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Marasmius and allied genera in forest communities of the Białowieża National Park

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L i s i e w s k a M.: *Marasmius and allied genera in forest communities of the Białowieża National Park*. Acta Mycol. 29 (1): 59-67, 1994

Distribution of 13 species of *Marasmius* and allied genera on a permanent research plot in different forest communities is demonstrated on maps. The following species were taken into account: *Marasmius androsaceus, M. bulliardii, M. chordalis, M. cohaerens, M. epiphyllus, M. lupuletorum, M. recubans, M. rotula, M. scordonius, M. splachnoides, M. wynnei, Marasmiellus ramealis* and *Micromphale perforans*.

The Białowieża Primeval Forest occupies an area of 1250 km^2 on the boundary between Poland and Belorussia. Within the borders of Poland it covers 580 km^2. It represents the lowland type of forests specific for the boreo-nemoral zone. The relatively short vegetation period (185 days) and the long duration of snow cover (92 days) favour boreal elements in the plant cover. In the physically-geographic sense this area is located in East Europe (F a l i ń s k i, 1988). The Białowieża Forest differs from West European forests mostly in the absence of beech, and from the East European forests in the abundance of oak and hornbean in the structure of forest communities (F a l i ń s k i, 1986).

The Białowieża Primeval Forests is one of the best preserved forest complexes on the European Lowland. The interest in this nature monument has increased since the first National Park in Poland was established here. The Białowieża National Park. (47 km^2) comprises the primeval forest ecosystems strictly preserved since 1921 (F a l i ń s k i, 1986). In 1977 the Białowieża National Park was included into the world's network of World List of Biosphaere Reserves by UNESCO and two years later it was placed on the World List of Cultural and Natural Heritage (S o k o ł o w s k i, 1983; Z i m n y, 1988).

Mycological team study was undertaken within the Programme CRYPTO in the National Park in the years 1987-1991. It concerned the better understanding of the role of cryptogamic plants in the structure of forest communities. The study was

carried out on a permanent research plot (No. V-100) of 154 ha area with fixed division into 1 ha squares (Fig. 1, 2). The plot comprised 6 forest communities representative for the whole National Park, such as: *Tilio-Carpinetum, Fraxino-Alnetum, Carici elongatae-Alnetum, Pino-Quercetum, Querco-Piceetum* and *Peucedano-Pinetum*. Mycological observations were made in different months during the vegetative period in the course of 4 years. The aim of the study was to determine the role of fungi in the structure of phytocoenoses in relation to substrate and tree composition, (F a l i ń s k i, 1991; F a l i ń s k i, M u ł e n k o, 1992).

Fig. 1. Location of the permanent research plot (100) in the Białowieża National Park

During mycological investigations, the author paused his attention on the collection of species of *Marasmius* and allied genera. On the permanent research plot 11 species of the genus *Marasmius*, 1 species of *Marasmiellus* and 1 *Micromphale* species were found and investigated. The nomenclature of species has been adopted from M o s e r (1983).

