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CHOSEN *MACROMYCETES* OF THE KUP INSPECTORATE – PRELIMINARY RESEARCH*

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ABSTRACT: The area of the Kup Inspectorate (part of the Stobrawski Landscape Park) has no completely published and more detailed mycological surveys up to now. Therefore, the goal of this paper is focused on presentation of the preliminary studies on *Macromycetes* from the Kup Inspectorate area. Sites of red-listed and rare species were reported as a result of the study. Moreover, the presence of interesting species, which have different forms of their body fruits and toxic activities, were set off. The paper shows common species which are easy to mark on the base of macromorphological features.

KEY WORDS: *Macromycetes*, Stobrawski Landscape Park, rare macrofungi, Opole Silesia, conservation

Introduction

Forests of the Kup Inspectorate in majority are located in the Stobrawski Landscape Park. They also constitute external Park's buffer zone. More detailed mycological data were not given from the area of the Kup Inspectorate up to now, so these studies have pioneer character.

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The goal of this paper is to present results of the preliminary studies of *Macromycetes* from the Kup Inspectorate area. Sites of endangered and rare species – protected by the Regulation of the Minister of Environment from July 9th of 2004 (Dz. U. No. 168, pos. 1765), as well as these included into the red list (Wojewoda 1999; Wojewoda and Ławrynowicz 2006) were reported in presented work. Additionally, the presence of interesting species, which have different forms of their body fruits and toxic activity, were set off.

Physiographical characteristics of the study area

The Kup Inspectorate is situated in the northern part of the Opole Province. Areas of several communes contribute to Inspectorate: Dobrzeń Wielki, Łubniany, Murów, Pokój, Popielów and Świerczów. According to the state division used in the forestry, it belongs in majority to the Silesian Natural – Forest Province (Śląska Kraina Przyrodniczo-Leśna), the Opole Plateau, the Bory Stobrawskie mesoregion (Mroczkiewicz 1952). The area ranges approximately between: N 50º 46' and N 50º 57', as well as E 17º 45' and E 18º 00'. The Kup Inspectorate is divided into three districts: the Kup District, including the following forestries: Brynica, Kup, Masów and Nowy Kup; the Pokój District with Czarna Woda, Dąbrówka Dolna, Kozuby and Winna Góra forestries; the Popielów District with: Chróścice, Kaniów, Lubienie and Ładza forestries.

The total area of the Kup Inspectorate is about 20 600 ha (State Forests, Kup Inspectorate 2012), approximately 70% of that number takes areas of the Stobrawski Landscape Park, established in 1996. The Park has lowland character and was funded to maintain and preserve the most valuable nature wonders of the Silesian Lowland. It includes complex of compact and dense forests called the Stobrawsko – Turawskie Forests. Mature pine monocultures significantly prevail among the tree stands there. Broadleaved woods such as: oak – linden – hornbeam forests *(Galio-Carpinetum betuli)*, ash – alder forests *(Fraxino-Alnetum)*, as well as ash – elm forests (*Ficario-Ulmetum minoris*) occur mainly in river valleys. Willow – poplar forests *(Salici-Populetum)* along rivers are very rare.

The Stobrawski Landscape Park is situated in the basin of the following rivers: Bogacica, Brynica, Budkowiczanka, Smotrawa and Stobrawa; its southern border is limited by the Odra and Nysa Kłodzka rivers (Provincial Inspectorate of Environment Protection 2007). Abundantly developed hydrological net of the Stobrawski Landscape Park is a refuge for many valuable species of fauna and flora. Fifty species of protected plants, including 38 under the strict protection and 12 partly protected, as well as approximately 250 species of

animals have been reported from the area of the Park up to now (The Stobrawski Landscape Park 2012).

Materials and methods

Mycological studies were made between the April 31st of 2011 and the April 2nd of 2012 (additional research has been led in 2013). Photographs were taken at the sites of the *Macromycetes* occurrence (the first author's photos are presented in the paper). Then, measurements of the body fruit (height, width of the cap) were made with the highest possible attention paid to the maintenance of the object studied in its natural habitat. Basic ecological information like: insolation, humidity of the substratum, tree species growing in the vicinity of the fungus were gathered. GPS coordinates heve been taken during the studies every time for each basidiocarp in order to make easier the return to the same place for monitoring conservation important taxa: protected, rare or withdrawing. Each basidiocarp has been determined with guides – books and atlases (Lange 1974; Gumińska and Wojewoda 1988; Hansen and Knudsen 1992; Bielli 2001; Chmiel 2006; Evans and Kibby 2007; Škubla 2007 Petersen and Laessøe: MycoKey 2012; Sokół 2012). Such characteristic features as: taste, smell, colour and shape of the hymenophore and pores have been noticed.

