII 1998); rare. The species noted on the host plant only once: in Secymin Nowy in the Puszcza Kampinoska (Majewski 1967). It is possible, that some authors did not distinguish between *Plantago intermedia* and *P. major*.

*Peronospora arthurii* Farlow – on leaves of *Oenothera biennis* L.: Olsztyn near Częstochowa, roadside (V–VII 1998), ruderal site (V 1998); Złoty Potok near Częstochowa, ruderal site (X 1998); common. The species reported from only six localities concentrated in SE Poland (Muleńko and Matejko Gosztyła 1997). It seems, that the species is spreading out in the country very quickly.

*Peronospora camelinae* Gäumann – on stems and leaves of *Camelina microcarpa* Andrzej.: the hill of Góra Zamkowa, xerothermic grassland (VI 1997 and V 1998); very rare. The species noted on this host in Śląsk (Schroeter 1889), Kujawy (Kochman and Majewski 1970) and in Rudnik near Lublin (Romaszewska-Sałata 1977).

*Peronospora conglomerata* Fuckel – on leaves of *Geranium robertianum* L.: Sokole Góry reserve, sect. 350b, beech forest, roadside (X 1997); very rare. The species known on this host only from the Omelno reserve near Radzyń Podlaski (Danilkiewicz 1984).

*Peronospora dentariae-macrophyllae* Gäumann — on *Dentaria enneaphyllos* L. [= *Cardamine enneaphyllos* (L.) Cr.]: Parkowe reserve, sect. 273g, *Dentario enneaphyllidis-Fagetum* (IV 1999); very common. Systemic infection, with deformations of leaves and stems. Conidiophores 196.0–368.0 × 9.8–17.4 μm. Sporangia broad-ellipsoid, 24.5–27.0 × 19.6–22.0 μm (Kochman and Majewski 1970: 20–27 × 15–22 μm). Oogonia were not observed. The species known as parasite of *Dentaria glandulosa* Waldst. et Kit. [= *Cardamine glandulifera* O. Schw.] (Kochman and Majewski 1970), but for the first time is reported in Poland on *Dentaria enneaphyllos*.

*Peronospora knautiae* Fuckel ex Schroeter — on the lower leaves of *Scabiosa ochroleuca* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (X 1997 and VII 1998); the hill of Góra Brodło, xerothermic grassland (VI–VII 1998); common. The species reported from the vicinity of Legnica and Gliwice, however, determination of the host plant is uncertain (Kochman and Majewski 1970), from Izbica and Świdniki in the Lublin Upland (Romaszewska-Sałata 1977) and twice from the Tatra Mts. (Sałata et al. 1984; Mułencko et al. 1995).

#### ERYSIPHALES

*Erysiphe biocellata* Ehrenberg — on *Thymus pulegioides* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (X 1997); very rare. Mycelium on leaves, amphigenous, thin, evanescent. Conidia in chains, ellipsoid to cylindrical, 32.0–36.8 × 14.7–17.1 μm (Sałata 1985: 26–37 × 16–22 μm). Mature cleistothecia absent. The species collected on *T. pulegioides* in Poland only once (in conidial stage) by Zalewski in the vicinity of Grudziądz (Wróblewski 1915).

*Erysiphe buhrii* U. Braun — on *Silene nutans* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (VI–VII 1999); rare. Mycelium amphigenous, in irregular patches, persistent, thick on both sides of leaves. Conidia in chains, ellipsoid to ellipsoid-ovoid, 36.8–45.0 × 14.7–17.1 μm (Sałata 1985: 25–46 × 15–22 μm; Braun 1987: 30–50 × 14–22.5 μm). Cleistothecia absent. The species noted in Poland only on *Melandrium album* (Mill.) Garcke (Sałata 1985). In Europe, Africa and North America the species occurs on numerous host species of various genera of *Caryophyllaceae*, amongst them on *Silene* (Braun 1987). *E. buhrii* on *Silene nutans* is reported from Poland for the first time.

*Erysiphe cruciferarum* Opiz ex L. Junell — on stems, leaves and fruits of *Alyssum alyssoides* (L.) L. [= *A. calycinum* L.]: Parkowe reserve, sect. 270a, on a sand shore of a pond (VI–VIII 1998); rare. The species known on this host from four localities in Poland: Poznań (Dominik 1936), Pogorzelec near Sejny (Majewski 1972), Pińczów and Józefów near Biłgoraj (Sałata 1985).



