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Fungi of the Sarnia Skała massif in the Tatra Mountains (Poland)

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Dedicated to the late Professor Władysław Wojewoda

FUNGI OF THE SARNIA SKAŁA MASSIF IN THE TATRA MOUNTAINS (POLAND)

ANNA RONIKIER

Abstract. This study is a detailed assessment of the diversity of agaricoid, boletoid, cyphelloid and cantharelloid fungi on the Sarnia Skała massif (Tatra National Park, S Poland), a small calcareous mountain harboring lower montane beech forest, upper montane spruce-dominated forest, and a small area of subalpine dwarf mountain pine community. This investigation, the first comprehensive mycological study in the Tatra Mts, is based on repeated surveys of the whole study area and detailed observations in 12 permanent plots (four in each vegetation belt) through six vegetation periods (1999–2004). In total, 297 taxa were recorded in the study area, 115 (39%) of which have not been reported from the Tatra Mts before. Distribution maps and altitudinal range diagrams are given for all species in the study area, their known distribution in the Tatra Mts is briefly summarized, and 172 species rare in Poland are described in detail and their micromorphological features are illustrated. Also in the permanent plots, mycocoenological observations were made in order to distinguish groups of species locally characteristic of the typical plant associations occurring in the lower montane, upper montane and subalpine belts; 42 species were recognized as characteristic of lower montane beech forest, 8 of upper montane spruce forest, and 11 of dwarf mountain pine shrubland. A general biogeographical analysis of species recorded on the Sarnia Skała massif revealed a relatively large group of 92 fungi representing the boreal-mountain element, associated with mountain areas and boreal forests and significantly contributing to the specificity of the fungi of mountain regions. A comparison of the study area's fungal diversity with that of other mycologically investigated mountain ranges in the Alps and the Carpathians showed that the study site was most similar to the Swiss National Park and Berchtesgaden National Park. This comparison demonstrates that the diversity and species composition of fungi on the Sarnia Skała massif is typical for high-mountain calcareous areas.

Key words: Agaricales, Boletales, Cantharellales, Russulales, diversity, boreal-mountain element, distribution, mycocoenology, *Dentario glandulosae-Fagetum, Polysticho-Piceetum, Pinetum mugo carpaticum*, Tatra National Park, Poland

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INTRODUCTION

The Tatra Mts form the highest massif of the Carpathian range (Fig. 1a) and the only Carpathian massif that contains all altitudinal vegetation belts: lower montane forest, upper montane forest, and the subalpine, alpine and subnival belts, well developed above the timberline. The mountains are built of diverse bedrock, including granitic and calcareous, and their geomorphology is largely characterized by postglacial relief reflecting the action of the Pleistocene glaciations. Due to their location within the Carpathian chain, their variety of habitats and history, the Tatra Mts are the most important diversity center of mountain biota in this part of Europe (Pawłowski 1977). The whole area is protected as national parks in both Poland and Slovakia. The flora of vascular plants, mosses or lichens in the Tatra Mts has been explored in greater depth, but data on the regional fungi are sparse and fragmentary (Wojewoda 1996).

Approximately 700 species of macromycetes are known from the Polish part of Tatra National Park (TNP), but the majority of mycological reports are based on very brief trips to the mountains. No previous study has been based on long-term observations spanning several years (Wojewoda 1996). The most protracted investigations were made by Frejlak (1973) in the vicinity of Morskie Oko lake in July/August of 1958 and 1967 but they did not cover the entire vegetative season. Our current knowledge of fungi in TNP is therefore far from exhaustive. This was evident even at beginning of this project: 43% of the species I then recorded through the vegetative season in the Polish part of TNP were not previously reported from the area (Ronikier 2002).

