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ORIGINAL RESEARCH PAPER

# New data to the knowledge of macrofungi of Wolin National Park

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## Abstract

This paper presents the results of mycological studies conducted in the Wolin National Park from July to November 2012, and sporadically in the following 4 years. Explorations were made by a route method over the whole area of the Park, mainly in forest associations: *Cephalanthero rubrae-Fagetum*, *Galio odorati-Fagetum*, *Luzulo pilosae-Fagetum*, and *Fago-Quercetum petraeae*. In total, 322 taxa of macrofungi were found, 37 Ascomycota and 285 Basidiomycota. Two of them, *Hericium coralloides* and *Inonotus obliquus*, are under partial protection, 39 on the red list of fungi in Poland. For the first time, *Russula torulosa*, previously not reported from Poland, was found in Wolin National Park. Among the examined phytocoenoses, *Galio odorati-Fagetum* and *Luzulo pilosae-Fagetum* are characterized by the highest species variety and abundance.

## Keywords

macromycetes; rare species; protected and threatened fungi; protected area; Poland

## Introduction

National parks belong to strategic natural resources of Poland [1]. They are established on the areas of exceptional natural value in order to preserve biological diversity of all groups of organisms, including rare and threatened with extinction species. Richness of species in particular national parks has not been sufficiently defined and in the case of fungus biota hardly recognized. Until 2000, detailed mycological observations have been conducted only in a few of them (e.g., [2–4]). The majority of the objects under this form of protection have been studied in recent years (e.g., [5–12]). However, the state of recognition of diversity fungi in many Polish national parks is still not enough.

The Wolin National Park (WNP) was established in 1960 [13] on the area of ca. 4691 ha, to protect one of the most valuable natural areas of Polish coast. It included high coastal cliffs up to 90 m above sea level, moraine hills overgrown with forest complexes, a beach belt and inland lakes (Czajcze, Domysłowskie, Rabiąż, Warnowskie, Grodno lakes and an artificial reservoir – Turkusowe Lake). In 1996, the park was extended by inclusion of: 1 nautical mile wide belt of coastal waters of Pomeranian Bay, islands in the Świna Reverse Delta together with surrounding waters of Szczecin Lagoon and the lakes, Wicko Duże and Wicko Małe [14]. Thus, the park has become the first national park of maritime nature protecting the waters of the Baltic Sea. Currently, it covers 10 937 ha, where forest ecosystems occupy 4648.53 ha (42.50% of the area), water ecosystems 4681.41 ha (42.80%), and non-forest ecosystems 1607.46 ha (14.70%). Total area of 498.72 ha (4.56%) is under strict protection. There is a great

variety of landscape forms in the Park: the Baltic coast, the Wolin terminal moraine, Lubińsko-Wapnickie Hills, the Wolin Lakeland, the Dargobądzka Plain, the shore of Szczecin Lagoon, and the Świna Reverse Delta [15]. The predominant elements of the relief are moraine hills covering approximately 75% of inland area of the park. The height difference within the park is from 0 to 116 m (the Grzywacz hill).

One of the decisive natural values for establishing WNP were forests, first of all, best preserved beech forests occurring here in three kinds of beech wood: acidophilous beech (*Luzulo pilosae-Fagetum*), fertile beech wood (*Galio odorati-Fagetum*), and orchid beech wood (*Cephalanthero rubrae-Fagetum*). Beech forest covers the highest points of moraine hills. Acidophilous beech occupies the largest area, whereas more species-rich fertile beech occurs on more fertile soils. The rarest orchid beech forest can be seen as a narrow belt on the top of the cliff on a unique soil, cliff naspa. The second important forest group of this area, i.e., the southern and central part of the park, consists of mixed forests most frequently represented by *Fago-Quercetum petraeae*, scarcely by *Betulo pendulae-Quercetum roboris*, covering small areas on soils with a relatively high water level. Another important forest group of WNP comprises *Empetro nigri-Pinetum*, linked to sandy soils of costal dunes and *Leucobryo-Pinetum* growing on sandy, slightly more fertile, poor in moisture, soils. The other types of forests such as alder, riparian, and *Vaccinio uliginosi-Betuletum pubescentis* forests [16], sporadically appear on small areas of the Park.

Due to exceptional natural values, the Wolin National Park was included into the European network Natura 2000 and the habitat area PLH320019 of Wolin and Uznam as well as the bird protection area PLB320002 Delta Świny.

The fungus biota of WNP has not been sufficiently recognized. There are only a few studies on macrofungi of that area. First reports of several species from the area of the present park come from German publications which appeared before World War II [17,18]. At the beginning of 1950's, Czubiński and Urbański [19] in their description of diversified flora and fauna mention also the fungi of the planned Wolin Park. Analyzing of mycotrophism in beech communities, Dominik [20] took into consideration the chalk promontory near Lubin and Wapnica, within the borders of WNP. A more detailed study of macrofungi of the Park [2] appeared almost 30 years after the first information on the occurrence of macromycetes. However, there were several reports of the presence of single stands of some fungal species from the area of WNP [21–27].

The aim of this paper is to present the new data supplementing the present knowledge of taxonomic diversity and abundance of macrofungi within WNP.

## Methods

Mycological observations in the Wolin National Park were made from July to November 2012, May and September 2013 and 2014, and also September of 2015 and 2016. The studies were conducted by the route method, over the area of the whole Park, mainly in the forest associations: *Cephalanthero rubrae-Fagetum*, *Galio odorati-Fagetum*, *Luzulo pilosae-Fagetum*, and *Fago-Quercetum petraeae*, in five areas under strict protection: (***i***) Prof. Wł. Szafer, (***i***) Dr B. Dyakowski, (***iii***) Prof. Z. Czubiński, (***vi***) Prof. M. Raciborski, (***v***) Doc. S. Jarosz (Fig. 1). The studies were also carried out in the vicinity of: Grodno, Międzyzdroje, Wapnica, Wicko, Wisełka, and Zalesie, in the region of Gosań Mt, Kawcza Mt, Enclousure of European Bisons, and Czajcze Lake.

The specimens were identified by examining their macroscopic and microscopic features using standard methods for studying macrofungi and references by Breitenbach and Kräzlin [28], Romagnesi [29], Kränzlin [30], Bernicchia and Gorjón [31], and Knudsen and Vesterholt [32]. The fungal nomenclature and its synonyms are given according to Mycobank [33] and Index Fungorum [34]. The names of vascular plants in the present paper follows Mirek et al. [35], and of plant communities, Matuszkiewicz [36]. The collected material is deposited in the Herbarium of the Department of Botany and Nature Conservation, Szczecin University (SZUB-F), Poland.

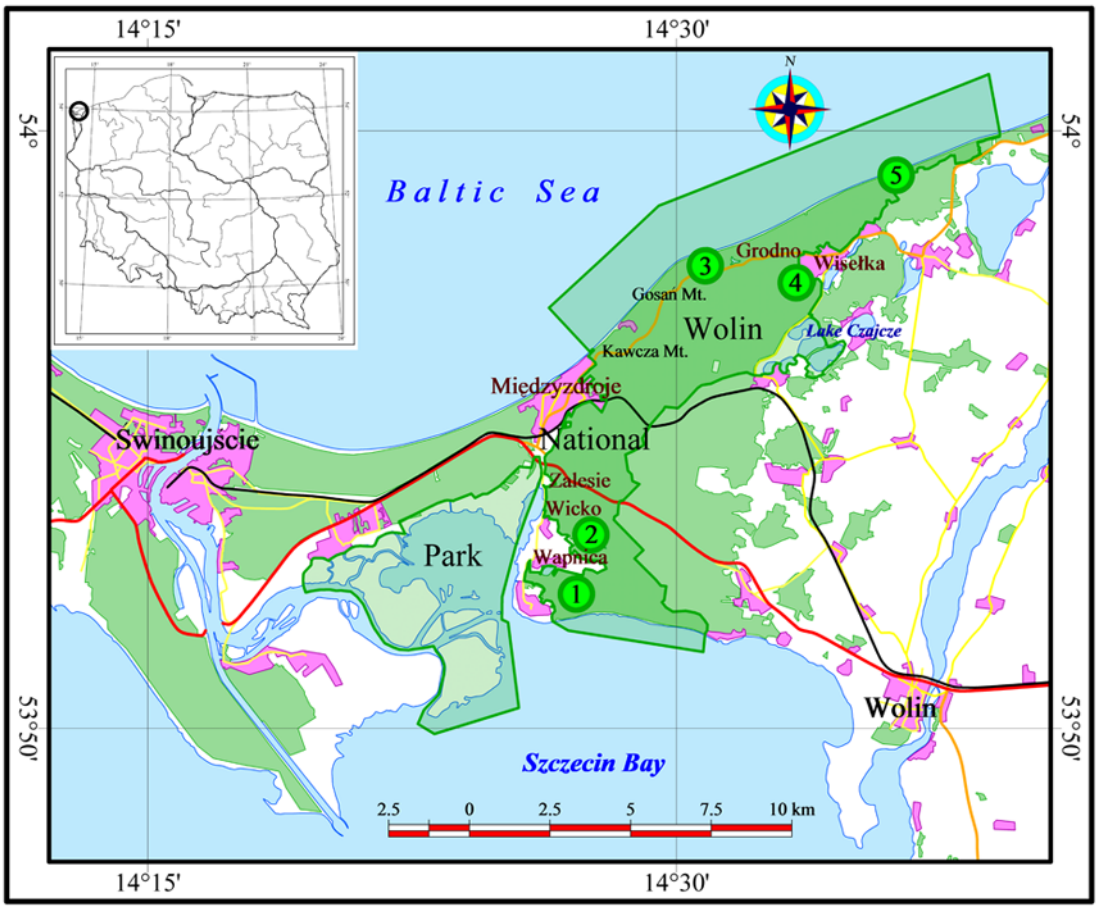


**Fig. 1** Localization of observation sites in the Wolin National Park. Protected areas: 1 – Prof. Wł. Szafer; 2 – Dr B. Dyakowski; 3 – Prof. Z. Czubiński; 4 – Prof. M. Raciborski; 5 – Doc. S. Jarosz.