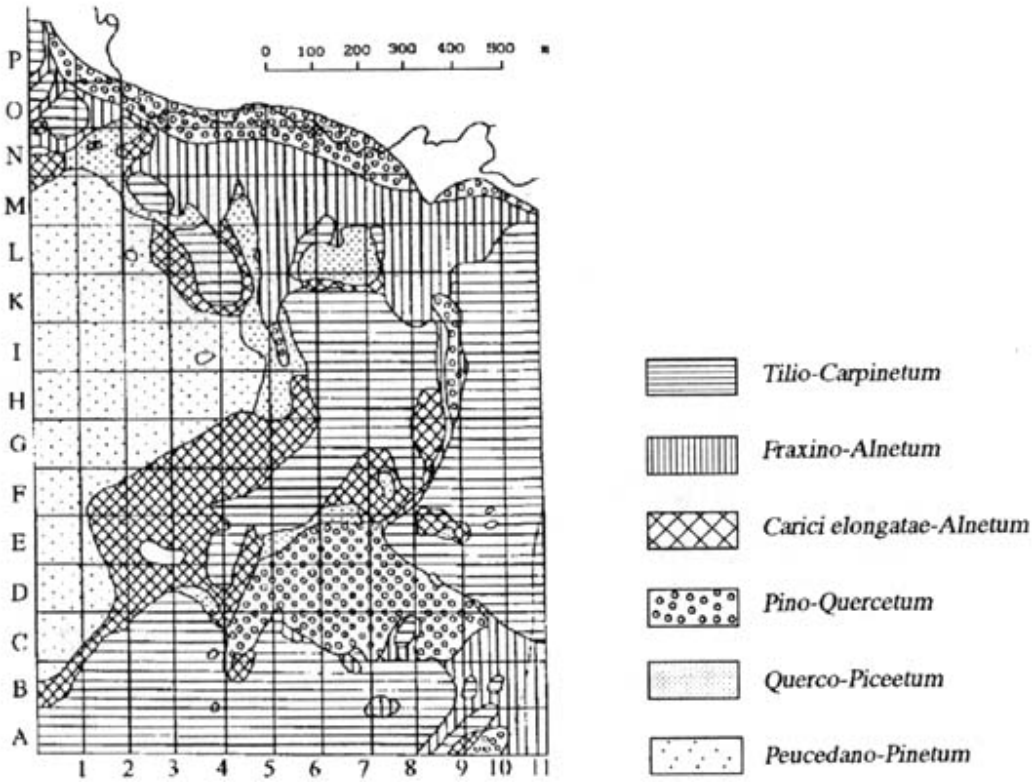


Fig. 2. Vegetation map of the permanent plot

***Marasmius androsaceus* (L.: Fr.) Fr.** This species was frequently found in *Peucedano-Pinetum* association, observed less frequently it was in *Pino-Quercetum* and *Querco-Piceetum* associations. It occurred sporadically in deciduous forests (Fig. 3). It was growing on needle litter and dead small twigs of *Pinus* and *Picea*.

M. androsaceus is one of the commonest *Marasmius* species in the coniferous forests in Poland.

***Marasmius bulliardii* Quél.** It was found rarely in few localities mainly in *Fraxino-Alnetum* association, sporadically in *Tilio-Carpinetum* and *Pino-Quercetum* associations on fallen leaves (Fig. 4).

This typical form (f. *bulliardii*) with stipe outgrowths was usually recorded in beech and oak forests in Poland.

***Marasmius chordalis* Fr.** The species was only noted in one locality in *Tilio-Carpinetum* association in the litter, probably on fern remains (Fig. 5).

It is rare in Poland, recorded among others on dead *Pteridium aquilinum* in mixed oak-pine forests on the Wolin Island.

***Marasmius cohaerens* (Pers.: Fr.) Fr.** It occurred occasionally in *Querco-Piceetum* and *Tilio-Carpinetum* associations on broadleaves or mixed litter (Fig. 6).

In Poland, this species is not common; it was recorded in deciduous and mixed forests and parks.