— on stems, leaves and fruits of *Capsella bursa-pastoris* (L.) Medik.: Parkowe reserve, sect. 270a, on the sand shore of a pond (VI 1998); very rare. The species reported on this host from: Kłęczany near Nowy Sącz (N a m y s ł o w s k i 1909), Dziekanów Polski near Warszawa, Białowieża (S a ł a t a 1985) and Olsztyn (D y n o w s k a et al. 1999).

— on *Erysimum odoratum* Ehrh. [= *E. pannonicum* Cr.]: the hill of Siatkowa Góra, xerothermic grassland (X 1998); very rare. Infection on leaves, stems and fruits. Mycelium amphigenous, effuse, coating large areas. Conidia formed singly, ellipsoid to cylindrical,  $29.4-34.3 \times 14.7-17.2 \mu\text{m}$  (S a ł a t a 1985:  $28-42 \times 12-18 \mu\text{m}$ ). Cleistothecia absent. Previously collected on this host only once, in Olkusz (M a j e w s k i 1972).

— on *Sinapis arvensis* L.: the hill of Góra Zamkowa, ruderal site (IX 1998); very rare. Infection slightly visible, weak; mycelium in small patches on the upper surfaces of leaves. Conidia formed singly, ellipsoid to cylindrical,  $29.4-36.8 \times 13.0-14.7 \mu\text{m}$  (S a ł a t a 1985:  $28-42 \times 12-18 \mu\text{m}$ ). Cleistothecia absent. On this host known only from Kamień Łukawski near Sandomierz (S a ł a t a 1985).

*Erysiphe galii* Fuckel ex Blumer — on leaves of *Cruciata glabra* (L.) Ehrenb. [= *Galium vernum* Scop.]: Sokole Góry reserve, sect. 350c, the hill of Sokola Góra, beech forest (VII 1998); very rare. Mycelium effuse, thin, evenly coating the upper surfaces of leaves. Conidia in chains, cylindrical to ellipsoid,  $32.0-34.3 \times 12.5-14.7 \mu\text{m}$  (S a ł a t a 1985:  $26-33 \times 13-18 \mu\text{m}$ ). Cleistothecia absent. In the world monograph of *Erysiphales* (B r a u n 1987) there is no information about occurrence of the fungus on *C. glabra*, but it is known to occur on *Cruciata laevipes* Opiz [= *Galium cruciata* (L.) Scop.]. *Cruciata glabra* is probably a new host for *E. galii*.

*Erysiphe graminis* de Candolle ex Méral [= *Blumeria graminis* (de Candolle) Speer] — on *Bromus benekenii* (Lange) Trimen: Dąbrowa forestry district, sect. 278f, mixed forest (VII 1999); rare. Mycelium amphigenous, effuse, thick, evanescent, on both sides of leaves. Conidia in long chains, ellipsoid,  $24.5-36.8 \times 13.0-14.7 \mu\text{m}$  (S a ł a t a 1985:  $18-35 \times 10-16 \mu\text{m}$ ). Cleistothecia absent. The species on this host collected only in the Pieniny Mts. (K u ć m i e r z 1977).

— on *Poa compressa* L.: the hill of Góra Zamkowa, on boulders (leg. T. Majewski) (VI 1997); very rare. Mycelium dense, in oblong patches, on both surfaces of leaves, persistent. Conidia in long chains, ellipsoid to cylindrical,  $29.4-31.9 \times 9.8-12.2 \mu\text{m}$  (S a ł a t a 1985:  $18-35 \times 10-16 \mu\text{m}$ ). Cleistothecia absent. The species occurs commonly on other representatives of the genus *Poa* (S a ł a t a 1985, B r a u n 1987), but has not been reported on *P. compressa* before.

*Erysiphe knautiae* Duby — on *Scabiosa ochroleuca* L.: the hill of Góra Brodło, xerothermic grassland (VII–X 1998); the hill of Góra Cegielnia, xerothermic grassland (IX 1998); the hill of Góra Kielniki, a slope of a quarry (X 1998); the hill of Góra Bliskie Lipówki, xerothermic grassland (VII–X 1998); the hill of Góra Zamkowa, xerothermic grassland (VIII 1998); common. Infection covering the superior surface of leaves and lower fragments of stems. Mycelium amphigenous, effuse, thin, persistent. Conidia formed singly, ellipsoid,  $32.0–36.8 \times 17.1–19.3 \mu\text{m}$  (Sałata 1985:  $28–37 \times 14–19 \mu\text{m}$ ). Cleistothecia absent. The species has not been collected on this host in Poland before. Known from rare findings on other species of the genus *Scabiosa*: *S. columbaria* L. and *S. lucida* Vill. (Sałata 1985; Mułenko et al. 1995).