## Results

During the studies on the area of the Wolin National Park, 322 taxa of macrofungi were identified, among them: 37 Ascomycota and 285 Basidiomycota. Two of recorded taxa: *Hericium coralloides* and *Inonotus obliquus*, are under partial protection [37] and 39 on the red list of fungi in Poland [38]. The category extinct (E) is represented by three species: *Geastrum rufescens*, *Gloeoporus dichrous*, and *Rhodonia placenta*. Five taxa: *Amanita virosa*, *Coprinus picaceus*, *Hericium coralloides*, *Ischnoderma resinosum*, and *Xylobolus frustulatus* belong to the category vulnerable (V). The largest group consists of the species classified as rare (R) – 27 taxa, e.g., *Hydropus subalpinus*, *Mycena crocata*, and *Porodaedalea pini*, and only four of indefinite threat (I): *Hebeloma radicosum*, *Hygrophorus hypothejus*, *Mycena pelianthina*, and *Leratiomyces squamosus*. One of the taxa, i.e., *Russula torulosa*, whose fruiting bodies occurred on a grey dune [39], has not been recorded up till now. The greatest richness and diversity of species among the examined phytocoenoses were found in *Galio odorati-Fagetum* (148 species) and *Luzulo pilosae-Fagetum* (232 species).

The following abbreviations are used in the list of species: SP – strict protection area: WSSP – Prof. Wł. Szafer; BDSP – Dr B. Dyakowski; ZCSP – Prof. Z. Czubiński; MRSP – Prof. M. Raciborski; SJSP – Doc. S. Jarosz. Species reported earlier by: ML – Lisiewska [2]; MS – Stier [18]; ZCJU – Czubiński and Urbański [19]; TD – Dominik [20]; AS – Skirgiełło [21]; MŁ – Ławrynowicz [23]; AR – Ronikier [24]; WW – Wojewoda [25]; SF – Friedrich [27]; and MSt – Stasińska et al. [39]. Plant community: CF – *Cephalanthero rubrae-Fagetum*; FQ – *Fago-Quercetum petraeae*; GF – *Galio odorati-Fagetum*; LF – *Luzulo pilosae-Fagetum*. Category of threat (according to Wojewoda and Ławrynowicz [38]): E – Endangered; V – Vulnerable; R – Rare; I – indeterminate. * – taxon new for Poland; P – partially protected species; div – forest division; May, Aug 2012 – observation date.

List of species – Ascomycota

***Annulohypoxylon multiforme*** (Fr.) Y. M. Ju, J. D. Rogers & H. M. Hsieh [= *Hypoxylon multiforme* (Fr.) Fr.] – on branches of *Betula*; LF; div 15; Aug 2012.

***Ascocoryne cylichnium*** (Tul.) Korf – on logs and stumps of *Fagus*; LF; div 2 (SJSP); 25 (MRSP); 48; Nov 2012.

***A. sarcoides*** (Jacq.) J. W. Groves & D. E. Wilson – on wood; GF; div 125 (BDSP); Oct 2012; ML.

***Bertia moriformis*** (Tode) De Not. – on twigs of *Fagus*; CF, LF, GF; div 11, 12 (ZCSP); 13 (Gosań Mt); 15B; 16; 25 (MRSP); 30; 46; 67; 68; 89; 104; 114; 109; 128Ay; 125 (BDSP); Jul–Nov 2012; May 2013–2014; Sep 2016.

***Bisporella citrina*** (Batsch) Korf & S. E. Carp. – on branches of *Fagus*; FQ, LF, GF; div 2 (SJSP); 15; 15B; 16; 25 (MRSP); 30; 40; 48; 68; 69; 89; 91; 104; 110; 111; 116; 121; 125 (BDSP); 127 (WSSP); Aug, Oct–Nov 2012; Sep 2014.

***Bulgaria inquinans*** (Pers.) Fr. – on logs of *Quercus*; GF; div 88; 105; 125 (BDSP); Aug, Oct 2012.

***Colpoma quercinum*** (Pers.) Wallr. – on twigs of *Quercus*; LF; div 13 (Gosań Mt); 48; 68; Nov 2012; May 2013; Sep 2016.

***Dasyscyphus willkommii*** (Hartig) Rehm (1881) [= *Lachnellula willkommii* (Hartig.) Dennis] – on twigs of *Larix*; LF; div 114; Sep 2012.

***Dasyscyphus virgineus*** (Batsch) Gray [= *Lachnum virgineum* (Batsch) P. Karst.] – on litter; LF; div 13, 14 (Gosań Mt); Zielonka Hill; May 2013–2014; ML.

***Dialonectria episphaeria*** (Tode) Cooke [= *Nectria epishaeria* (Tode) Fr.] – on basidiocarps of *Diatrype stigma*; LF; div 46; 114; Sep 2012, 2016.

***Diatrype disciformis*** (Hoffm.) Fr. – on branches of *Fagus*; FQ, CF, LF, GF; div 2 (SJSP); 11 (ZCSP); 13, 14 (Gosań Mt); 15; 15B; 16; 46; 48; 67; 68; 88; 89; 94; 97; 113; 121; 127 (WSSP); Jul–Nov 2012; May 2013–2014; Sep 2016.

***D. stigma*** (Hoffm.) Fr. – on twigs of *Fagus* and *Quercus*; FQ, CF, LF GF; div 1C; 11, 12 (ZCSP); 15; 25 (MRSP); 30; 46; 48; 68; 104; 113; 114; 125 (BDSP); Jul–Nov 2012; Sep 2014, 2016.

***Diatrypella quercina*** (Pers.) Cooke – on branches of *Quercus*; LF; div 25 (MRSP); 46; 48; 68; Oct–Nov 2012; Sep 2016.

***D. verrucaeformis*** (Ehrh.) Nitschke – on branches of *Betula*; LF; div 1B; 1C; 2g,n; 62; 68; 91; 111; Aug–Nov 2012; Sep 2016.

***Elaphocordyceps ophioglossoides*** (Ehrh.) G. H. Sung, J. M. Sung & Spatafora [= *Cordyceps ophioglossoides* (Ehrh.) Link] – on basidiocarps of *Elaphomyces*; div 115c; Oct 2012; R; ML.

***Elaphomyces asperulus*** Vittad. – below ground; LF; div 2 (SJSP); 14o (Gosań Mt); Aug, Nov 2012; MŁ.

***E. muricatus*** Fr.– below ground; LF; div 47f; Nov 2012; MŁ.

***Eutypa spinosa*** (Pers.) Tul. & C. Tul. – on logs of *Fagus*; LF; div 14 (Gosań Mt); 109a; May 2013–2014.

***Gyromitra esculenta*** (Pers.) Fr. – on ground; Zielonka Hill; May 2013.

***Helvella crispa*** (Scop.) Fr. – on ground; LF; div 15Bj (Kawcza Mt); 20; 70; 71; Aug, Oct–Nov 2012; ML.

***H. lacunosa*** Afzel. – on ground; LF; div 2j (SJSP); 89a; Oct–Nov 2012; R; ML.

***Humaria hemisphaerica*** (Hoffm.) Fuckel – on ground; LF, GF; div 14 (Gosań Mt); 128a, 128Az (WSSP); Aug 2012; ML.

***Hymenoscyphus calyculus*** (Fr.) W. Phillips – on wood; LF, GF; div 68; 121; Oct 2012.

***H. fructigenus*** (Bull.) Gray – on acorns of *Quercus*; div 14 (Gosań Mt); 69; May 2013; Sep 2014.

***Hypoxylon fragiforme*** (Pers.) J. Kickx f. – on branches and logs of *Fagus*; FQ, CF, LF, GF; div 2 (SJSP); 9; 11 (ZCSP); 13 (Gosań Mt); 15; 15B; 16; 25 (MRSP); 31; 46 48; 67; 68; 88; 89; 91; 111; 113; 116; 121; 127 (WSSP); 125 (BDSP); 128Ay; Jul–Nov 2012; May, Sep 2014; Sep 2016.

***Kretzschmaria deusta*** (Hoffm.) P. M. D. Martin [= *Ustulina deusta* (Hoffm.) Maire] – on stumps of *Fagus*; LF, GF; div 13; 14 (Gosań Mt); 15; 25 (MRSP); 67; 68; 89; 121; 128a, 128Az (WSSP); Jul–Nov 2012; May 2013; Sep 2016; ML.

***Mollisia cinerea*** (Batsch) P. Karst. – on wood; LF, GF; div 15; 15A; 15B; 16; 40; 127, 128a, 128Az (WSSP); Aug 2012.

***Nectria cinnabarina*** (Tode) Fr. – on twigs; FQ, LF, GF; div 15B; 16; 69; 125 (BDSP); Aug, Oct 2012; Sep 2014.

***Otidea alutacea*** (Pers.) Massee – on ground; div 70; Sep 2014; ML.

***Peziza badia*** Pers. – on ground; div 98; Aug 2012; ML.

***P. micropus*** Pers. – on logs of *Fagus*; LF, GF; div 89; 91; 111; 125 (BDSP); 128a, 128Az (WSSP); Aug, Oct 2012.

***P. vesiculosa*** Bull. – on ground; LF; div 14 (Gosań Mt); 15B; 16; Aug 2012.

***Rutstroemia firma*** (Pers.) P. Karst. – on twigs of *Quercus*; GF; div 125 (BDSP); Oct 2012.

***Scutellinia scutellata*** (L.) Lambotte – on twigs; div 70m (N lakeside of Czajcze Lake); Sep 2014.

***Xylaria carpophila*** (Pers.) Fr. – on cupules of *Fagus*; LF, GF; div 2 (SJSP); 13; 14 (Gosań Mt); 15B; 16; 46; 68; 94; 114; 127 (WSSP); Aug–Nov 2012; May 2013; Sep 2016.