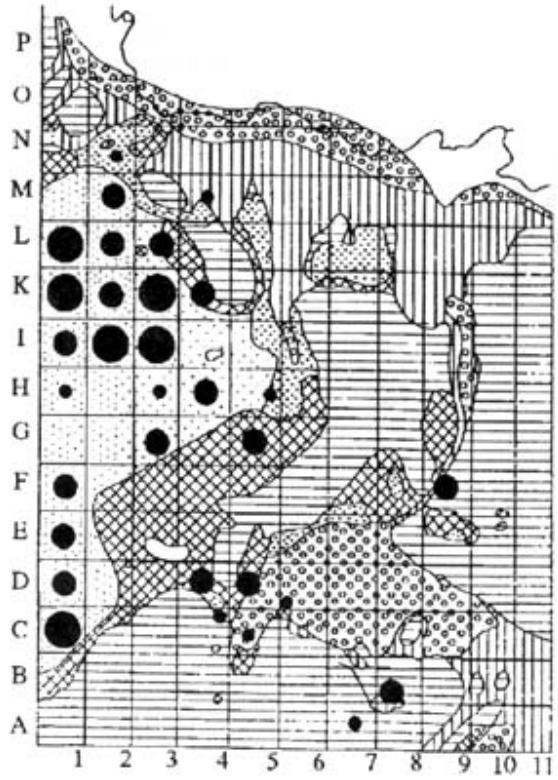
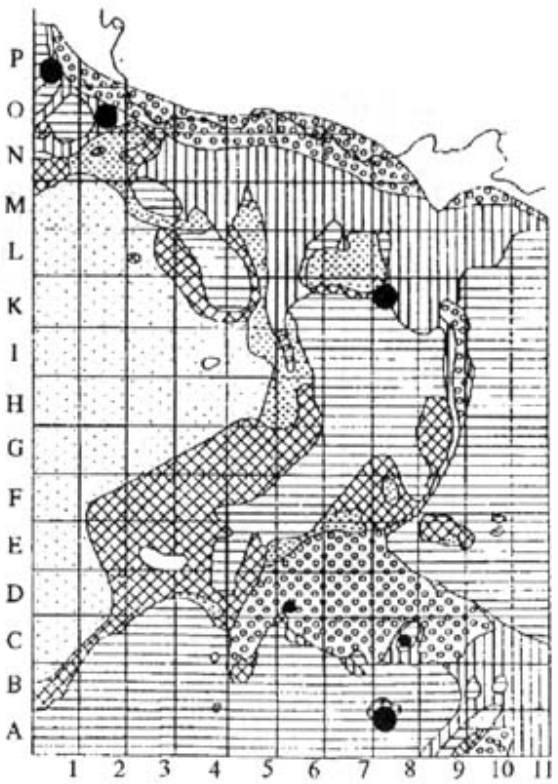


Fig. 3



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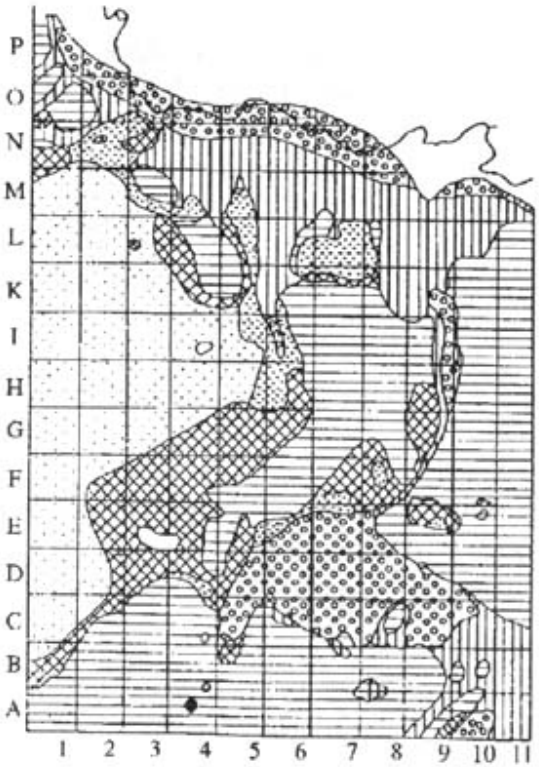

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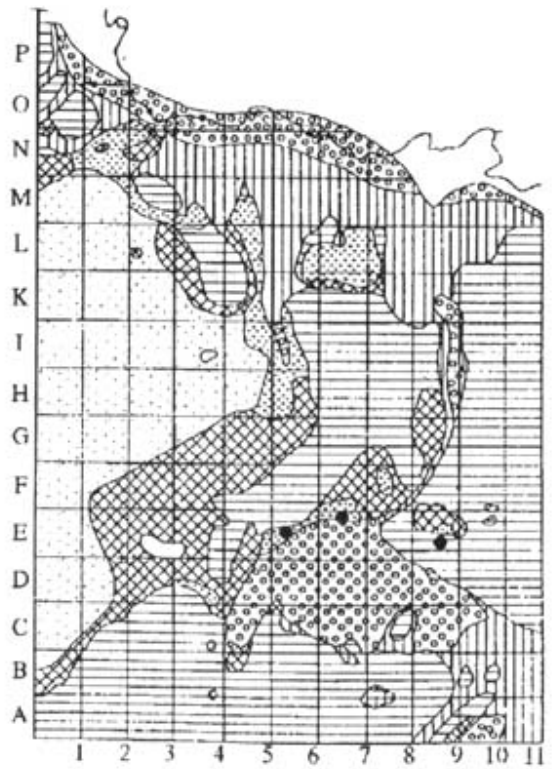