The Sarnia Skała massif is a small calcareous mountain close to the town of Zakopane (Fig. 1b) and easily accessible. The first records of fungi on the massif come from the first study of macromycetes in the Polish Tatras. Krupa (1886) reported *Geaster hygrometricus* Pers. from the Dolina Białego valley. [According to Wojewoda *et al.* (1986), a *Geaster hygrometricus* specimen Krupa found on the neighboring Nosal massif is *Geastrum fimbriatum* Fr., so the locality in the Dolina Białego valley is also likely that of *G. fimbriatum*]. A study by Rouppert (1912) giving some species, mostly ascomycetes, is the second work reporting localities of fungi on the Sarnia Skała massif. Wróblewski (1922) and Teodorowicz (1933) listed a few localities of aphyllophoroid fungi. Working on mycorrhizal symbiosis, Dominik and Pachlewski (1956) published some localities from the Sarnia Skała area, but their list of species includes those from localities not on the massif, so it is not clear which species were collected in the study area. Wojewoda *et al.* (1986) reported further species from the Sarnia Skała area: 9 aphyllophoroid fungi and 5 species of agaricoid and cantharelloid fungi. An additional 41 species were reported in a recently published list of ascomycetes collected as a by-product of the present study (Chmiel & Ronikier 2007). The present study is the first in-depth long-term investigation of fungi in the Polish part of the Tatra Mts.

The Sarnia Skała massif is one of the most interesting regions in the TNP and a special part of the Tatra Mts. The altitudinal limits of the vegetation belts are significantly lower there; this has been called the Sarnia Skała phenomenon (Piękoś 1968). An important feature of the massif is the presence of well-preserved natural montane forests; unlike in some other parts of the Polish Tatras, they have been less affected by industrial exploitation. This makes the Sarnia Skała massif a good model area for an initial assessment of fungal diversity in the calcareous part of the Tatra Mts.

The main aims of this study were (*i*) to examine the diversity of fungal species occurring on the Sarnia Skała massif and present the spatial and altitudinal distribution of every species in the study area in detail, (*ii*) to distinguish groups of species locally characteristic of the typical plant associations in the lower montane, upper montane and subalpine belts, based on mycocoenological observations in permanent plots, (*iii*) to distinguish