***X. hypoxylon*** (L.) Grev. – on wood; LF, GF; div 25 (MRSP); 31; 40; 48; 68; 125 (BDSP); Jul–Nov 2012; Sep 2016; ML.

***X. longipes*** Nitschke – on wood; LF; div 94; 114; Sep 2012.

## Basidiomycota

***Agaricus silvicola*** (Vittad.) Peck – on ground; LF, GF; div 114; 128Ay; Aug, Sep 2012; ML.

***A. squarrosus*** Oeder [= *Pholiota squarrosa* (Vahl) P. Kumm.] – at the base of *Fagus*; GF; div 125 (BDSP); Oct 2012.

***Amanita citrina*** (Schaeff.) Pers. – on ground; LF, GF; div 2 (SJSP); 11, 12 (ZCSP); 30; 31; 32; 46; 68; 89; 91; 93; 94; 97; 98; 110; 111; 113; 114; 115; 121; 125 (BDSP); Sep–Nov 2012; Sep 2016; ML, AS.

***A. fulva*** Pers. – on ground; FQ, LF, GF; div 1B; 1C; 8; 9; 13 (Gosań Mt); 15; 16; 17; 39; 40; 62; 70; 89; 91; 93; 94; 97; 98; 104; 105; 110; 111; 113; 114; Jul–Nov 2012; Sep 2014; ML.

***A. gemmata*** (Fr.) Bertill. – on ground; LF; div 1A; 1B; 15A; 40; Aug 2012; ML.

***A. muscaria*** (L.) Lam. – on ground; div 70 (N lakeside of Czajcze Lake); Sep 2014; ML.

***A. pantherina*** (DC.) Krombh.– on ground; LF; div 15; 39; Aug 2012; ML.

***A. phalloides*** (Fr.) Link – on ground; LF; div 31; 88; 94; 104; 105; 114; 115; Aug, Sep 2012; ML, AS.

***A. porphyria*** Alb. & Schwein. – on ground; div 91; 111; Oct 2012; ML.

***A. rubescens*** Pers. – na ziemi; LF, GF; div 8; 13, 14 (Gosań Mt); 15B; 16; 40; 62; 93; 104; 105; 115; 127 (WSSP); Jul–Sep 2012; ML.

***A. virosa*** Bertill. – on ground; div 91; 111; Oct 2012; V.

***Armillaria solidipes*** Peck [= *A. ostoyae* (Romagn.) Herink] – on wood; LF, GF; div 2 (SJSP); 11, 12 (ZCSP); 25 (MRSP); 48; 89; 109; 125 (BDSP); Oct–Nov 2012.

***Auricularia auricula-judae*** (Bull.) J. Schröt. – on trunks of *Fagus* and *Quercus*; LF, GF; div 1C; 13 (Gosań Mt); 16; 127 (WSSP); 128Ag; Aug, Oct 2012.

***Auriscalpium vulgare*** Gray – on cone of *Pinus*; FQ, LF, GF; div 1A; 1B; 1C; 2g, n; 8; 9; 11, 12 (ZCSP); 14 (Gosań Mt); 25 (MRSP); 30; 31; 32; 39; 41; 69; 91; 104; 111; 121; 125 (BDSP); Jul–Nov 2012; Sep 2014; ML.

***Baeospora myosura*** (Fr.) Singer – on cone of *Pinus*; LF; div 8; 14 (Gosań Mt); 25g (MRSP); 115; Aug, Oct–Nov 2012.

***Bjerkandera adusta*** (Willd.) P. Karst. – on wood of *Fagus* and *Quercus*; LF, GF; div 15; 15B; 16; 46, 68; 110; 116; 125 (BDSP); 127, 128Az (WSSP); Aug–Nov 2012; Sep 2016.

***Bolbitius reticulatus*** (Pers.) Ricken – on logs of *Fagus*; LF; div 91f; Oct 2012; R.

***Boletus calopus*** Pers. – on ground; LF; div 16w; Aug 2012; R.

***B. edulis*** Bull. – on ground; LF, GF; div 15Bj (Kawcza Mt); 68; 127 (WSSP); Aug, Oct 2012; ML, MS.

***B. erythropus*** Pers. – on ground; GF; div 125 (BDSP); Oct 2012; ML.

***B. pulverulentus*** Opat. – on ground; div 15Ac; Aug 2012; R.

***Calocera cornea*** (Batsch) Fr. – on wood of deciduous trees; LF, GF; div 2 (SJSP); 17; 48; 68; 69; 104; 110; 127, 128a, 128Az (WSSP); Aug, Oct–Nov 2012; Sep 2016.

***C. viscosa*** (Pers.) Fr.– on stumps of *Pinus*; FQ, LF, GF; div 1B; 1C; 2 (SJSP); 8; 9; 14 (Gosań Mt); 31; 39; 40; 41; 62; 104; 111; 115; 128Ah; Aug–Nov 2012; Sep 2014; ML.

***Calvatia excipuliformis*** (Scop.) Perdeck – on ground; GF; div 128Ah; Aug 2012.

***Cantharellus cibarius*** Fr. – on ground; LF; div 11, 12 (ZCSP); 15B; 16; 40; 41; 88; 91; 104; 111; Aug, Oct 2012; ML.

***C. cinereus*** Pers. – on ground; LF, GF; div 104; 127 (WSSP); Aug 2012.

***C. tubaeformis*** Fr. – on ground; LF; div 91; 111; Oct 2012; ML.

***Chlorophyllum rhacodes*** (Vittad.) Vellinga [= *Macrolepiota rhacodes* (Vittad.) Singer var. *rhacodes*] – on ground; LF, GF; div 68; 125 (BDSP); Oct 2012.

***Chondrostereum purpureum*** (Pers.) Pouzar – on log of *Fagus*; div 30; Aug 2012.

***Chroogomphus rutilus*** (Schaeff.) O. K. Mill. – on ground; LF; div 1A; 1B; 91; 111; 113; 114; Aug–Oct 2012; ML.

***Clavulina cinerea*** (Bull.) J. Schröt. – on ground; LF; oddz. 109; Oct 2012.

***C. coralloides*** (L.) J. Schröt. – on ground; GF; div 121; 127 (WSSP); Aug 2012; ML.

***Clitocybe clavipes*** (Pers.) P. Kumm. – on ground; LF; div 2 (SJSP); 91; 111; 70; Oct–Nov 2012; Sep 2014; ML.

***C. dealbata*** (Sowerby) P. Kumm. – on litter; GF; div 125 (BDSP); Oct 2012.

***C. geotropa*** (Bull. Ex DC.) Quél.– on ground and litter; LF; oddz. 15B; 16; Aug 2012; ML.

***C. metachroa*** (Fr.) P. Kumm. – on litter; LF, GF; div 48; 125 (BDSP); Oct–Nov 2012.

***C. nebularis*** (Batsch) P. Kumm. – on ground; LF, GF; div 2 (SJSP); 25 (MRSP); 48; 125 (BDSP); Oct–Nov 2012; ML.

***Collybia cirrata*** (Schumach.) Quél. – on debris of fungi; GF; div 125 (BDSP); Oct 2012.

***Coltricia perennis*** (L.) Murrill – on ground; FQ, LF; div 70; 105; 114; Aug, Sep 2012; Sep 2014; ML.

***Coniophora arida*** (Fr.) P. Karst. – on trunk of *Pinus*; div 115; Oct 2012.

***Conocybe subovalis*** Kühner & Watling – on ground; LF; div 91; Oct 2012.

***Coprinellus domesticus*** (Bolton) Vilgalys, Hopple & Jacq. Johnson [= *Coprinus domesticus* (Bolton) Gray] – on stumps; LF, GF; div 13, 14 (Gosań Mt); 109; 127 (WSSP); Aug, Oct 2012.

***C. impatiens*** (Fr.) J. E. Lange [= *C. impatiens* (Fr.) Quél.] – on liter; LF; div 2 (SJSP); Nov 2012.

***C. micaceus*** (Bull.) Vilgalys, Hopple & Jacq. Johnson [= *C. micaceus* (Bull.) Fr.] – on stumps and logs; LF, GF; div 2 (SJSP); 15B; 16; 125 (BDSP); Aug, Oct–Nov 2012.

***C. xanthothrix*** (Romagn.) Vilgalys, Hopple & Jacq. Johnson (= *C. xanthothrix* Romagn.) – on litter; LF; div 2 (SJSP); Nov 2012.

***Coprinopsis picacea*** (Bull.) Redhead, Vilgalys & Moncalvo [= *C. picaceus* (Bull.) Gray] – on ground; Trzciągowo (near div 131g); Oct 2012; V.