The short description of research areas (Fig.1) :

The 1st research area: Brynica

Research area Brynica includes Kup Forestry, the Kup District.

I. Brynica – fresh mixed coniferous forest, forest divisions numbers: 177 – 178, 198 – 204.

II. Brynica – "Górka", the patch of dry forest on postglacial dune.

III. Brynica – "Gróbek" in direction of the Prążnica river, moist mixed broadleaved forest, forest section numbers: 134, 128 – 129, 118 – 119, 101 – 104.

The 2nd research area: Kup

Research area Kup includes the Nowy Kup Forestry, the Kup District.

I. Kup – fresh mixed coniferous forest, forest section numbers: 139 – 140, 147 – 149.

The 3rd research area: **Ładza**

Research area Ładza includes the Stobrawski Landscape Park, Ładza Forestry, Popielów District

I. Ładza – fresh forest – 200 years old pine stand, forest section numbers: 143 – 145.

The 4th research area: Pokój

Research area Pokój includes the Stobrawski Landscape Park, the Winna Góra Forestry, the Pokój District.

I. Pokój – acidophilous lowland beechwood in the vicinity of the "Matylda" pond.

List of abbreviations for Tab. 1 :

Forest habitat types:
df – dry forest
ff – fresh forest
fmcf – fresh mixed coniferous forest
fmbf – fresh mixed broadleaved forest
mmbf – moist mixed broadleaved forest

Tree species:
Bp. – Betula pendula
Fs. – Fagus sylvatica
Ps. – Pinus sylvestris

Status:

§ – the species taken under the protection of the law based on the Regulation of the Minister of Environment from July 9th of 2004 regarding the wild protected fungi species (Dz. U. No. 168, pos. 1765)

PL – Polish red list of the macrofungi (Wojewoda and Ławrynowicz 2006)
Status: E – endangered species; **V –** vulnerable species; **R** – rare species

OP – Red list of Upper Silesian macrofungi (Wojewoda 1999)
Status: R – rare species (**remark:** status applies only to Opole Province)

M – morphologically untypical fungus

Remark: Synonymy follows Wojewoda (2003). Forest habitat types had been identified by first author during the field studies based on the forest typology according to Zaręba (1988).

Results of studies

The occurrence of 32 species of *Macromycetes* has been ascertained in the area of the Kup Inspectorate as the result of these studies. Six of them are considered as rare, endangered, protected by law or these which deserve on attention (Fig. 2; Tab. 1). During the studies the following species also have been found: *Amanita citrina* (Schaeff.) Pers., *Amanita muscaria* (L.: Fr.) Hook., *Calocera viscosa* (Pers.: Fr.) Fr., *Cantharellus cibarius* Fr., *Coltricia perennis* (L.: Fr.) Murrill, *Craterellus cornucopioides* (L.: Fr.) Pers., *Fomitopsis pinicola* (Swartz.: Fr.) P. Karst., *Ganoderma applanatum* (Pers.) Pat., *Gloeophyllum odoratum* (Wulf.: Fr.) Imaz., *Lactarius deliciosus* (L.: Fr.) Gray, *Lepista nuda* (Bull.: Fr.) Cooke, *Leucopaxillus giganteus* (Quél.) Kotl., *Macrolepiota procera* (Scop.: Fr.) Singer, *Paxillus involutus* (Batach: Fr.) Fr., *Phallus impudicus* L.: Fr., *Phellinus pini* (Brot.: Fr.) A. Ames, *Phellinus robustus* (P. Karst.) Bourd. & Galz., *Piptoporus betulinus* (Bull.: Fr.) Karst., *Polyporus brumalis* Pers.: Fr., *Psilocybe fascicularis* (Huds.: Fr.) Noordel., *Scleroderma citrinum* Pers., *Suillus luteus* (L.: Fr.) Roussel, *Trametes versicolor* (L.:Fr.) Pilát, *Tylopilus felleus* Karst., *Xerocomus badius* (Fr.: Fr.) Gilbert, *Xerocomus subtomentosus* (L.: Fr.) Quél.

All listed species are those which have not been included in Tab.1. These species are not protected by law and are not on the red lists – they are common. Six species which deserve special attention have been described in Tab.1.

Forest management which is led by foresters should not cause fungi damages. Some risk may be connected with excessive harvesting of mushrooms associated with the destruction of the undergrowth.