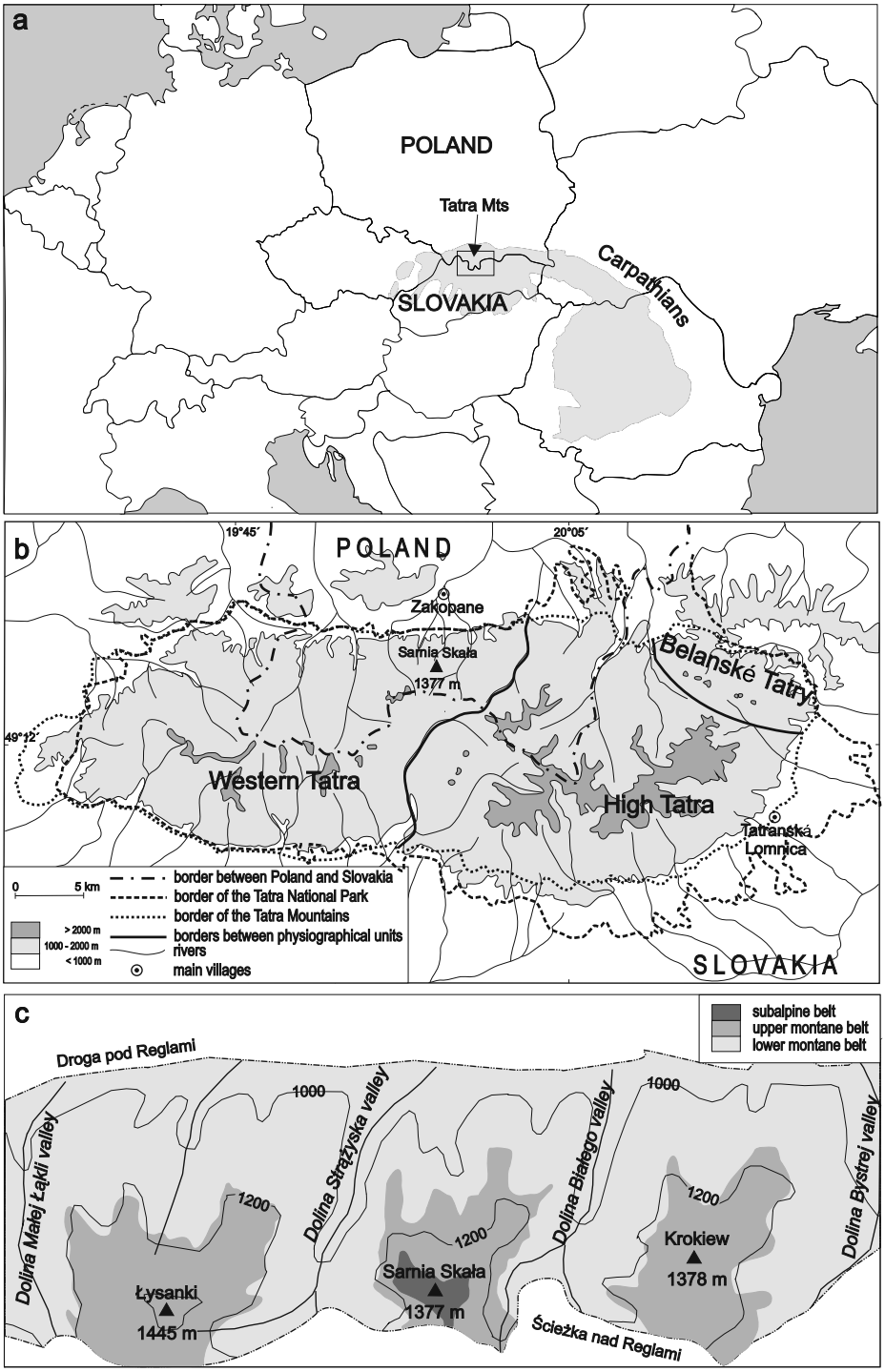


Fig. 1. Localization of the study area: a – situation of the Tatra Mts within the Carpathians, b – situation of the Sarnia Skała massif in the Tatra Mts, c – altitudinal vegetation belts in the Sarnia Skała and neighboring massifs.

the group of boreal-mountain species and estimate its importance for the fungi of the study area, and (*iv*) to compare the fungal species composition on the Sarnia Skała massif with that in some other mycologically investigated mountain ranges in the Alps and Carpathians. As the first long-term project on agaricoid, boletoid, cantharelloid and cyphelloid fungi in the Tatra Mts, this study also should provide a template for fungi monitoring studies in the TNP.

Description of the study area

Location and borders

The Sarnia Skała massif is in the West Tatra Mts, next to the town of Zakopane (Klimaszewski 1962, 1996) (Fig. 1b). The western part of the study area includes the Dolina Strążyska valley, which separates the Sarnia Skała massif from the adjacent Łysanki massif. Biały Potok stream running along the Dolina Białego valley lies between the Sarnia Skała massif and the Krokiew massif to the east (Fig. 1c). Czerwona Przełęcz pass together with the Ścieżka nad Reglami hiking trail, which crosses it, form its southern border, and the northern slopes are delimited by the Droga nad Reglami hiking trail (Fig. 2). The lowest point of the study area is at 897 m a.s.l., and the summit of Sarnia Skała reaches 1377 m a.s.l. (Horvat *et al.* 1980). The surface of the area's vertical projection is *ca* 3 km^2.

Topography

The summit rocky ridge of Sarnia Skała extends *ca* 200 m east-west (Fig. 3a, b) and is highest towards the east (Cywiński 1994). There are several groups of rocks in the area, the biggest one in the summit region, and a number of smaller rocks on the northern ridges and slopes of the massif (e.g., Zawieszka, Igła, Kazalnica) and on the slopes descending on the south side towards Czerwona Przełęcz pass (Fig. 2, 3a). Ragged crags of weathered dolomite formed of fragmented rock interconnected with veins of crystallic dolomite shape the typical landscape of the surrounding valleys (Bac-Moszaszwili & Gąsienica Szostak 1990). The western and eastern troughs (Sokołowski 1928) with patches of dwarf mountain pine shrubland stretch along the northern slopes of Sarnia Skała. Bounding the massif to the east and west and cutting into it from the north are river valleys which never were glaciated and have young-valley features, with narrow bottoms, steep slopes, many ledges and evorsion potholes (Klimaszewski 1962, 1996).