***Coprinus comatus*** (O. F. Müll.) Pers. – on ground; div 70; 98; 114; 128B; Sep 2012, 2014; ML.

***Cortinarius bolaris*** (Pers.) Fr. – on ground; LF, GF; div 104; 105; 121; Aug, Oct 2012; ML.

***C. caperatus*** (Pers.) Fr. [= *Rozites caperatus* (Pers.) P. Karst.] – on ground; LF; div 91; 115; Oct 2012; ML, AS.

***C. citrinus*** J. E. Lange ex P. D. Orton – on ground, under *Fagus* and *Quercus*; LF; div 116b; Oct 2012.

***C. flexipes*** (Pers.) Fr. – on ground; LF; div 2 (SJSP); 11, 12 (ZCSP); 31; 91; 110; Oct–Nov 2012; ML.

***C. orellanus*** Fr. – on ground; LF; div 15; Aug 2012; R.

***C. paleaceus*** (Weinm.) Fr. – on ground; LF; div 115; Oct 2012.

***C. semisanguineus*** (Fr.) Gillet – on ground; div 64; Sep 2014; ML.

***C. stillatitius*** Fr. – on ground; LF; div 11h (ZCSP); Oct 2012.

***C. torvus*** (Fr.) Fr. – on ground; LF; div 91; Oct 2012.

***Cratherellus cornucopioides*** (L.) Pers. – on ground; LF; div 14 (Gosań Mt); Aug 2012; ML.

***Crepidotus variabilis*** (Pers.) P. Kumm. – on litter; LF, GF; div 1C; 2 (SJSP); 14, 13 (Gosań Mt); 15; 25 (MRSP); 30; 31; 32; 89; 91; 104; 110; 111; 125 (BDSP); 127 (WSSP); Aug–Nov 2012.

***Crucibulum laeve*** (Huds.) Kambly – on twig; div 20; Nov 2012; ML.

***Cyathus striatus*** (Huds.) Willd. – on litter; LF, GF; div 13, 14 (Gosań Mt); 15B; 16; 128a, 128Az (WSSP); Aug 2012; ML.

***Cystoderma amianthinum*** (Scop.) Fayod – on ground; LF; div 2g; 15; 20; 30; 32; 97; Aug–Nov 2012; ML.

***C. carcharias*** (Pers.) Fayod – on ground; div 2g; 20; Nov 2012; ML.

***Dacrymyces stillatus*** Nees – on wood; FQ, LF, GF; div 1A; 1B; 1C; 2g,n; 8; 9; 13 (Gosań Mt); 15; 16; 30; 31; 39; 40; 41; 48; 62; 70; 89; 91; 104; 111; 114; 127, 128a, 128Az (WSSP); 128Ah; Jul–Nov 2012; Sep 2014.

***Daedalea quercina*** (L.) Pers. – on stump of *Quercus*; LF; div 105; Aug 2012.

***Daedaleopsis confragosa*** (Bolton) J. Schröt. – on wood of *Fagus*; FQ, LF; div 39; 41; 62; 70; 93; 110; 113; Aug–Nov 2012; Sep 2014.

***Datronia mollis*** (Sommerf.) Donk – on logs of *Fagus*; LF, GF; div 15A; 16; 25 (MRSP); 113; 125 (BDSP); Aug–Nov 2012.

***Dentipellis fragilis*** (Pers.) Donk – on log of *Fagus*; GF; div 109b; Oct 2012; (leg. M. Walczak); R.

***Entoloma cetratum*** (Fr.) M. M. Moser – on ground; div 64; 65; Sep 2014; ML.

***E. juncinum*** (Kühner & Romagn.) Noordel. – on ground; LF, GF; div 16; 104; 127 (WSSP); Aug 2012; R; ML.

***Exidia truncta*** Fr. [= *E. glandulosa* (Bull.) Fr.] – on wood of *Quercus*; LF; div 2 (SJSP); 25 (MRSP); 41; 48; Aug, Nov 2012; R.

***E. plana*** Donk – on wood of deciduous trees; CF, LF; div 11 (ZCSP); 13 (Gosań Mt); 15; 25 (MRSP); 113; 114; Aug–Nov 2012; May 2013–2014.

***Fomes fomentarius*** (L.) Fr. – on logs and trunks of *Fagus* and *Quercus*; FQ, LF, GF; div 1B; 1C; 2 (SJSP); 13, 14 (Gosań Mt); 15; 15B; 16; 25 (MRSP); 30; 46; 48; 68; 70; 89; 91; 104; 109; 111; 121; 125 (BDSP); 127 (WSSP); Jul–Nov 2012; May 2013; Sep 2014, 2016.

***Fomitopsis pinicola*** (Sw.) P. Karst. – on logs of *Pinus* and *Fagus*; FQ, LF; div 1C; 14 (Gosań Mt); 31; 39; 46, 48; 68; 70; 104; 110; 113; 114; Jul–Nov 2012; Sep 2014, 2016.

***Galerina vittiformis*** (Fr.) Singer – among mosses; div 1A; 1B; Aug 2012; Sep 2014.

***Ganoderma lipsiense*** (Batsch) G. F. Atk. [= *G. applanatum* (Pers.) Pat.] – on logs and trunks of *Fagus*; FQ, LF, GF; div 13, 14 (Gosań Mt); 15; 15B; 16; 68; 93; 127, 128a, 128Az (WSSP); Jul–Nov 2012; Sep 2016.

***Geastrum fimbriatum*** Fr. – on ground; LF; div 89a; Oct 2012; R.

***G. rufescens*** Pers. – on ground; LF; div 11; Oct 2012; (leg. M. Wilchelm – personal information, 2012); E.

***Gloeoporus dichrous*** (Fr.) Bres. – on wood of deciduous tree; LF; div 68; Oct 2012; E.

***Gloeophyllum sepiarium*** (Wulfen) P. Karst. – on logs of *Pinus*; LF; div 48; 113; 114; Sep, Nov 2012.

***Gomphidius roseus*** (Fr.) Fr. – on ground; div 91; Oct 2012; R; ML.

***Gymnopilus penetrans*** (Fr.) Murril – on wood; LF; div 2 (SJSP); 13 (Gosań Mt); 17; 20; 25 (MRSP); 30; 31; 32; 41; 48; 69; 70; 91; 104; 111; 115; Aug, Oct–Nov 2012; Sep 2014; ML.

***Gymnopus androsaceus*** (L.) J. L. Mata & R. H. Petersen [= *Setulipes androsaceus* (L.) Antonín] – on litter; FQ, LF, GF; div 1A; 1B; 14 (Gosań Mt); 16; 17; 25 (MRSP); 30; 31; 39; 41; 62; 69; 70; 89; 91; 93; 111; 128Ah; Jul–Nov 2012; Sep 2014; ML.

***G. confluens*** (Pers.) Antonín, Halling & Noordel. – on litter; LF, GF; div 9; 13, 14 (Gosań Mt); 16; 48; 68; 89; 111; 125 (BDSP); 128a, 128Az (WSSP); 128Ag; Aug, Oct–Nov 2012; ML.

***G. dryophilus*** (Bull.) Murrill – on litter; FQ, CF, LF, GF; div 11 (ZCSP); 15B; 16; 48; 68; 69, 71; 89; 91; 105; 111; 125 (BDSP); 127, 128a, 128Az (WSSP); Jul–Nov 2012, May 2014; ML, TD.

***G. foetidus*** (Sowerby) J. L. Mata & R. H. Petersen [= *Marasmiellus foetidus* (Sowerby) Antonín, Hlling & Noordel.] – on twigs; LF; div 13 (Gosań Mt); Aug 2012; R.

***G. fusipes*** (Bull.) Gray – at the base of stumps of *Quercus*; LF; div 68; 87; 104; 105; Aug 2012; Sep 2016; ML.

***G. perforans*** (Hoffm.) Antonín & Noordel. [= *Marasmiellus perforans* (Hoffm.) Antonín, Hlling & Noordel.] – on litter; GF; div 125 (BDSP); Oct 2012.

***G. peronatus*** (Bolton) Gray on litter; LF, GF; div 15, 15A; 16; 17; 25 (MRSP); 30; 39; 48; 67; 68; 70; 71; 89; 91; 104; 110; 111; 127 (WSSP); Aug, Oct–Nov 2012; Sep 2014, 2016; ML.

***Hapalopilus nidulans*** (Fr.) P. Karst. – on branches of *Quercus*; CF, LF; div 11 (ZCSP); 16; 98; Aug–Sep 2012; May 2014.

***Hebeloma crustuliniforme*** (Bull.) Quél. – on ground; LF, GF; div 11 (ZCSP); 98; 116; 125 (BDSP); Sep–Oct 2012; ML.

***H. radicosum*** (Bull.) Ricken – on roots of *Fagus*; div 98c; Sep 2012; I.

***Hericium coralloides*** (Scop.) Pers. – on trunks and logs of *Fagus*; LF; div 46d; 91f; 109a (M. Walczak – personal information, 2012); Oct 2012; Sep 2016; V, P.

***Heterobasidion annosum*** (Fr.) Bref. – on stumps of *Pinus*; FQ, LF, GF; div 1B; 1C; 13, 14 (Gosań Mt); 25 (MRSP); 31; 41; 48; 70; 91; 110; 111; 114; 115; 125 (BDSP); Aug–Nov 2012; Sep 2014.

***Hydropus subalpinus*** (Höhn.) Singer – on twigs; LF, GF; div 1C; 13, 14 (Gosań Mt); 15; 15B; 16; 17; 30; 31; 32; 91; 104; 105; 125 (BDSP); 127 (WSSP); Aug, Oct 2012; R.

***Hygrophoropsis aurantiaca*** (Wulfen) Maire – on ground; FQ; div 1A; 1B; 70; Aug 2012; Sep 2014; ML.

***Hygrophorus eburneus*** (Bull.) Fr. – on ground; LF; div 48; 68; 89; 91; 111; 113; Sep–Nov 2012; ML.

***H. hypothejus*** (Fr.) Fr. – on ground; div 2g,n; 111; Oct–Nov 2012; I, ML.

***Hymenochaete rubiginosa*** (Dicks.) Lév. – on stumps of *Quercus*; LF, GF; div 25 (MRSP); 68; 125 (BDSP); 127 (WSSP); 128Ay; Aug, Oct–Nov 2012; Sep 2016.