*Erysiphe sordida* L. Junell — on leaves of *Plantago intermedia* Gilib. [= *P. pauciflora* Gilib.; *P. major* L. subsp. *intermedia* (DC.) Arcangeli]: Olsztyn near Częstochowa, lawn (VII 1998); Parkowe reserve, sect. 270a, an edge of coniferous forest (VII 1998); rare. The species collected on the host only in Przesławice and Secymin Nowy in the Puszcza Kampinoska (Majewski 1967). It is possible, that some authors did not distinguish between *Plantago intermedia* and *P. major*.

*Erysiphe verbasci* (Jaczewski) Blumer — on *Verbascum lychnitis* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (VII 1998); the hill of Ostra Górka, ruderal site (IX 1998); common. Infection covering the superior surface of leaves and lower fragments of stems. Mycelium amphigenous, effuse, thick, persistent. Conidiophores abundant. Conidia in chains, cylindrical-ellipsoid,  $34.3–39.2 \times 17.2–20.6 \mu\text{m}$  (Sałata 1985:  $30–42 \times 18–26 \mu\text{m}$ ). Cleistothecia absent. The species noted on this host in Europe (Braun 1987). From Poland reported on it for the first time.

*Microsphaera baeumleri* P. Magnus — on stems and leaves of *Vicia villosa* Roth: the hill of Góra Bliskie Lipówki, near an arable field (VIII–X 1998); rare. Mycelium amphigenous, effuse on leaves and stems, thin, persistent. Conidia cylindrical,  $34.3–38.7 \times 12.5–13.7 \mu\text{m}$  (Sałata 1985:  $27–46 \times 10–21 \mu\text{m}$ ). Mature cleistothecia absent. The species known for occurrence on this host in Europe (Sałata 1985), from Poland reported on it for the first time.

*Microsphaera vanbruntiana* Gerard [= *Microsphaera vanbruntiana* Gerard var. *sambuci-racemosae* U. Braun] — on *Sambucus nigra* L.: Olsztyn near Częstochowa, roadside (X 1997 and IX 1998); Parkowe reserve, sect. 276a, beech forest (VIII 1998); very rare. Mycelium amphigenous, effuse, thin, covering both sides of leaves. Conidia  $32.0–24.3 \times 12.5–13.4 \mu\text{m}$ . Cleistothecia abundant, scattered to gregarious on both surfaces of leaves,  $135–142 \mu\text{m}$  in diam. Asci broad-ellipsoid to ovoid,  $44.1–66.2 \times 27.0–44.1 \mu\text{m}$ , 3–6-spored. Ascospores ellipsoid,  $27.0–29.4 \times 12.5–13.4 \mu\text{m}$ . This characteristic corresponds to those given by Sałata (1985) and Braun (1987). The species collected in Poland for the first time in Lublin in 1980

(R o m a s z e w s k a-S a ł a t a and M u ł e n k o 1982) on *Sambucus racemosa* L., but on *S. nigra* has been noted only once, in conidial stage (as *Oidium* sp.) in Brodnica near Toruń (D y n o w s k a et al. 1999). B r a u n (1987) verified its single specimen deriving from Germany and accepted it as very rare.

*Podosphaera tridactyla* (Wallroth) de Bary — on *Padus serotina* (Ehrh.) Borkh.: Parkowe reserve, sect. 270h, deciduous forest (X 1997); sect. 270a, thickets near a pond (X 1998); rare. Mycelium amphigenous, thin, in subglobose patches on the superior surface of leaves, evanescent. Conidia in chains, cylindrical to ellipsoid,  $24.5-27.0 \times 13-14.7 \mu\text{m}$ . Cleistothecia single, scattered,  $83.0-85.0 \mu\text{m}$  in diam. Asci broad-ellipsoid,  $73.5-80.9 \times 66.2-71.1 \mu\text{m}$ . Ascospores ellipsoid,  $19.6-11.1 \times 13-14.7 \mu\text{m}$ . This characteristic corresponds to those given by S a ł a t a (1985) and B r a u n (1987). A conidial stage of powdery mildew on *P. serotina* has been observed by the author in the area of central Poland and Częstochowa Upland many times. Mature sexual stage is known only from one locality (the Parkowe reserve, sect. 270a). B r a u n (1987) mentioned the occurrence of *P. tridactyla* on many species of the genus *Prunus sensu lato*, but there is no information about parasitism on *P. serotina*. This species is probably a new host of *P. tridactyla*.