Hydrology

The study area is located within the northern subregion of the Tatra hydrographic region (Łajczak 1996). The subregion has a complex system of groundwater fissure circulation. There are groundwater reservoirs in dolomite and dolomitic limestone. as well as numerous springs, bog springs and low efficiency effluents (Wit-Jóźwikowa & Ziemońska 1962). Biały Potok stream in the Dolina Białego valley and Potok Strążyski stream in the Dolina Strążyska valley are the main streams of the Sarnia Skała massif (Fig. 2). Outside TNP, a stream flowing from the Dolina ku Dziurze valley flows into Potok Strążyski stream; water flowing along the Dolina Spadowiec valley flows into Potok Młyniska stream, an extension of Potok Strążyski stream (Wit-Jóźwikowa & Ziemońska 1985). These streams are relatively short and have a steep gradient. The steepest gradient of all the streams of the Polish Tatras (187‰) was reported for Biały Potok stream (Cywiński 1994). Water flowing down from the Sarnia Skała massif is delivered to the Biały Dunajec catchment.

Geology

The northern edge of the Tatra Mts is marked by a ledge formed where soft Podhale flysch shale comes into contact with hard Eocene nummulitic limestone. A narrow strip of limestone runs along the northern border of the study area. The entire Sarnia Skała massif is formed mostly of dolomites and limestone divided between soft shale of the upper Triassic period and the lower Jura running east-west. The upper part of the massif, including the summit, is built up of Middle Triassic dolomites forming a strip of dolomite massifs comprising Łysanki, Sarnia Skała and Krokiew. The lower part of the massif's northern ridges are built of shale.

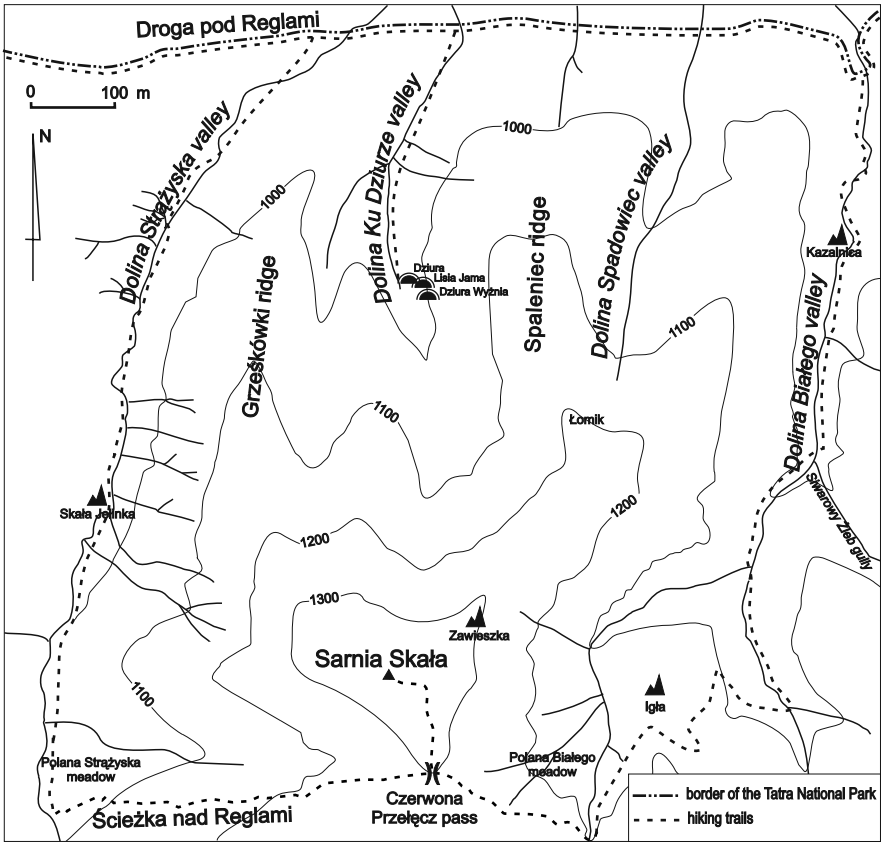


Fig. 2. Map of the study area.