***Hyphoderma setigerum*** (Fr.) Donk – on wood; LF; div 11, 12 (ZCSP); 25 (MRSP); 68; 104; 105; Aug, Oct–Nov 2012; Sep 2016.

***Hyphodontia nespori*** (Bres.) J. Erikss. & Hjortstam – on branches; LF; div 1C; 13, 14 (Gosań Mt); Aug 2012.

***Hypholoma capnoides*** (Fr.) P. Kumm. [= *Psilocybe capnoides* (Fr.) Noordel.] – on wood; LF; div 31; 121; Oct 2012.

***H. fasciculare*** (Huds.) P. Kumm. [= *P. fascicularis* (Huds.) Kühner] – on wood; FQ, LF, GF; div 1B; 2g,n; 2 (SJSP); 15; 25 (MRSP); 31; 39; 40; 48; 68; 69; 91; 97; 98; 104; 105; 111; 113; 114; 116; 125 (BDSP); 128a, 128Az (WSSP); Jul–Nov 2012; Sep 2014, 2016; ML.

***H. lateritium*** (Schaeff.) P. Kumm. [= *P. lateritia* (Schaeff.) Noordel.] – on wood; LF; div 31; 89; Oct 2012; ML.

***Imleria badia*** (Fr.) Vizzini [= *Xerocomus badius* (Fr.) E.-J. Gilbert] – on ground; LF; div 46; 68; 70; 91; 94; 97; 110; Sep–Nov 2012; Sep 2014, 2016; ML, MS.

***Inocybe asterospora*** Quél. – on ground; LF, GF; div 13, 14 (Gosań Mt); 16; 32; 70; 71; 91; 94; 105; 111; 115; 121; Aug–Oct 2012.

***I. dulcamara*** (Pers.) P. Kumm. – on ground; LF; div 105; Aug 2012; ML.

***I. rimosa*** (Bull.) P. Kumm. [= *I. fastigiata* (Schaeff.) Quél.] – on ground; LF; div 15B; Aug 2012; ML.

***I. geophylla*** (Sowerby) P. Kumm. var. ***geophylla*** – on ground; LF, GF; div 20; 48; 71; 91; 110; 111; 125 (BDSP); Oct–Nov 2012; ML.

***I. geophylla*** var. ***lilacina*** (Peck) Gillet – on ground; LF, GF; div 116; 125 (BDSP); Oct 2012; ML.

***I. griseolilacina*** J. E. Lange – on ground; LF; div 116b; Oct 2012; R.

***I. hirtella*** Bres. – na ziemi; LF; div 68; 105; Aug, Oct 2012; ML.

***I. lacera*** (Fr.) P. Kumm. – on ground; LF; div 1A; 1B; 15; 91; 111; 114; 121; Aug–Oct 2012.

***I. lanuginosa*** (Bull.) P. Kumm. – on ground; LF, GF; oddz. 16; 17; 105; 111; 121; Oct 2012; ML.

***I. maculata*** Boud. – on ground; div 105; Aug 2012.

***I. praetervisa*** Quél. – on ground; GF; div 39; 127 (WSSP); Aug 2012.

***Innonotus nodulosus*** (Fr.) P. Karst. – on trunks of *Fagus*; LF, GF; div 15B; 31; 46; 68; 125 (BDSP); Aug, Oct 2012; Sep 2016.

***I. obliquus*** (Ach. ex Pers.) Pilát – on trunks of *Betula*; div 1C; Aug 2012; R, P.

***Ischnoderma resinosum*** (Schrad.) P. Karst. – on logs of *Fagus*; LF, GF; div 89a; 93l; 125 (BDSP); Oct 2012; V.

***Kuehneromyces mutabilis*** (Schaeff.) Singer & A. H. Sm. – on wood of deciduous trees; FQ, LF; div 2 (SJSP); 31; 39; 69; Nov 2012; Sep 2014; ML.

***Laccaria amethystea*** (Bull.) Murrill – on ground; LF, GF; div 2 (SJSP); 8; 11, 12 (ZCSP); 25 (MRSP); 30; 32; 39; 48; 68; 69; 70; 91; 109; 110; 111; 114; 115; 116; 121; 125 (BDSP); 127 (WSSP); Aug–Nov 2012; Sep 2014; ML.

***L. laccata*** (Scop.) Cooke – on ground; LF, GF; div 2 (SJSP); 11 (ZCSP); 25 (MRSP); 32; 48; 125 (BDSP); Oct–Nov 2012; ML.

***L. proxima*** (Boud.) Pat. – on ground; div 91; Oct 2012; ML.

***L. tortilis*** (Bolton) Cooke – on ground; GF; div 25 (MRSP); 125 (BDSP); Oct–Nov 2012.

***Lactarius aurantiacus*** (Pers.) Gray – on ground; div 20; Nov 2012; ML.

***L. blennius*** (Fr.) Fr. – on ground; LF, GF; div 2 (SJSP); 11 (ZCSP); 68; 89; 91; 109; 111; 121; 125 (BDSP); Oct–Nov 2012; ML.

***L. deliciosus*** (L.) Gray – on ground; LF; div 1A; 1B; 91; 93; 94; 97; Aug–Oct 2012; ML.

***L. fluens*** Boud. – on ground; LF; div 20; 25 (MRSP); 32; 48; 91; 94; 98; 104; 114; Aug–Nov 2012.

***L. necator*** (Bull.) Pers. – on ground; FQ; div 69; Sep 2014.

***L. quietus*** (Fr.) Fr. – on ground; FQ, LF, GF; div 1C; 14 (Gosań Mt); 16; 39; 40; 68, 69; 94; 104; 109; 114; 125 (BDSP); 127, 128a, 128Az (WSSP); Jul–Oct 2012; Sep 2014; ML.

***L. rufus*** (Scop.) Fr. – on ground; LF; div 9; 14 (Gosań Mt); 15, 15A; 39; 40; 91; 94; 104; 105; 111; Aug–Oct 2012; ML.

***L. tabidus*** Fr. [= *L. thejogalus* (Bull.) Gray ss. Neuhoff] – on ground; FQ, LF, GF; div 1C; 8; 9; 14 (Gosań Mt); 15, 15A; 31; 39; 69; 70; 91; 93; 104; 109; 111; 128a, 128Az (WSSP); Aug–Oct 2012; Sep 2014.

***L. vellereus*** (Fr.) Fr. – on ground; LF, GF; div 2 (SJSP); 25 (MRSP); 30; 31; 32; 68; 71; 89; 91; 93; 94; 97; 98; 104; 111; 113; 114; 115; 116; 125 (BDSP); 127 (WSSP); Aug–Nov 2012; ML.

***L. vietus*** (Fr.) Fr. – on ground; LF; div 110; Oct 2012.

***L. volemus*** (Fr.) Fr. – on ground; div 91; Oct 2012.

***Laetiporus sulphureus*** (Bull.) Murrill – on trunk of *Quercus*; LF; div 46; Sep 2016; ML.

***Leccinum scabrum*** (Bull.) Gray – on ground; div 110; Oct 2012; ML, MS.

***Lenzites betulina*** (L.) Fr. – on logs of *Fagus*; GF; div 125 (BDSP); Oct 2012.

***Lepiota cristata*** (Bolton) P. Kumm. – on ground; LF, GF; div 116; 125 (BDSP); Oct 2012; ML.

***Lepista flaccida*** (Sowerby) Pat. – on litter; LF, GF; div 14 (Gosań Mt); 25 (MRSP); 48; 125 (BDSP); Aug, Oct–Nov 2012.

***L. nuda*** (Bull.) Cooke – on ground; LF, GF; div 68; 89; 116; 125 (BDSP); Oct 2012; ML.

***Leratiomyces squamosus*** (Pers.) Bridge & Spooner [= *Psilocybe squamosa* (Pers.) P. D. Orton] – on ground and litter; LF, GF; div 31; 71; 91; 109a; 110; 111; 114; 121; 125 (BDSP); Sep–Oct 2012; I; ML.

***Lycoperdon echinatum*** Pers. – on ground; div 6; Oct 2012; (leg. M. Wilchelm – personal information, 2012); R.

***L. foetidum*** Bonord. (= *L. nigrescens* Wahlenb.) – on ground; div 69; Sep 2014.

***L. perlatum*** Pers. – on ground; FQ, LF, GF; oddz. 2 (SJSP); 15A; 25 (MRSP); 30; 68; 70; 71; 89; 91; 93; 109; 111; 115; 125 (BDSP); Aug–Nov 2012; Sep 2014, 2016; ML.

***L. pyriforme*** Schaeff. – on wood and old basidiocarps of *Fomes fomentarius*; LF, GF; div 48; 115, 125 (BDSP); 127 (WSSP); Jul–Nov 2012; ML.

***L. umbrinum*** Pers. – on ground; LF; oddz. 2g,n; div 2 (SJSP); Nov 2012.

***Macrolepiota procera*** (Scop.) Singer – on ground; div 46; Sep 2016; ML.

***Macrotyphula contorta*** (Holmsk.) Rauschert [= *Clavariodelphus fistulosus* (Holmsk.) Corner] – on twigs; LF; div 2 (SJSP); 25g (MRSP); Nov 2012; R.

***Marasmiellus ramealis*** (Bull.) Singer – on twigs of *Fagus*; GF; div 127 (WSSP); Aug 2012; ML.

***Marasmius epiphyllus*** (Pers.) Fr. – on litter; LF, GF; div 16; 128a, 128Az (WSSP); Aug 2012.

***M. rotula*** (Scop.) Fr. – on twigs; LF, GF; div 13, 14 (Gosań Mt); 15B; 16; 104; 127 (WSSP); Aug 2012; ML.

***M. torquescens*** Quél. – on twigs and litter; GF; div 127 (WSSP); Aug 2012; ML.

***Megacollybia platyphylla*** (Pers.) Kotl. & Pouzar – on wood of deciduous trees; FQ, LF, GF; div 2 (SJSP); 14 (Gosań Mt); 15; 15B; 16; 71; 67; 68; 69; 70; 89; 91; 104; 111; 114; 127, 128a, 128Az (WSSP); Jul–Nov 2012; Sep 2014, 2016; ML.