*Sphaerotheca erigerontis-canadensis* (Léveillé) L. Junell [= *S. fusca* (Fries) Blumer emend. U. Braun] — on leaves of *Leontodon hispidus* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (X 1997); very rare. The species reported on this host only twice: from the Ojców National Park (K u ć m i e r z 1973) and Skowronno Dolne near Pińczów (R o m a s z e w s k a-S a ł a t a 1981).

*Sphaerotheca ferruginea* (Schlechtendal ex Fries) L. Junell — on *Sanguisorba minor* Scop.: the hill of Góra Bliskie Lipówki, xerothermic grassland (VI and X 1997; IX–X 1998); the hill of Góra Brodło, xerothermic grassland (VIII–X 1998); the hill of Góra Kielniki, a slope of a quarry (X 1998); Olsztyn near Częstochowa, ruderal site (IX–X 1998); common. Infection amphigenous, in irregular patches on leaves to confluent, persistent. Conidia in chains, oval to oblong ellipsoid,  $27.0-34.3 \times 12.5-14.7 \mu\text{m}$  (S a ł a t a 1985:  $24-34 \times 12-18 \mu\text{m}$ ). Cleistothecia absent. S a ł a t a (1985) described four, situated in southern Poland, localities of this fungus on *S. minor*, with a note that the data should be confirmed.

*Sphaerotheca fugax* Penzig et Saccardo — on *Geranium pusillum* Burm. f. ex L.: Olsztyn, near a fence (X 1997 and VII 1998); very rare. Mycelium amphigenous, effuse, in regular patches on the superior surface of older leaves, persistent. Conidia in chains, ellipsoid,  $27.0-32.0 \times 17.1-19.5 \mu\text{m}$  (S a ł a t a 1985:  $26-38 \times 14-20 \mu\text{m}$ ). Cleistothecia absent. There are no data on occurrence of the species on this host in the Polish mycological literature, as well as in B r a u n ' s (1987) monograph. Host species probably new for *S. fugax*.

*Sphaerotheca fuliginea* (Schlechtendal ex Fries) Pollacci — on leaves of *Veronica spicata* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (IX–X 1998); very rare. The species observed only twice on *V. spicata*: in Wrocław–Bierdzany (Schroeter 1908) and in Kazimierówka near Brwinów (Sałata 1985).

*Sphaerotheca helianthemi* L. Junell — on *Helianthemum nummularium* (L.) Miller subsp. *obscurum* (Celak.) Holub [= *H. ovatum* (Viv.) Dunal]: the hill of Góra Bliskie Lipówki, xerothermic grassland (X 1997 and X 1998); rare. Mycelium slight, effuse, evenly coating leaves and stems, evanescent. Conidia in chains, ellipsoid,  $29.4 \times 14.7$ – $17.2$ . Cleistothecia scattered, mostly on stems,  $73.5$ – $78.4$   $\mu\text{m}$  in diam. Asci broad-ellipsoid to subglobose,  $51.5$ – $63.7 \times 36.8$ – $56.4$   $\mu\text{m}$ . Ascospores  $13.0$ – $17.2 \times 9.8$ – $14.7$   $\mu\text{m}$ . This characteristic corresponds to that given by Sałata (1985). The species recorded on this host only once in Poland: in the Tatra Mts. (Mułencko et al. 1995). It was collected two times on *H. nummularium* (L.) Miller: in Wola Justowska near Kraków (leg. Raciborski) (Wróblewski 1925) and in the Tatra Mts. (Sałata 1985). Braun (1987) recorded *S. helianthemi* only on *H. nummularium* subsp. *nummularium* and subsp. *grandiflorum*.