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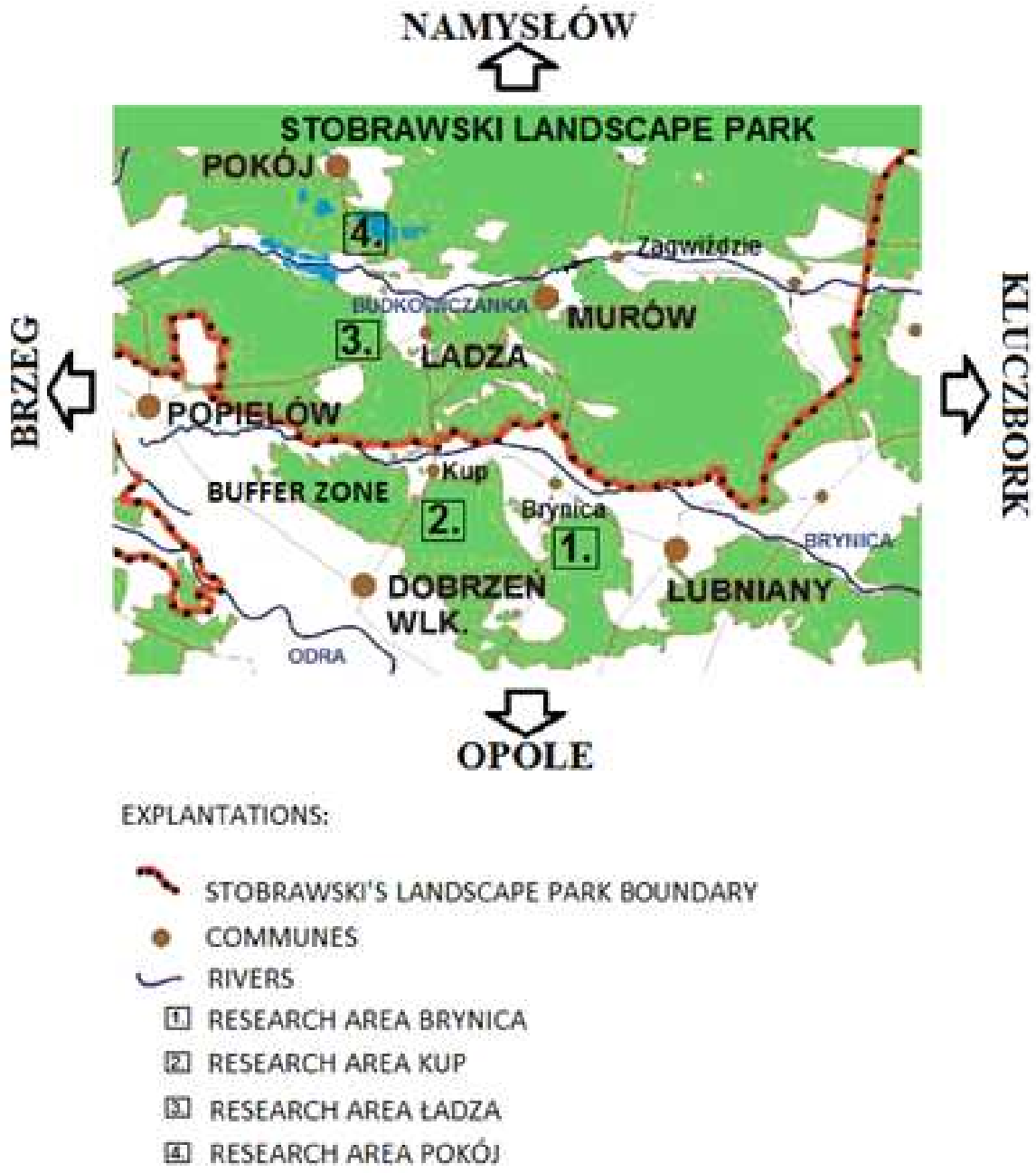

Fig. 1. Localization of research areas in the southern part of the Stobrawski Landscape Park and the fragment of its buffer zone (Kup Inspectorate).

Fig. 2**. [A]** ***Amanita virosa*** (Fr.) Bertillon [9 VII 2011, research area 1/II], **[B]** ***Clavariadelphus truncatus*** **(**Quél.) Donk [19 XI 2011, research area 1/I]; **[C]** ***Inonotus obliquus*** (Pers.) Pilát [29 VIII 2011, research area I/III]; [**D]** ***Otidea onotica*** (Pers.) Fuckel [29 VIII 2011, research area I/II]; [**E]** ***Sparassis crispa*** (Wulf.) Fr. [29 VIII 2011, research area 1/II]; **[F]** ***Tremella mesenterica*** Retz.: Fr [19 X 2011, research area 2/I] /the first author's photos/. Species listed in the Tab.1.

Tab. 1. List of rare, endangered and interesting species of the *Macromycetes* ascertained in the area of the Kup Inspectorate with notes concerning: research area/s; date of findings; forest habitat type; number of basidiocarps. Symbol abbreviations in "Material and method" section.