***Meripilus giganteus*** (Pers.) P. Karst. – on logs of *Fagus*; LF, GF; div 109a (M. Walczak – personal information, 2012); 116b; 128Ay; Aug, Oct 2012.

***Mutinus caninus*** (Huds.) Fr. – on ground; LF, GF; div 13d (Gosań Mt); 15o, m, 15Ac; 15Bj (Kawcza Mt); 110; 127 (WSSP); Aug, Oct 2012; SF.

***Mycena capillaris*** P. Karst. – on leaves of *Fagus*; LF; div 115; Oct 2012; ML.

***M. crocata*** (Schrad.) P. Kumm. – on litter; LF; div 2j (SJSP); 109a; 115; 121; Oct–Nov 2012; R.

***M. epipterygia*** (Scop.) Gray var. ***epipterygia*** – on ground and among mosses; LF; div 2 (SJSP); 30; 91; 111; 121; Oct–Nov 2012; ML.

***M. filopes*** (Bull.) P. Kumm. – on twigs; LF; div 31; 89; 91; 111; Oct 2012; ML.

***M. galericulata*** (Scop.) Gray – on stumps of deciduous trees; LF, GF; div 2 (SJSP); 8; 13 (Gosań Mt); 16; 25 (MRSP); 46; 68; 93; 104; 109; 121; 125 (BDSP); Aug–Nov 2012; Sep 2016; ML.

***M. galopus*** (Pers.) P. Kumm. – on litter; FQ, LF, GF; div 1A; 1B; 1C; 2 (SJSP); 8; 9; 20; 25 (MRSP); 30; 31; 32; 40; 41; 48; 69; 70; 89; 91; 104; 110; 111; 115; 116; 121; 125 (BDSP); 128a, 128Az (WSSP); 128Ah; Jul–Nov 2012; Sep 2014; ML.

***M. haematopus*** (Pers.) P. Kumm. var. ***haematopus*** – on stumps and logs of deciduous trees; LF, GF; div 1C; 2 (SJSP); 13 (Gosań Mt); 15; 30; 39; 70; 89; 91; 104; 110; 111; 116; 121; 125 (BDSP); Aug, Oct–Nov 2012.

***M. inclinata*** (Fr.) Quél. – on stumps of *Quercus*; LF; div 25 (MRSP); 48; 68; Oct–Nov 2012; ML.

***M. pelianthina*** (Fr.) Quél. – on litter; LF, GF; div 48; 125 (BDSP); Oct–Nov 2012; I, ML.

***M. polygramma*** (Bull.) Gray – at the base of trunks of deciduous trees; LF, GF; div 115; 125 (BDSP); Oct 2012; ML.

***M. pura*** (Pers.) P. Kumm. – on ground and litter; FQ, LF, GF; div 1A; 1B; 1C; 2g,n; 2 (SJSP); 13, 14 (Gosań Mt); 17; 20; 25 (MRSP); 48; 68; 70; 89; 91; 98; 109; 111; 113; 114; 125 (BDSP); 128Ag; Aug–Nov 2012; Sep 2014; ML.

***M. sanguinolenta*** (Alb. & Schwein.: Fr.) P. Kumm. – on litter; LF, GF; div 1C; 13, 14 (Gosań Mt); 15A; 15B; 16; 30; 40; 41; 70; 89; 115; 127, 128a, 128Az (WSSP); Aug, Oct 2012; Sep 2014; ML.

***M. stipata*** Maas Geest. & Schwöbel. – on branches and logs of *Pinus*; LF; div 2g,n; 30; 31; Nov 2012.

***M. stylobates*** (Pers.) P. Kumm. – on leaves of *Fagus*; LF; div 1C; 104; Aug 2012; ML.

***M. vitilis*** (Fr.) Quél. – on litter; LF, GF; div 1A; 1B; 2 (SJSP); 11, 12 (ZCSP); 15A, 48; 121; 125 (BDSP); 128Ag; Aug, Oct–Nov 2012.

***M. vulgaris*** (Pers.) P. Kumm. – on needles, among mosses; div 91; 111; Oct 2012; ML.

***M. zephirus*** (Fr.) P. Kumm. – on ground and litter; FQ, LF, GF; div 15A; 25 (MRSP); 31; 32; 68; 69; 70; 91; 110; 111; 115; 125 (BDSP); 128Ah; Aug, Oct–Nov 2012; Sep 2014.

***Mycetinis alliaceus*** (Jacq.) Earle [= *Marasmius alliaceus* (Jacq.) Fr.] – on wood of *Fagus*; FQ, LF, GF; div 2 (SJSP); 11, 12 (ZCSP); 13, 14 (Gosań Mt); 15, 15A; 15B; 16; 25 (MRSP); 30; 31; 32; 40; 68; 69; 70; 71; 89; 97; 98; 104; 109; 114; 115; 116; 121; 125 (BDSP); 127, 128a, 128Az (WSSP); Aug–Nov 2012; Sep 2014; ML.

***Oudemansiella mucida*** (Schrad.) Höhn. – on logs and stumps of *Fagus*; LF, GF; div 2 (SJSP); 11, 12 (ZCSP); 31; 48; 68; 89; 71; 91; 94; 97; 104; 111; 113; 116; 125 (BDSP); Aug–Nov 2012; ZCJU, ML.

***Panellus serotinus*** (Pers.) Kühner – on logs of *Fagus*; LF, GF; div 2 (SJSP); 48; 125 (BDSP); Oct–Nov 2012.

***P. stipticus*** (Bull.) P. Karst. – on stumps of *Quercus*; LF, GF; div 2 (SJSP); 48; 71; 125 (BDSP); Oct–Nov 2012.

***Paxillus involutus*** (Batsch) Fr. – on ground; FQ, LF; div 30; 31; 68; 70; 91; 94; 111; Sep–Oct 2012; Sep 2014; ML.

***Peniophora cinerea*** (Pers.) Cooke – on branches; FQ, LF; div 15; 16; 69; 70; 111; Aug, Oct 2012; Sep 2014.

***P. quercina*** (Pers.) Cooke – on branches of *Quercus*; CF, LF; div 2 (SJSP); 11 (ZCSP); 16; 25 (MRSP); 31; 40; 46; 68; 97; 98; 114; Jul–Nov 2012; May 2014; Sep 2016.

***Phaeolus schweinizii*** (Fr.) Pat. – on roots of *Pinus*; div 15A; Aug 2012.

***Phallus impudicus*** L. – on ground; LF, GF; div 11, 12 (ZCSP); 14 (Gosań Mt); 15, 15A; 31; 48; 70; 91; 94; 104; 110; 111; 125 (BDSP); 128a, 128Az (WSSP); Aug–Nov 2012; Sep 2014; ML, AS.

***Phanerochaete laevis*** (Fr.) J. Erikss. & Ryvarden – on wood of *Fagus*; LF; div 13, 14 (Gosań Mt); 15, 15Ac; 15B; 16; 17; 111; Aug, Oct 2012.

***Ph. sanguinea*** (Fr.) Pouzar – on twigs; FQ; div 40; 69; Aug 2012; Sep 2014.

***Ph. velutina*** (DC.) P. Karst. – on litter and branches; GF; div 127 (WSSP); Aug 2012.

***Phellinus ferruginosus*** (Schrad.) Pat. – on branches of *Quercus*; FQ, LF; div 48; 68; 70; 97; 98; 104; 113; Aug–Nov 2012; Sep 2014, 2016.

***Ph. hippophaëcola*** H. Jahn – on branches of *Hippophäe rhamnoides*; Wapnica (N lakeside of Turkusowe Lake); May 2013; WW.

***Ph. robustus*** (P. Karst.) Bourdot & Galzin – on wood of *Quercus*; LF, GF; div 46; 68; 105; 128a, 128Az (WSSP); Aug 2012; Sep 2016.

***Phlebia radiata*** Fr. – on logs of *Fagus*; LF, GF; div 25 (MRSP); 89; 109; 125 (BDSP); Oct–Nov 2012.

***Ph. tremellosa*** (Schrad.) Nakasone & Burds. – on logs of *Fagus*; LF, GF; div 25 (MRSP); 31; 48; 70, 125 (BDSP); Oct–Nov 2012; Sep 2014.

***Pholiota aurivella*** (Batsch) P. Kumm. – on logs of *Fagus*; GF; div 89; 104; Aug, Oct 2012.

***Ph. flammans*** (Batsch) P. Kumm. – on logs of *Pinus*; FQ; div 70; 94; Sep 2012, 2014.

***Ph. lenta*** (Pers.) Singer – on litter; LF, GF; div 109; 115; 116; 125 (BDSP); Oct 2012.

***Piptoporus betulinus*** (Bull.) P. Karst. – on wood of *Betula*; LF; div 1B; 1C; 91; 70; 110; 111; Aug–Nov 2012; Sep 2014.

***Pluteus cervinus*** (Schaeff.) P. Kumm. – on wood of deciduous trees; LF, GF; div 2 (SJSP); 11, 12 (ZCSP); 13 (Gosań Mt); 30; 68; 89; 69; 71; 104; 109; 116; 121; 125 (BDSP); Jul–Nov 2012; Sep 2014; ML.

