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SHORT COMMUNICATION

Contribution to knowledge of fungal biota of Kampinos National Park (Poland): part 3

Błażej Gierczyk[1]*, Andrzej Szczepkowski[2], Tomasz Ślusarczyk[3], Anna Kujawa[4]

[1] Faculty of Chemistry, Adam Mickiewicz University in Poznań, Uniwersytetu Poznańskiego 8, 61-614 Poznań, Poland
[2] Faculty of Forestry, Warsaw University of Life Sciences – SGGW, Nowoursynowska 159, 02-776 Warsaw, Poland
[3] Naturalists' Club, 1 Maja 22, 66-200 Świebodzin, Poland
[4] Institute for Agricultural and Forest Environment, Polish Academy of Sciences, Bukowska 19, 60-809 Poznań, Poland

* Corresponding author. Email: hanuman@amu.edu.pl

Abstract
We present interesting findings from the final year (2018) of the project concerning fungi in the fire-damaged forests in Kampinos National Park (central Poland). Seven taxa have been collected which are new to the park, one species (*Scutellinia patagonica*) hitherto unrecorded in Poland has been found. The current number of macromycetes taxa known from Kampinos National Park has reached 1,611.

Keywords
macromycetes, micromycetes, new country reports, postfire fungi

Introduction

Kampinos National Park (Kampinoski Park Narodowy; KPN) is located in central Poland, to the west of Warsaw [1–4]. After arson in the pine forests near the village of Palmiry (late spring and summer 2015), a 3-year-long project concerning postfire fungi was undertaken (2016–2018), which has produced many interesting findings concerning both pyrophilous and nonpyrophilous fungi [5,6]. This report presents fungal taxa new to the KPN collected during the final year of the project; one taxon new to Poland was found in 2018.

Detailed information on the study area and methods have been published previously [5,6]. In brief, the burned area (ca. 11 ha) is located in an 80–200-year-old pine forest. The study was conducted on 45 permanent plots (10 × 10 m); however, material was also collected between them and outside the fire-damaged forest. The collected specimens were identified using standard mycotaxonomical methods [5,6] and nomenclature was used according to *Funga Nordica* (2nd ed.) [7] and MycoBank [8]. Dried specimens were deposited in the fungarium of the Division of Mycology and Forest Phytopathology of the Warsaw University of Life Sciences – SGGW (WAML) and the private fungaria of B. Gierczyk (BGF) and T. Ślusarczyk (TSH).

Species list

Abbreviations used: NP – national park; LP – landscape park; res. – nature reserve; OOŚS – "Sieraków" strictly protected area (Polish: Obszar Ochrony Ścisłej Sieraków); RL – red-listed species (threat categories: E – endangered); ASz – A. Szczepkowski; BG – B. Gierczyk; TŚ – T. Ślusarczyk.

Ascomycota

Colpoma juniperi (P. Karst. ex P. Karst.) Dennis (Fig. 1). **Specimen examined:** KPN, 1.5 km S from Palmiry, Nowy Dwór municipality, Laski Protective District, Kaliszki Protective Sub-District, forest compartment No.: 77j (OOŚS); 2018-09-09; a dozen ascomata on dead *Juniperus communis* branches in the burned forest [together with *Lophodermium juniperinum* (Fr.) De Not. on the needles]; leg. & det. ASz; WAML1019. **Notes:** Very rare species in Poland, known from Goszczowice and Olesno (Śląsk Opolski region) [9], Bieszczady NP [10], and Babia Góra NP [11].

Fig. 1 Ascomata of *Colpoma juniperi* (P. Karst. ex P. Karst.) Dennis from Kampinos National Park (2018-09-09). Photography by Błażej Gierczyk.

Dinemasporium strigosum (Pers.) Sacc. **Specimen examined:** KPN, 1.5 km S from Palmiry, Nowy Dwór municipality, Laski Protective District, Kaliszki Protective Sub-District, forest compartment No.: 77j (OOŚS); 2018-09-09; numerous conidiomata on dead grass and herbs in the burned pine forest; leg. & det. BG; BGF0002798. **Notes:** Species not rare in Poland, known from several localities: the vicinity of Olsztyn (Łyna valley) [12], Bieszczady Mts and Karkonosze Mts [13], Białowieża NP [14–16], and the vicinity of the villages of Pakość and Góra [17]. The data by Rouppert and Namysłowski [18,19] are incorrectly cited as a Polish locality by Mułenko et al. [20], instead, they refer to the vicinity of the village of Острівець [Ostrivec′], Ukraine. *Dinemasporium strigosum* belongs to micromycetes, but forms conspicuous apothecia-like conidiomata (1–2 mm in diameter).

Scutellinia patagonica (Rehm) Gamundí (Fig. 2). **Specimen examined:** KPN, 1.5 km NNW from of Zaborówek, Leszno municipality, forest compartment No.: 258b; 2018-07-22; a dozen ascomata on a *Quercus petraea* log in an oak forest; leg. & det. BG; BGF0002547. **Species description:** Apothecia small, disc-shaped, 4–8 mm in diameter, red in color and fading to reddish orange with age. Marginal and receptacular hair dark brown to almost black in color. Asci eight-spored, cylindrical, 220–300 µm long. Spores broadly ellipsoid to subglobose, 19–24 × 14–18 µm, unevenly covered with distinct, isolated, or somewhat coalescent, rounded warts up to 1.5 µm in diameter and 1 µm in height. Marginal hair thick-walled, pointed, with bi- to multifurcate rooting base, up to 1,000 µm long (but mostly shorter, ca. 500–700 µm). Paraphyses with orange content, straight, sparsely septate, inflated at the apex. **Notes:** Species new to Poland. *Scutellinia patagonica* is a cosmopolitan taxon known from South America (Argentina, Chile, Falkland Islands, Peru, and South Georgia), North America (Canada, Costa Rica),