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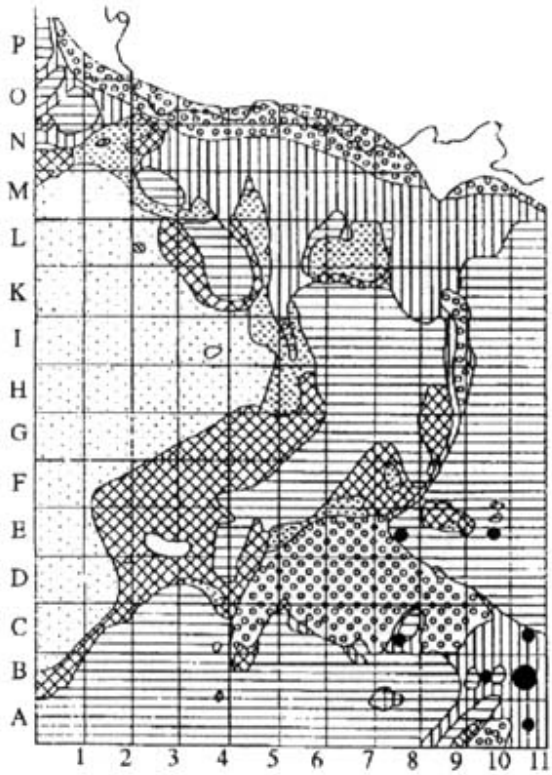

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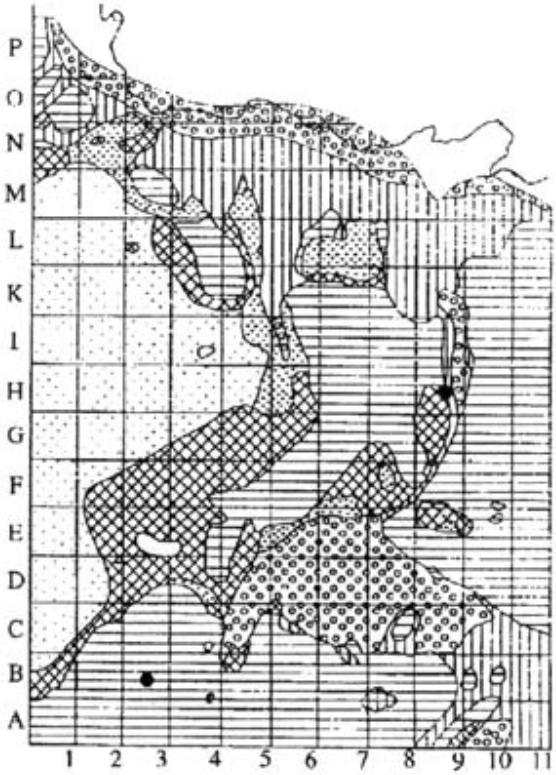

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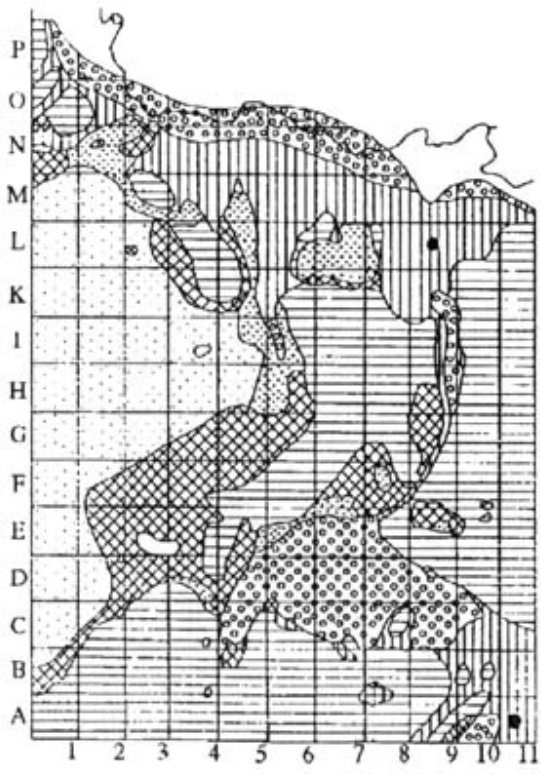