#### UREDINALES

*Puccinia asperulae-cynanchicae* Wurth — on stems and leaves of *Asperula cynanchica* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (IX–X 1997; VII–X 1998); the hill of Góra Brodło, xerothermic grassland (IX 1998); very common. The species known from only three localities: the Ojców National Park (Kucmierz 1973), Prusy near Kraków (Wróblewski 1922) and the Góry Pieprzowe Mts. near Sandomierz (Součková-Tomková 1958).

*Puccinia dentariae* (Albertini et Schweinitz) Fuckel — on *Dentaria enneaphyllos* L. [= *Cardamine enneaphyllos* (L.) Cr.]: Parkowe reserve, sect. 273g, *Dentario enneaphyllidis-Fagetum* (V 1998; IV 1999); common; (Fig. 2). Plants infected very strongly, with deformations of leaves and stems. Young telia covered by epidermis, then pulveraceous, brown,  $32.0$ – $36.8 \times (12.5$ – $)14.7$ – $17.5$   $\mu\text{m}$  (Majewski 1979:  $33$ – $45 \times 15$ – $18$   $\mu\text{m}$ ). Mesospores abundant. The species has not been noted on this host in Poland so far (Majewski 1979).

— on stems and leaves of *Dentaria bulbifera* L. [= *Cardamine bulbifera* (L.) Crantz]: Dąbrowa forestry district, sect. 275c, *Melico-Fagetum* (V 1999); common. The species reported from Poland only twice: from Kalwaria Zebrzydowska (Raciborski 1887), from Połonina Caryńska in the Bieszczady Zachodnie Mts. (Domanski et al. 1970) and from Iwonicz Zdrój (Wólczńska 1994).





Fig. 2. *Puccinia dentariae* (Alb. et Schw.) Fuck. on *Dentaria enneaphyllos*



Fig. 3. *Ramularia concomitans* Ell. et Holw. on *Bidens tripartita*





Fig. 4. *Thedgonia ligustrina* (Boerema) Sutton on *Ligustrum vulgare*



Fig. 5. *Ascochyta actaeae* (Bres.) J. J. Davis on *Thalictrum minus*

*Puccinia violae* de Candolle — on leaves of *Viola rupestris* F. W. Schmidt [= *Viola arenaria* DC.]: the hill of Góra Brodło, xerothermic grassland (VI–VII and IX–X 1998); common. The species observed on this host plant only for several times: in the vicinity of Zielona Góra, in Kup near Opole, in Złoty Potok near Częstochowa and in Stawinoga near Serock (M a j e w s k i 1979).

### MONILIALES

*Gyoerffyella oxalidis* Vanev — on leaves of *Oxalis acetosella* L.: Parkowe reserve, sect. 273g, *Dentario enneaphyllidis*-Fagetum (VII 1998); very rare. The species known so far only from three European countries: Bulgaria (V a n e v 1976), Poland (South Roztocze, the Białowieża National Park (M u ł e n k o 1993), and the Tatra Mts. (M u ł e n k o et al. 1995) and from Great Britain (M u ł e n k o and W o o d w a r d 1996).

*Mycovellosiella murina* (Ellis et Kellerman) Deighton [?= *Cercospora violae-sylvaticae* Oud.] — on leaves of *Viola rupestris* F. W. Schmidt [*Viola arenaria* DC.]: the hill of Góra Brodło, xerothermic grassland (VIII–IX 1998 and VII 1999); very rare. Leaf spots usually not large, 2–5 (–8) mm in diam., irregular, grey-brown with no margin. Coating visible on the lower side of the spots. Conidiophores 85.8–95.0 × 4.2–5.0 μm. Conidia 2–4 (–8)-cellular, cylindrical, 31.9–61.3 × 3.9–4.5 μm. This characteristic corresponds to that given by B r a n d e n b u r g e r (1985). The species noted in Poland only on *Viola sylvatica* Fries in Puławy (J a n k o w s k a-B a r b a c k a 1931) and on *Viola epipsila* Led. in the Białowieża National Park (M u ł e n k o 1996b). *Viola rupestris* is a new host species of this fungus in Poland.