***P. romellii*** (Britzelm.) Sacc. – on logs; LF, GF; div 89a; 125 (BDSP); Oct 2012.

***P. salicinus*** (Pers.) P. Kumm. – on logs of *Fagus*; LF, GF; div 14 (Gosań Mt); 89a; 128a, 128Az (WSSP); Aug, Oct 2012; Sep 2014.

***P. umbrosus*** (Pers.) P. Kumm. – on log of *Fagus*; LF; div 89a; Oct 2012.

***Polyporus ciliatus*** Fr. – on branches; FQ, LF, GF; div 48; 70; 89; 125 (BDSP); Oct–Nov 2012; Sep 2014.

***P. tuberaster*** (Jacq. ex Pers.) Fr. – on branches; FQ, LF, GF; div 1C; 15; 17; 69; 91; 104; 105; 111; 127 (WSSP); Aug, Oct 2012; Sep 2014; R.

***P. varius*** (Pers.) Fr. – on branches of *Fagus*; CF, FQ, LF, GF; div 1C; 2 (SJSP); 11, 12 (ZCSP); 13, 14 (Gosań Mt); 15, 15A; 15B; 16; 17; 30; 31; 40; 46; 67; 68; 69; 93; 94; 97; 104; 113; 114; 127, 128a, 128Az (WSSP); 128Ah; Jul–Nov 2012; My, Sep 2014; Sep 2016; ML.

***Porodaedalea pini*** (Brot.) Murrill [= *Phellinus pini* (Brot.) A. Ames] – on trunks and logs of *Pinus*; LF, GF; div 11j (ZCSP); 46d; 68g; 125 (BDSP); Oct 2012; May 2013; Sep 2016; R.

***Postia caesia*** (Schrad.) P. Karst. [= *Oligoporus caesius* (Schrad.) Gilb. & Ryvarden] – on wood of *Pinus*; LF, GF; div 2 (SJSP); 31; 48; 89; 91; 111; 125 (BDSP); 128a, 128Az (WSSP); Aug, Oct–Nov 2012.

***P. ptychogaster*** (F. Ludw.) Vesterh. [= *O. ptychogaster* (F. Ludw.) Falck & O. Falck] – on logs of *Pinus*; div 115c; Oct 2012; R.

***P. stiptica*** (Pers.) Jülich [= *O. stipticus* (Pers.) Gilb. & Ryvarden] – on wood of *Pinus*; LF, GF; div 15A; 17; 41; 91; 111; 128Ah; Aug, Oct 2012.

***Psathyrella candolleana*** (Fr.) Maire – on ground and litter; LF, GF; div 15B; 25 (MRSP); 104; 128a, 128Az (WSSP); Aug, Nov 2012.

***P. friesii*** Kits van Wav. [= *P. fibrillosa* (Pers.) Maire] – on litter; LF; div 2 (SJSP); 30; 91; 111; 109; Oct–Nov 2012.

***P. murcida*** (Fr.) Kits van Wav. – on litter; LF; div 115b; Oct 2012.

***P. piluliformis*** (Bull.) P. D. Orton – on wood of *Fagus* and *Quercus*; FQ, LF, GF; div 2 (SJSP); 20; 25 (MRSP); 30; 31; 48; 68; 69; 89; 109; 110; 115; 116; 121; 125 (BDSP); Oct–Nov 2012; Sep 2014.

***P. prona*** (Fr.) Gillet – on ground; GF; div 125 (BDSP); Oct 2012.

***Pseudoclitocybe cyathiformis*** (Bull.) Singer – on ground; GF; div 125 (BDSP); Oct 2012.

***Pseudohydnum gelatinosum*** (Scop.) P. Karst. – on stumps of *Pinus*; LF, GF; div 48; 125 (BDSP); Oct–Nov 2012.

***Pseudomerulius aureus*** (Fr.) Jülich – on logs of *Pinus*; FQ; div 69; 111; Sep 2012, 2014; R.

***Radulomyces molaris*** (Chaillet ex Fr.) M. P. Christ. – on branches of *Quercus*; div 25 (MRSP); 39; 98; Aug–Nov 2012.

***Ramaria stricta*** (Pers.) Quél. – on ground; LF; div 2 (SJSP); 15A; 91; 114; 111; Aug–Nov 2012.

***Resupinatus trichotis*** (Pers.) Singer – on branch; div 1C; Aug 2012.

***Rhizopogon luteolus*** Fr. & Nordholm – on ground; FQ; div 70m (N lakeside of Czajcze Lake); Sep 2014; ML.

***Rhodocollybia butyracea*** (Bull.) Lennox f. ***butyracea*** – on ground; FQ, LF, GF; div 2g,n; 2 (SJSP); 11, 12 (ZCSP); 25 (MRSP); 48; 68; 69; 71; 91; 109; 110; 111; 121; 125 (BDSP); 128Ag; Aug, Oct–Nov 2012; Sep 2014.

***Rh. maculata*** (Alb. & Schwein.) Singer – on ground; FQ, LF; div 48; 70; 89; Oct–Nov 2012; Sep 2014; ML.

***Rhodonia placenta*** (Fr.) Niemelä, K. H. Larss. & Schigel [= *Oligoporus placentus* (Fr.) Gilb. & Ryvarden] – on log of *Pinus*; div 39 (road to Bison Show Reserve); Aug 2012; E.

***Rickenella fibula*** (Bull.) Raithelh. – among mosses; LF; div 1A; 1B; 8; 9; 13 (Gosań Mt); 32; 89; Aug, Oct X 2012; ML.

***R. swartzii*** (Fr.) Kuyper – on ground and among mosses; div 1A; 1B; Aug 2012.

***Roridomyces roridus*** (Fr.) Rexer [= *M. rorida* (Fr.) Quél.] – on litter and among mosses; div 64; Sep 2014; ML.

***Russula amoenolens*** Romagn. – on ground; div 98c; Sep 2012; R.

***R. atropurpurea*** (Krombh.) Britzelm. (= *R. undulata* Volen.) – on ground; GF; div 125 (BDSP); Oct 2012; ML.

***R. betularum*** Hora – on ground; FQ; div 1A; 1B; 69; 91; Aug, Oct 2012; Sep 2014.

***R. caerulea*** Fr. – on ground; FQ; div 70i; Sep 2014; R.

***R. claroflava*** Grove – on ground; LF; div 16; Aug 2012.

***R. cyanoxantha*** (Schaeff.) Fr. – on ground; LF, GF; div 15; 15B; 16; 31; 48; 71; 93; 97; 104; 111; 113; 121; 128a, 128Az (WSSP); Aug–Nov 2012; ML.

***R. decolorans*** (Fr.) Fr. – on ground; div 41; 111; Aug, Oct 2012; ML.

***R. emetica*** (Schaeff.) Pers. – on ground; LF; div 1A; 1B; 1C; 2g,n; 9; 14 (Gosań Mt); 15; 16; 17; 31; 32; 40; 62; 68; 91; 97; 111; 113; 114; 121; Aug–Nov 2012; ML.

***R. fellea*** (Fr.) Fr. – on ground; LF, GF; div 2g,n; 2 (SJSP); 9; 11, 12 (ZCSP); 14 (Gosań Mt); 15; 15B; 16; 25 (MRSP); 48; 68; 91; 93; 94; 97; 105; 109; 111; 113; 114; 125 (BDSP); 127, 128a, 128Az (WSSP); Aug–Nov 2012; ML.

***R. foetens*** Pers. – on ground; LF; div 89; 104; 113; Aug–Sep 2012; ML.

***R. fragilis*** Fr. – on ground; FQ, LF, GF; div 69; 71; 94; 98; 127 (WSSP); Aug–Oct 2012; Sep 2014; ML.

***R. lutea*** (Huds.) Gray – on ground; LF, GF; div 71; 91; 111; 114; 121; Sep–Oct 2012; ML.

***R. mairei*** Singer – on ground; LF GF; div 11 (ZCSP); 15; 25 (MRSP); 31; 48; 93; 94; 97; 98; 104; 114; 115; 125 (BDSP); Aug–Nov 2012.

***R. nigricans*** Fr. – on ground, LF, GF; div 8; 13, 14 (Gosań Mt); 16; 30; 46, 67; 71; 89; 91; 93; 94; 97; 98; 104; 105; 111; 113; 115; 121; 125 (BDSP); 127 (WSSP); Aug–Nov 2012; Sep 2016; ML.

***R. ochroleuca*** Pers. – on ground; LF, GF; div 2 (SJSP); 13 (Gosań Mt); 25 (MRSP); 30; 31; 32; 68; 71; 89; 91; 111; 113; 125 (BDSP); Aug–Nov 2012.

***R. paludosa*** Britzelm. – on ground; div 1B; Aug 2012.

***R. risigallina*** (Batsch) Sacc. – on ground; LF; div 16; Aug 2012; ML.

***R. sanguinea*** (Bull.) Fr. – on ground; div 1A; 1B; Aug 2012; ML.

****R. torulosa*** Bres. – on ground; div 1A; 1B; Aug 2012, Sep 2013–2014, Oct 2015; MSt.

***R. xerampelina*** (Schaeff.) Fr. – on ground; LF; div 1A; 1B; 48; 91; 93; 94; 111; Aug–Nov 2012.

***Schizophyllum commune*** Fr. – on wood; Zielonka Hill; May 2013; ML.

**Schizopora paradoxa** (Schrad.) Donk [= *Hyphodontia paradoxa* (Schrad.) Langer & Vesterholt] – on wood; FQ, LF, GF; div 1C; 2 (SJSP); 11, 12 (ZCSP); 13, 14 (Gosań Mt); 15; 15B; 16; 30; 40; 68; 89; 98; 104; 105; 113; 128Ag; 128a, 128Az (WSSP); Jul–Nov 2012; Sep 2016.