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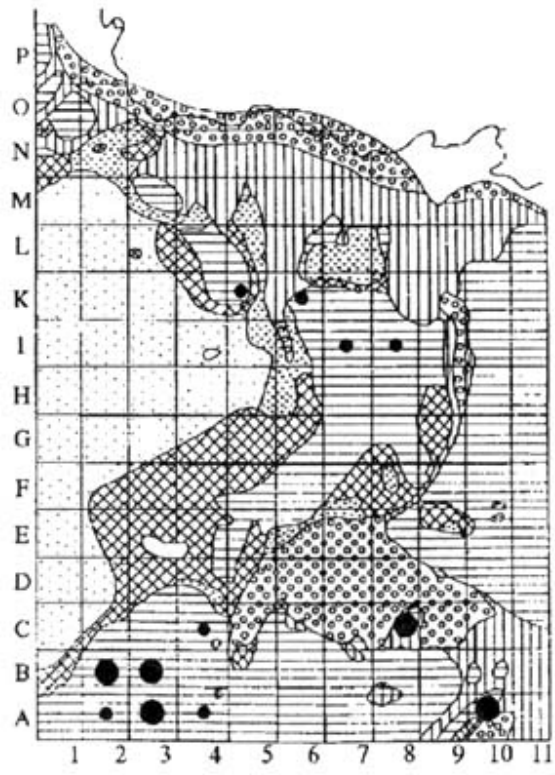