*Ramularia ajugae* (Niessl) Saccardo [= *Fusidium ajugae* Niessl in Fuck.; *Cylindrospora ajugae* (Niessl) Schroet.; *Ramularia tozziae* Lindau; *R. ajugae* (Niessl) Sacc. var. *ajuga-pyramidalis* Sacc.] — on lower leaves of *Ajuga genevensis* L.: the hill of Góra Brodło, xerothermic grassland (VIII 1998); common. The species reported from four localities: Łazy near Zielona Góra and Wierzbie near Niemodlin (S c h r o e t e r 1908), Mielnik in the Bug Valley (R o m a s z e w s k a-S a ł a t a and M u ł e n k o 1983) and Augustowo near Bielsk Podlaski (W o ł c z a ń s k a 1998a).

*Ramularia asplenii* Jaap — on *Asplenium trichomanes* L.: Parkowe reserve, sect. 274b, beech forest, on boulders (VII 1998 and VII 1999); very rare. Plants infected very slightly, affected fragments of leaves are dried out and browned. Poorly visible coating of conidiophores (22.1–27.0 × 3.2–3.7 μm) on the inferior side of leaves. Conidia 1–2-cellular, cylindrical to fusiform, formed in chains, 8.6–13.5 × 2.4–2.7 μm (V i m b a 1970: 6–15 × 2–3 μm; B r a n d e n b u r g e r 1985: 6–16 × 2–4 μm). The species new to Poland. In Latvia collected on *Asplenium ruta-muraria* L. (V i m b a 1970).



*Ramularia carduca* (Voss) U. Braun [= *Ovularia carduca* Voss; *Ramularia circaeae* (Schroet.) Allesch.; *R. circaeae* Allesch.; *Cylindrospora circaeae* Schroet.; *Ramularia circaeina* Sacc. et Syd.] — on leaves of *Circaea lutetiana* L.: Dąbrowa forestry district, sect. 278a, mixed forest (VII 1998); rare. The species known from Oborniki Śląskie (Schroeter 1983), Puławy (Janowska-Barbicka 1931) and from several localities in the Białowieża National Park (Mułenko and Chlebicki 1992, Mułenko 1994, 1996b).

*Ramularia concomitans* Ellis et Holway [= *R. concomitans* Ell. et Schw.] — on leaves of *Bidens tripartita* L.: Parkowe reserve, sect. 270a, an edge of a pond (VII 1998); common; (Fig. 3). Leaf spots pale brown, irregular to angular, up to 4–6 mm in diam., with darker margin. Coating visible on the lower side of leaves. Conidiophores 1-cellular, 17.2–19.6 × 2.4–3.2  $\mu\text{m}$ . Conidia in chains, ellipsoid to cylindrical, slightly curved, 1–2-cellular, 17.1–19.5 (–22.0) × 3.7–4.4 (–4.9)  $\mu\text{m}$  (Vimba 1970: 13.5–22.5 × 3–4.5  $\mu\text{m}$ ). The species new to Poland, known from Latvia on *Bidens cernua* L. (Vimba 1970).

*Ramularia hieracii* (Bäumler) Jaap [= *Ramularia filaris* Fres. var. *hieracii* Bäumler; *R. conspicua* Syd; ?*R. corcontica* Bub. et Kab.; ?*R. subalpina* Bub.; *R. hamburgensis* Lind.; ?*R. helvetica* Jaap et Lind.; *Cylindrospora taraxaci* (Karst.) Schroet.] — on leaves of *Hieracium pilosella* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland (VIII and IX 1998); very rare. Leaf spots brownish-green, sometimes with purple margin, usually subcircular, 4–6 mm in diam., mycelium cover white, zonate, on the upper side of leaves. Conidiophores 1–2-cellular, 31.9–44.1 × 2.4–2.7  $\mu\text{m}$ . Conidia 1–2-cellular, formed in chains, 12.5–15.9 × 2.4–3.2  $\mu\text{m}$ . This characteristic corresponds to those given by Brandenburger (1985) and Wołczańska (1998a), but the length of conidia is in accordance with the lower range of their measurements. The species observed in Poland on several species of the genus *Hieracium* (Wołczańska 1998a), but until now unknown on *H. pilosella*.

*Theadonia ligustrina* (Boerema) Sutton — on leaves of *Ligustrum vulgare* L.: Olsztyn near Częstochowa, in a hedge (X 1997); Janów near Częstochowa, in a hedge (X 1998); common; (Fig. 4). The species reported from two localities in Poland: Janów Lubelski and Mielnik in the Lublin Upland (Wołczańska 1998b).