***Scleroderma citrinum*** Pers. – on ground; FQ; div 48; 70; Nov 2012; Sep 2014; ML.

***S. verrucosum*** (Bull.): Pers. – on ground; LF, GF; div 8; 9; 25 (MRSP); 31; 32; 39; 41; 68; 91; 97; 98; 104; 111; 113; 114; 121; Aug–Nov 2012; ML.

***Sparassis crispa*** (Wulfen) Fr. – at the base of *Pinus*; LF; div 11h (ZCSP); 46d; 113; Sep–Oct 2012; Sep 2016; R; ML.

***Sphaerobolus stellatus*** Tode – on wood; GF; div 125 (BDSP); Oct 2012.

***Stereum hirsutum*** (Willd.) Pers. – on wood; FQ, LF, GF; div 1C; 2 (SJSP); 13, 14 (Gosań Mt); 15; 15A; 15B; 16; 25 (MRSP); 30; 32; 46; 48; 62; 68; 70; 89; 104; 114; 127, 128a, 128Az (WSSP); Jul–Nov 2012; Sep 2014, 2016; ML.

***S. rugosum*** Pers. – on wood; FQ, LF, GF; div 1B; 1C; 11 (ZCSP); 13 (Gosań Mt); 15B; 16; 25 (MRSP); 48; 62; 91; 104; 105; 111; 121; 125 (BDSP); 128a, 128Az (WSSP); Jul–Nov 2012.

***S. sanguinolentum*** (Alb. & Schwein.) Fr. – on branches of *Pinus*; FQ, LF; div 1C; 9; 40; 41; 62; 69; 70; 91; 104; 111; 121; 128Ah; Jul–Nov 2012; Sep 2014.

***S. subtomentosum*** Pouzar – on logs; LF, GF; div 2 (SJSP); 13 (Gosań Mt); 125 (BDSP); 127 (WSSP); Aug, Nov 2012.

***Strobilurus stephanocystis*** (Kühner & Romagn. ex Hora) Singer – on cone of *Pinus*; Zielonka Hill; May 2013–2014; ML.

***Stropharia aeruginosa*** (Curtis) Quél. [= *Psilocybe aeruginosa* (Curst.) Noordel.] – on ground and wood; FQ, LF, GF; div 2g, n; 2 (SJSP); 25 (MRSP); 31; 48; 68; 70; 109; 110; 116; 125 (BDSP); Oct–Nov 2012; Sep 2014; ML.

***S. semiglobata*** (Batsch) Quél. [= *Psilocybe semiglobata* (Batsch) Noordel.] – on droppings; div 115; Oct 2012.

***Suillus bovinus*** (L.) Roussel – on ground; div 91; Oct 2012; ML, MS.

***S. luteus*** (L.) Roussel – on ground; div 1B; Sep 2014; ML, MS.

***S. grevillei*** (Klotzsh) Singer – on ground; LF; div 113; 114; Sep 2012; ML.

***Tapinella atrotomentosa*** (Batsch) Šutara [= *Paxillus atrotomentosus* (Batsch) Fr.] – on logs and stumps of *Pinus*; div 30; 39; 41; Aug, Oct 2012; ML.

***T. panuoides*** (Fr.) E.-J. Gilbert [= *P. panuoides* (Fr.) Fr.] – on logs of *Pinus*; LF; div 15A; 111; Aug, Oct 2012.

***Thelephora terrestris*** Ehr. – on ground and wood; FQ; div 1A; 1B; 9; 31; 39; 70; Aug 2012; Sep 2014; ML.

***Trametes gibbosa*** (Pers.) Fr. – on stumps and logs of *Fagus*; LF, GF; div 13, 14 (Gosań Mt); 48; 94; 110; 113; 114; 125 (BDSP); Jul–Nov 2012.

***T. hirsuta*** (Wulfen) Pilát – on wood; LF, GF; div 1C; 8; 15A; 39; 40; 48; 127, 128a, 128Az (WSSP); Jul–Nov 2012.

***T. ochracea*** (Pers.) Gilb. & Ryvarden – on wood; GF; div 111; 121; 125 (BDSP); Oct 2012.

***T. pubescens*** (Schumach.) Pilát – on wood; GF; div 127 (WSSP); Aug 2012; R.

***T. versicolor*** (L.) Lloyd – on wood; LF; div 89; 91; 97; Sep–Oct 2012; ML.

***Tremella encephala*** Pers. – on branches of *Pinus* and basidiocarps of *Stereum sanguinolentum*; div 9; 128Ah; Aug 2012.

***T. mesenterica*** (Schaeff.) Retz. – on twigs of *Quercus*; FQ, LF; div 68; 69; Oct 2012; Sep 2014; ML.

***Trichaptum abietinum*** (Pers. ex J. F. Gmel.) Ryvarden – on wood of *Pinus*; FQ, LF, GF; div 1B; 1C; 2g,n; 8; 9; 15; 31; 39; 40; 41; 46; 62; 68; 70; 97; 125 (BDSP); 128Ah; Jul–Nov 2012; Sep 2014, 2016; ML.

***T. fuscoviolaceum*** (Ehrenb.) Ryvarden – on logs of *Pinus*; LF; div 1A; 1B; 41; 104; Aug 2012.

***Tricholoma lascivum*** (Fr.) Gillet – on ground; GF; div 125 (BDSP); Oct 2012.

***T. scalpturatum*** (Fr.) Quél. – on ground; LF; div 2 (SJSP); 20; Nov 2012.

***T. sulphureum*** (Bull.) P. Kumm. – on ground; LF; div 2 (SJSP); 116; Oct–Nov 2012; ML.

***T. terreum*** (Schaeff.) P. Kumm. – on ground; GF; div 1A; 1B; 2g,n; 125 (BDSP); Oct–Nov 2012; ML.

***T. virgatum*** (Fr.) P. Kumm. – on ground; LF, GF; div 71; 125 (BDSP); Oct 2012.

***Tricholomopsis rutilans*** (Schaeff.) Singer – on stumps of *Pinus*; LF; div 15; 31; 70; Aug, Oct 2012; Sep 2014; ML.

***Tubaria furfuracea*** (Pers.) Gillet – on ground; LF, GF; div 109; Oct 2012.

***Tylopilus felleus*** (Bull.) P. Karst. – on ground; LF; div 9; 16; 17; 39; 40; 46; 88; 105; Aug 2012; Sep 2016; ML, MS.

***Volvariella bombycina*** (Schaeff.) Singer – at the base of *Fagus*; LF; div 46d; Sep 2016; R.

***Vuilleminia comedens*** (Nees) Mraire – on branches of *Quercus*; LF, GF; div 14 (Gosań Mt); 39; 41; 46; 48; 68; 89; 98; 114; 127 (WSSP); Jul–Nov 2012; May 2013; Sep 2016.

***Xerocomellus chrysenteron*** (Bull.) Šutara [= *Xerocomus pascuus* (Pers.) E.-J. Gilbert] – on ground; LF, GF; div 2 (SJSP); 11, 12 (ZCSP); 20; 25 (MRSP); 30; 31; 32; 48; 68; 70; 71; 91; 97; 98; 111; 113; 114; 115; 121; 125 (BDSP); 127 (WSSP); Jul–Nov 2012; Sep 2014; ML, MS.

***Xerocomus subtomentosus*** (L.) Quél. – on ground; LF; div 1C, 46; Aug 2012; Sep 2016; ML, MS.

***Xeromphalina caulicinalis*** (Fr.) Kühner & Maire (= *X. fellea* Maire & Malençon) – on ground and needles; LF; div 8; 9; 13 (Gosań Mt); 70; 91; 111; Aug, Oct 2012; Sep 2014.

***Xerula radicata*** (Relhan) Dörfelt – on roots of *Fagus*; LF, GF; div 13, 14 (Gosań Mt); 15, 15A; 15B; 16; 48; 67, 68, 89; 94; 97; 104; 105; 110; 114; 116; 125 (BDSP); 127 (WSSP); Jul–Nov 2012; Sep 2016; AR.

***Xylobolus frustulatus*** (Pers.) Boidin – on old logs of *Quercus*; CF, LF; div 11 (ZCSP); 46d, 68g; May 2014; Sep 2016; V.

## Discussion

In total, in WNP 476 fungal taxa have been identified so far, which constitutes approximately 13% of all macromycetes known from Poland [40–42]. Over one third (i.e., 179 species) of them, had not been reported until now from investigated area.

The occurrence of 143 species given by, e.g., Lisiewska [2], Stier [18], Skirgiełło [21], Ławrynowicz [23], and Friedrich [27] has been confirmed. Although conducted studies focused on selected phytocoenoses, they revealed a great diversity in the Park mycobiota. The number of macrofungi taxa found in WNP is higher than the number of fungi reported from other national parks in Pomerania. Almost 100 fewer taxa were given from the Drawieński National Park (379) (Stefaniak 2013, cited in [43]). Also, a lower number of fungal species in comparison with WNP, was recorded in NP Bory Tucholskie (413) [8] and in the Słowiński NP (429) [3]. As a rule, national parks in other regions of Poland, e.g., Kampinowski NP (1533) [43], Bieszczadzki NP (1054) (Kujawa et al. 2011, cited in [43]), have a greatest variety and abundance of fungi. However, it should be noted that the studies took place at different intensity, on the objects of different size, in different ecosystems and plant associations of varying diversity.

Mycological observations conducted in season 2012 and sporadic observations in the following 4 years, as well as available literature data may constitute for further detailed studies of macrofungi of the Wolin National Park. Fluctuations and periodicity of the appearance of fruiting bodies do not allow for detailed mycological analysis and drawing far-reaching conclusions. The number of fungi in the WNP is likely to be higher and further studies may result in discovering other rare and endangered taxa that had not been reported earlier.

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