Fig. 10

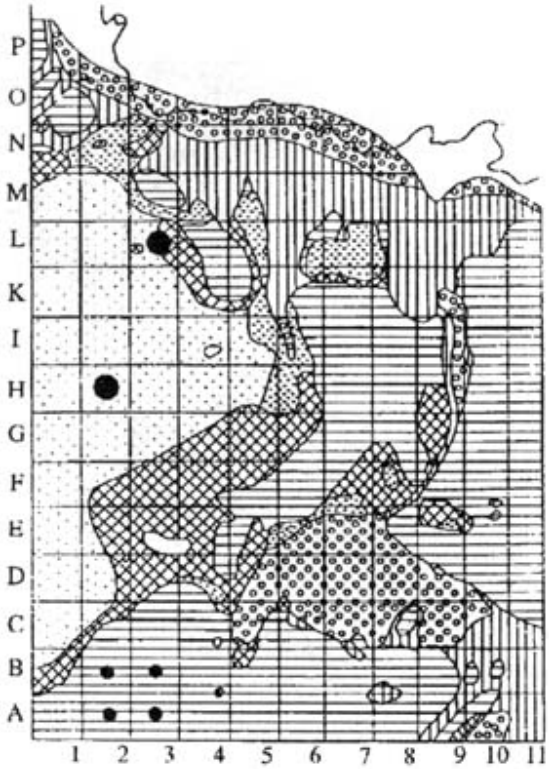


Fig. 11

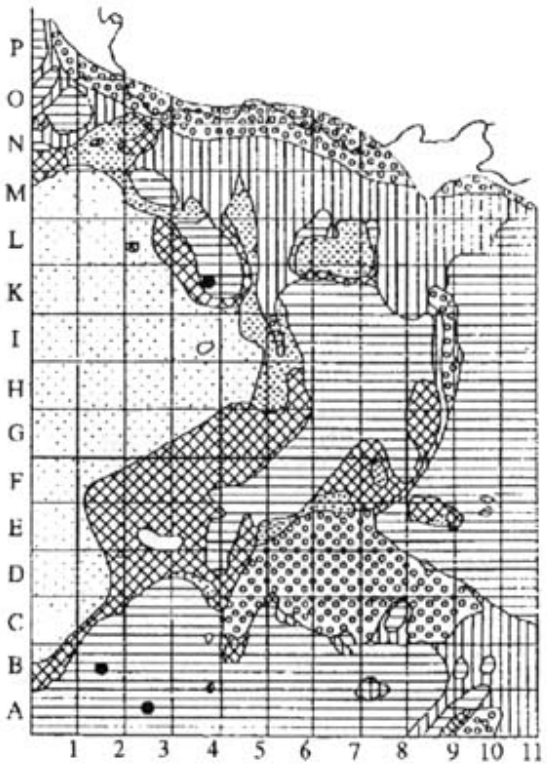
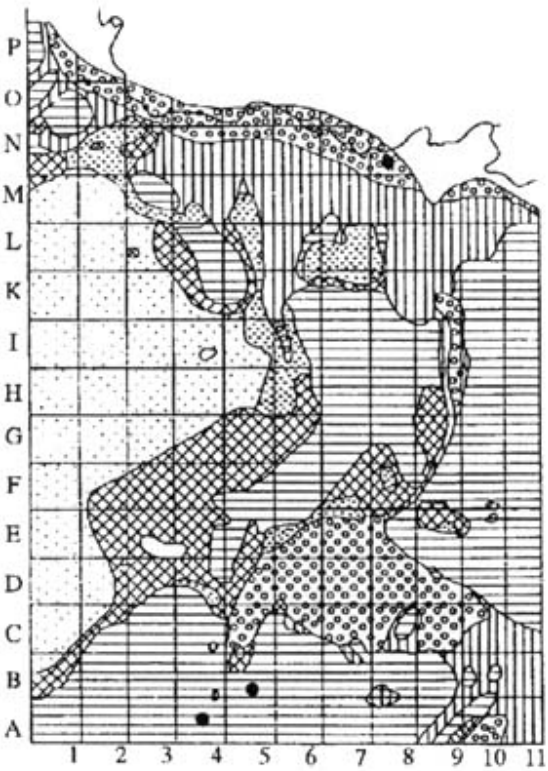


Fig. 12



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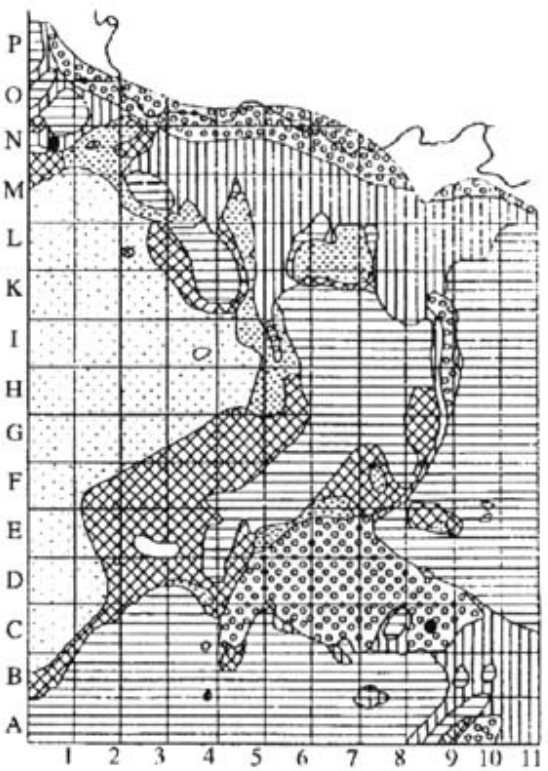