No.	Species and additional information	Research area/s; date of findings species; forest habitat type; number of basidiocarps
1.	***Amanita virosa*** (Fr.) Bertillon **PL – V**	**1/II**; 9 VII 2011; df – glacial dune; 1 basidiocarp under the *Ps.* **4/I**; 17 VII 2011; fmbf; 2 basidiocarps under the *Fs.*
2.	***Clavariadelphus truncatus*** (Quél.) Donk **§ | PL–E | M**	**1/I**; 19 XI 2011; ff; 3 basidiocarps near to *Fs.*
3.	***Inonotus obliquus*** (Pers.) Pilát **§** (partial protection) **PL–R | OP-R | M**	**1/III**; 29 VIII 2011; mmbf; 1 basidiocarp on the *Bp.* **3/I;** 16 X 2011; ff; 1 basidiocarp on the *Bp.*
4.	***Otidea onotica*** (Pers.) Fuckel (Index fungorum) **M**	**1/II**; 29 VIII 2011; df – glacial dune; 3 basidiocarps fused in a cluster **4/I**; 22 X 2011; fmbf; 5 basidiocarps fused in a cluster, under the *Fs.*
5.	***Sparassis crispa*** **§ | PL-R | OP–R | M**	**1/II**; 29 VIII 2011; df; 1 basidiocarp under the *Ps.*
6.	***Tremella mesenterica*** Retz.: Fr. **M**	**2/I**; 19 X 2011; fmcf; 1 basidiocarp on the rotten oak branch

Bibliography

Bielli E. 2001. Grzyby – podręczny leksykon przyrodniczy. Horyzont. Warszawa. 224 pp.

Chmiel M.A. 2006. Krytyczna lista wielkoowocnikowych grzybów workowych Polski. Instytut Botaniki im. W. Szafera PAN, Kraków, 125 pp.

Evans S., Kibby G. 2007. Kieszonkowy atlas grzybów. Publ. Solis, 396 pp.

Gumińska B., Wojewoda W. 1988. Grzyby i ich oznaczanie. Publ. PRWiL, 505 pp.

Hansen L., Knudsen H. 1992. Nordic *Macromycetes – Polyporales, Boletales, Agaricales, Russulales,* Vol. 2. Nordsvamp, 474 pp.

Lange L. 1974. The Distribution of Macromycetes in Europe, a report of a survey undertaken by the Committee for Mapping of Macromycetes in Europe, first half century. Dansk Botanisk Forening, Kopenhaga, 105 pp.

Mroczkiewicz L. 1952. Podział Polski na krainy i dzielnice przyrodniczoleśne. PWRiL, Warszawa, 119 pp.

Petersen J.H., Laessøe P. MycoKey In: www.mycokey.com [access: 20.01.2012].

Provincial Inspectorate of Environment Protection 2007. The state of the environment in Opole and Opole district. Opole, 49 pp.

Regulation of the Minister of Environment from July 9th of 2004 (Dz. U. Nr 168, poz. 1765) – Rozporządzenie Ministra Środowiska z dnia 9 lipca 2004 r. w sprawie gatunków dziko występujących grzybów objętych ochroną (Dz. U. Nr 168, poz. 1765).

Snowarski M. 2012. Multimedialny Atlas grzybów Polski 1997-2012. [W]: www.grzyby.pl [access: 13.01.2012].

Sokół S. 2012. Przegląd gatunków z rodzaju *Ganoderma* występujących w Polsce In: Siwulski M, Sobieralski K. (eds) Lakownica lśniąca *Ganoderma lucidum* – biologia, uprawa i właściwości lecznicze. Poznań University of Life Science, 199 pp.

State Forests, Kup Inspectorate 2012. In: www.katowice.lasy.gov.pl → informacje ogólne [access: 13.01.2013].

Škubla P. 2007. Wielki atlas grzybów. Elipsa, 432 pp.

The Stobrawski Landscape Park 2012. In: www.skp.zopk.pl [access: 13.01.2013].

Wojewoda W. 1999. Red list of Upper Silesian Macrofungi. Centrum Dziedzictwa Przyrody Górnego Śląska, Raporty Opinie, 4: 8-51.

Wojewoda W. 2003. Checklist of Polish larger Basidiomycetes. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, 812 pp.

Wojewoda W. Ławrynowicz M. 2006. Red list of the Macrofungi in Poland In: Mirek Z., Zarzycki K., Wojewoda W., Szeląg Z. (eds). Red list of Plants and Fungi in Poland. Polski. W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków, 53-70 pp.

Zaręba R. 1988. Fitosocjologia i typologia leśna. Publ. SGGW–AR, Warszawa, 244 pp.