### SPHAEROPSIDALES

*Ascochyta actaeae* (Bresadola) J. J. Davis [= *Stagonosporopsis actaeae* (Allesch.) Died.] — on leaves of *Thalictrum minus* L.: the hill of Góra Brodło, xerothermic grassland (VII–VIII 1998); very rare; (Fig. 5). Lesions yellowish-brown to greyish, irregular, with no margin, 4–8 mm in diam.



Pycnidia visible on the upper sides of leaves, brown, dispersed, immersed or partially erumpent, subglobose, 112.0–160.0  $\mu\text{m}$  diam., ostiolate. Ostiole nearly circular, surrounded by dark brown cells. Conidia hyaline, cylindrical, mostly erect, apex and base rounded, medianly 1-sepate, 14.7–19.5 (–22.0)  $\times$  4.7–5.2  $\mu\text{m}$  (M e l ' n i k 1977: 12–28  $\times$  5–7  $\mu\text{m}$ ), guttulatae. The species new to Poland, known from several countries of Europe and from North America. It is a parasite of *Actaea spicata* L., *Delphinium elatum* L. and *Hydrastis* sp. (M e l ' n i k 1977). There is no information about its occurrence on species belonging to the genus *Thalictrum* (B r a n d e n b u r g e r 1985). *Thalictrum minus* is probably a new host species of this fungus.

*Septoria geranii* Roberge et Desmazières [= *Septoria geranii-pratensis* P. Henn.] – on leaves of *Geranium palustre* L.: Złoty Potok near Częstochowa, ruderal site (X 1998); rare. Leaf spots distinct, brown to black, often with red margin, subcircular, sometimes confluent, up to 8 mm in diam. Pycnidia visible on the lower sides of leaves, brown, gregarious, partially erumpent, subglobose, 113.0–172.0  $\mu\text{m}$  diam., ostiolate. Ostiole nearly circular, surrounded by dark brown cells. Conidia hyaline, filamentous 5–6-sepate, 27.0–53.9  $\times$  2.2–2.4  $\mu\text{m}$ .

– on leaves of *Geranium robertianum* L.: the hill of Góra Bliskie Lipówki, xerothermic grassland, on boulders (VI and IX 1998); very rare. Leaf spots indistinct, diffuse, brownish-green, small 1–2 mm in diam. Pycnidia on the upper side of leaves, brown, scattered, immersed, globose, 147.0–196.0  $\mu\text{m}$  in diam., ostiolate. Conidia hyaline, filamentous, 4–5-sepate, 32.0–57.6  $\times$  1.6  $\mu\text{m}$ . These characteristics correspond to those given by B r a n d e n b u r g e r (1985) and R o m a s z e w s k a-S a ł a t a et al. (1997). The species known in Poland on *Geranium pratense* L. from Rymanów near Krosno (R o m a s z e w s k a-S a ł a t a et al. 1997) and from Białowieża National Park on *G. robertianum* L. (M u ł e n k o 1996a). *Geranium palustre* is a new host species of *Septoria geranii* in Poland.

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## Mikroskopowe grzyby fitopatogeniczne rzadkie i nowe dla Polski

### Streszczenie

W pracy przedstawiono 36 gatunków grzybów fitopatogenicznych rzadkich i nowych dla Polski, należących do *Peronosporales*, *Erysiphales*, *Uredinales* i *Deuteromycotina*. Grzyby te zebrano w latach 1996–1999 na terenie projektowanego Jurajskiego Parku Narodowego,

położonego na Wyżynie Częstochowskiej, obszaru niemal zupełnie nie zbadanego pod względem występowania tych grup grzybów. Wśród wymienionych gatunków trzy są nowe dla Polski: *Ramularia asplenii* Jaap, *R. concomitans* Ell. et Holw. i *Ascochyta actaeae* (Bres.) J. J. Davis. Trzyńście zebrano na roślinach żywicielskich, na których nie były dotąd obserwowane w Polsce. Pozostałe gatunki (19) występują w Polsce rzadko na wymienionych żywicielach. Dla gatunków nowych, występujących na nowych żywicielach i rzadko spotykanych podano krótkie opisy ich morfologii, a dla pozostałych gatunków pochodzące z literatury dane o ich występowaniu w naszym kraju. Dla każdego gatunku grzyba zamieszczono krótką informację o zaobserwowanej częstotliwości występowania oraz podano daty zbioru.