Fig. 14

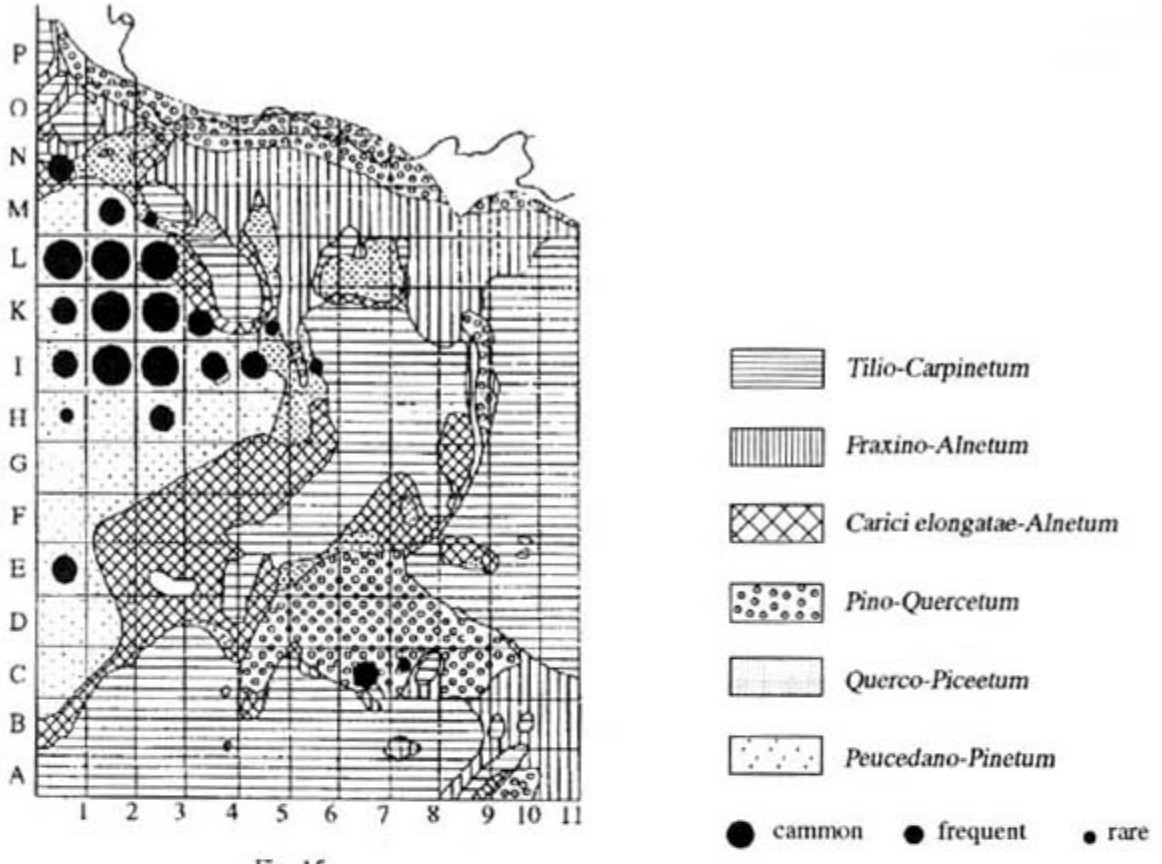

Fig. 15

Fig. 3-15. Distribution of species of *Marasmius* and allied genera on the permanent plot in forest communities

3 – *Marasmius androsaceus* (L.: Fr.) Fr.; 4 – *M. bulliardii* Quél.; 5 – *M. chordalis* Fr.; 6 – *M. cochaerens* (Per.: Fr.) Fr.; 7 – *M. epiphyllus* (Pers.: Fr.) Fr.; 8 – *M. lupuletorum* (Weinm.) Fr.; 9 – *M. recubans* Quél.; 10 – *M. rotula* (Scop.: Fr.) Fr.; 11 – *M. scorodonius* (Fr.) Fr.; 12 – *M. splachnoides* Fr.; 13 – *M. wynnei* Berk. et Br.; 14 –*Marasmiellus ramealis* (Bull.: Fr.) Sing.; 15 – *Micromphale perforans* (Hofn.: Fr.) Sing

***Marasmius epiphyllus* (Pers.: Fr.) Fr.** The species was noted in few localities mainly in *Fraxino-Alnetum*, rarely in *Tilio-Carpinetum* association. It was growing on fallen leaves of *Alnus glutinosa, Fraxinus excelsior* and *Quercus robur* (Fig. 7).