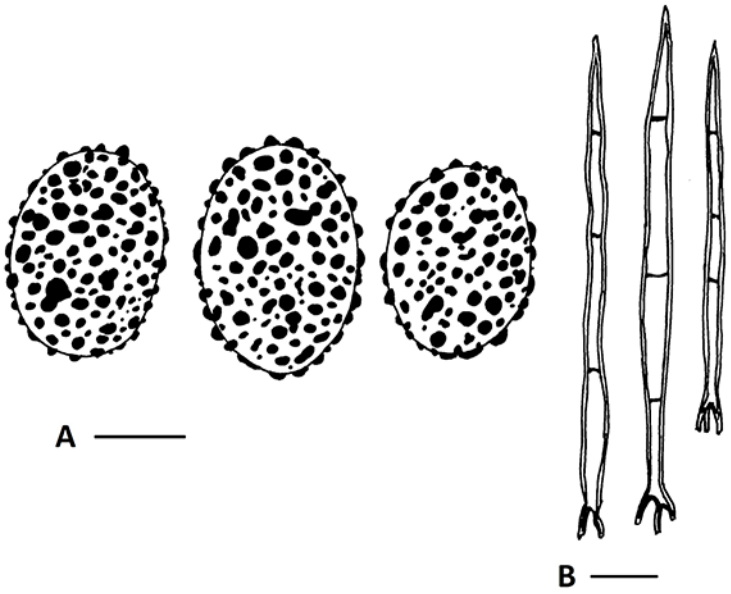

Fig. 2 Microcharacters of *Scutellinia patagonica* (Rehm) Gamundí. (**A**) spores; (**B**) marginal hair. Scale bars: 10 µm.

Europe (Austria, France, Iceland, Norway, Spain, Switzerland, Greece, and the United Kingdom), and Asia (China, Korea, and Russia) [21–33]. The most similar *Scutellinia* species in Polish biota is *S. subhirtella* Svrček, differing by its hair base shape (bi- or trifurcate) and the even distribution of tubercles on its spore surface. Other similar taxa include *S. umbrorum* (Fr.) Lambotte and *S. heterosculpturata* Kullman & Raitv., which have larger sculpture tubercles than *S. patagonica*. *Scutellinia vitreola* Kullman produces larger (up to 28 µm long) spores ornamented with partially coalescent warts.

Basidiomycota

Agaricus bitorquis (Quél.) Sacc. **Specimen examined:** KPN buffer zone between the villages of Nowiny and Piaski Duchowne, Sochaczew municipality; 2018-05-26; two basidiomata on soil by the road side in the pine forest; leg. ASz, det. BG; BGF0002494. **Notes:** Species common in Poland, known from over 20 localities [34,35].

Amyloxenasma allantosporum (Oberw.) Hjortstam & Ryvarden. **Specimen examined:** KPN, 1.5 km S from Palmiry, Nowy Dwór municipality, Laski Protective District, Kaliszki Protective Sub-District, forest compartment No.: 77g; 2018-09-08; few basidiomata on a fallen *Pinus sylvestris* branch in the burned forest; leg. & det. TŚ; TSH 312/2018. **Notes:** Species very rare in Poland, known only from the vicinity of Kielce [36], Świętokrzyskie Mts [37,38], and Kaszuby LP [39].

Dacryobolus sudans (Alb. & Schwein.) Fr.; CL-E. **Specimen examined:** KPN, 1.5 km S from Palmiry, Nowy Dwór municipality, Laski Protective District, Kaliszki Protective Sub-District, forest compartment No.: 77d (OOŚS); 2018-09-08; few basidiomata on a fallen *Pinus sylvestris* branch in the burned forest; leg. & det. TŚ; TSH 300/2018. **Notes:** Rare species in Poland known from the vicinity of Międzyrzec Podlaski [40–42] and Katowice [43], and from Karkonosze Mts [44,45], Bieszczady Mts [46,47], Gorce Mts [48], Bór na Czerwonem res. [49], and Kaszuby LP [39].

Pterula gracilis (Desm. & Berk.) Corner (Fig. 3). **Specimen examined:** KPN, 1.5 km S from Palmiry, Nowy Dwór municipality, Laski Protective District, Kaliszki Protective Sub-District, forest compartment No.: 77f (OOŚS), 77j (OOŚS); 2018-09-09; numerous basidiomata on dead grasses and herbs in the burned pine forest; leg. & det. BG; BGF0002797. **Notes:** Very rare species in Poland known only from the vicinity of Świebodzin [50].

Fig. 3 Basidiomata of *Pterula gracilis* (Desm. & Berk.) Corner from Kampinos National Park (2018-09-09). Photography by Błażej Gierczyk.

Conclusions

The third year of the study on the postfire fungi of KPN revealed little new data. Drought lasting for almost the entire vegetation season led to unfavorable conditions for fungal sporomata formation. In 2018, no pyrophilous species new to the KPN were found; however, seven parasitic and saprobic taxa were collected that had not yet been reported from the KPN (three Ascomycota, four Basidiomycota). Among them, one species (*Scutellinia patagonica*) is new to Poland, whilst a very rare graminicolous and herbicolous species (*Pterula multifida*) was reported for the second time in Poland. The current number of macromycetes taxa known from the KPN is 1,611 (1,399 Basidiomycota and 212 Ascomycota).

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