It is quite common in Poland on the midribs and petioles of leaves in damp sites.

***Marasmius lupuletorum* (Weinm.) Fr.** Recorded in two localities on leaf litter in *Tilio-Carpinetum* and *Fraxino-Alnetum* associations (Fig. 8).

The species is widespread in Poland, growing on fallen leaves and twigs in deciduous forests.

***Marasmius recubans* Quél.** Noted only twice in *Fraxino-Alnetum* association in humid places on fallen leaves of *Alnus* and *Quercus*, mostly on the petioles and midribs (Fig. 9).

In Poland, this species is rather common in beech and oak-hornbeam forests, scattered in the riverside and flood plain forests.

***Marasmius rotula* (Scop.: Fr.). Fr.** Occurred frequently in *Tilio-Carpinetum* association, gregarious to cespitose on fallen twigs and pieces of decayed deciduous wood (Fig. 10).

In Poland, it is one of the most common *Marasmius* species in oak-hornbeam, alluvial and alder forests.

***Marasmius scordonius* (Fr.) Fr.** The species was scarcely found at several sites in *Tilio-Carpinetum*, abundantly in *Peucedano-Pinetum* and *Pino-Quercetum* associations, on mixed litter (Fig. 11).

In Poland, this fungus is common in mixed pine-oak forests and in dry forest meadows.

***Marasmius splachnoides* Fr.** It was found only in *Tilio-Carpinetum* association, scarcely on fallen oak leaves in litter (Fig. 12).

In Poland, it was recorded in deciduous woods as well as in mixed pine-oak forests.

***Marasmius wynnei* Berk. et Br.** The specimens occurred rarely in few localities, mainly in *Tilio-Carpinetum* and once in *Carici elongatae-Alnetum* association. They were collected from leaf litter and rotten trunks (Fig. 13).

It is rather common in Poland, recorded in moist oak-hornbeam forests, less frequently in beech and mixed forests and parks.

***Marasmiellus ramelis* (Bull.: Fr.)** Sing. Recorded in two localities on litter in *Carci elongatae-Alnetum* and *Fraxino-Alnetum* associations (Fig. 14).

In Poland, it is rather widespread, growing on dead twigs sometimes covered by litter in deciduous forests.

***Micromphale perforans* (Hofm.: Fr.) Sing.** It is one of the most common species of *Peucedano-Pinetum* association, noted less frequently on several sites in *Querco-Piceetum*, *Pino-Quercetum*, as well as in *Carici elongatae-Alnetum* on needle litter of *Picea* (Fig. 15).

In Poland, it is common and widely distributed mainly in spruce forests.

In the Biosphere Reserve in Białowieża, species of *Marasmius* and allied genera were fruiting most abundantly in *Peucedano-Pinetum* associations. *Marasmius androsaceus* and *Micromphale perforans* found in this forest community have the best conditions for their growth on needle litter.

In *Tilio-Carpinetum* association dominating in the study area, the species of the genus *Marasmius* were recorded less frequently. There were such species, as: *Marasmius rotula*, *M. splanchoides*, *M. wynnei*, *M. lupuletorum* and *M. scorodonius* growing on leaf litter and also on rotten wood.

Several species associated with humid places, such as: *Marasmius epiphyllus*, *M. recubans*, *M. bulliardii* and *Marasmiellus ramealis* were noted in *Fraxino-Alnetum* and *Carici elongatae-Alnetum* associations.

The presence of *Picea abies* in the tree stand of all forest communities in the Białowieża National Park brought about the occurrence of fungi usually associated with coniferous forests (e.g. *Marasmius androsaceus, M. scorodonius, Micromphale perforans*) in the oak-hornbeam and floodplain forests.

The 4-years mycological observations on the permanent plot in the Białowieża Primeval Forest have shown a closer connection of saprophytic species of *Marasmius* and allied genera to the tape of substrate and tree composition than to the forest communities.

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