Grześkówki ridge is formed of black shale containing thin layers of dark limestone. Additionally, the argillaceous shale, calcareous sandstone and quartzites occurring in the Dolina Spadowiec valley and Dolina ku Dziurze valley form a small share of the area's mineral composition. Another strip of shale stretches latitudinally south of the summit of Sarnia Skała. Upper Triassic red shale crops out in Czerwona Przełęcz pass, and Upper Triassic red and brown shale and sandstone occurs north of the pass towards the summit (Michalik 1985; Bac-Moszaszwili & Gąsienica Szostak 1990).

SOILS

Brown rendzinas (Cambi-Rendzic Leptosols) accompanied by medium-deep and deep brown soils and leached brown soils (Eutric Cambisols) dominate in the lower montane belt of the Sarnia Skała massif. These soils underlie the eutrophic and mesotrophic habitats of the Carpathian beech forests. They develop on a regolith of carbonaceous rock. There the bedrock plays an important role in determining soil-formation processes. pH is usually neutral or alkaline across the entire profile (Adamczyk 1962; Komornicki & Skiba 1985; Skiba 2002). Soil formation depends more on the climate and vegetation in the upper montane and subalpine belts, and the effect of bedrock is of lesser importance. Conifers growing in these belts shed large amounts of needles and contribute to the development of very thick, acidic raw humic formations. Humic rendzinas (Humi-Rendzic Leptosols) and tangel-rendzinas (Umbri-Rendzic Leptosols) form in these places (Skiba 2002). Microbiological humification is attenuated

in the cold and humid mountain climate, so that decomposition of organic matter is delayed and acidic ectohumic levels (pH 4.9–5.5) are reached even on the limestone regolith. Soil pH at deeper levels is alkaline (Komornicki 1952). Initial rendzinas (Rendzi-Lithic Leptosols) with a very shallow profile occur in the rocky summit area of the massif. They form fertile habitats for fissure, saxicolous and scree vegetation (Komornicki & Skiba 1985; Skiba 2002). These are typical lithogenic soils that show the greatest affinity with the bedrock. Their pH is neutral or alkaline, as they are formed on carbonaceous rock.

CLIMATE

The climate of the Tatras has features of the high mountain climate of the temperate zone, including an annual pressure regime with maxima in summer and minima in winter, much higher average temperature in autumn than in spring, a narrower annual temperature amplitude, high relative humidity in summer, and balanced summer and winter total precipitation ratios (Orlicz 1962; Hess 1996).

The study area lies within two altitudinal climate zones. The northern edges of the massif (up to *ca* 1000 m a.s.l.) are in the cool temperate zone with mean annual temperature from 4°C to 6°C. The remaining area lies in the cool zone with slightly lower mean annual temperature of 2–4°C (Hess *et al.* 1985; Hess 1996). The limits of individual climate zones overlap with the vegetation belts. The upper limit of the subalpine belt (dwarf mountain pine vegetation) runs along the 0°C isotherm, the upper limit of the upper montane belt overlaps the +2°C isotherm, and the upper limit of the lower montane belt overlaps the +4°C isotherm (Hess 1996). The observed natural lowering of the vegetation belts in relation to adjacent massifs, which has been called the Sarnia Skała phenomenon, probably is due to local climatic conditions (Piękoś 1968).

Detailed meteorological data from the Sarnia Skała area are not available, so here I give means from 1951–1960 provided by meteorological stations then operating at Myślenickie Turnie and in Zakopane (Orlicz 1962): mean annual air temperature 4.9°C for Zakopane (844 m a.s.l.) and 3.4°C for Myślenickie Turnie (1360 m a.s.l.); mean annual precipitation 1096 mm for Zakopane and 1444 mm for Myślenickie Turnie. The only meteorological station currently operating at an altitude comparable to that of the study area is in Zakopane in the lower montane belt. Two other stations, in Hala Gąsienicowa mountain pasture and on the Kasprowy Wierch massif, are above the timberline. Meteorological data from the station in Zakopane for the study months are given in Tables 1 and 2 and in Figure 5.

The pattern of thermic seasons as determined by mean monthly temperature shows rapid shifting of the climate with altitude. As established from long-term data (1931–1960), conventional climatologic

Table 1. Mean monthly air temperatures [°C] for the main period of the research.

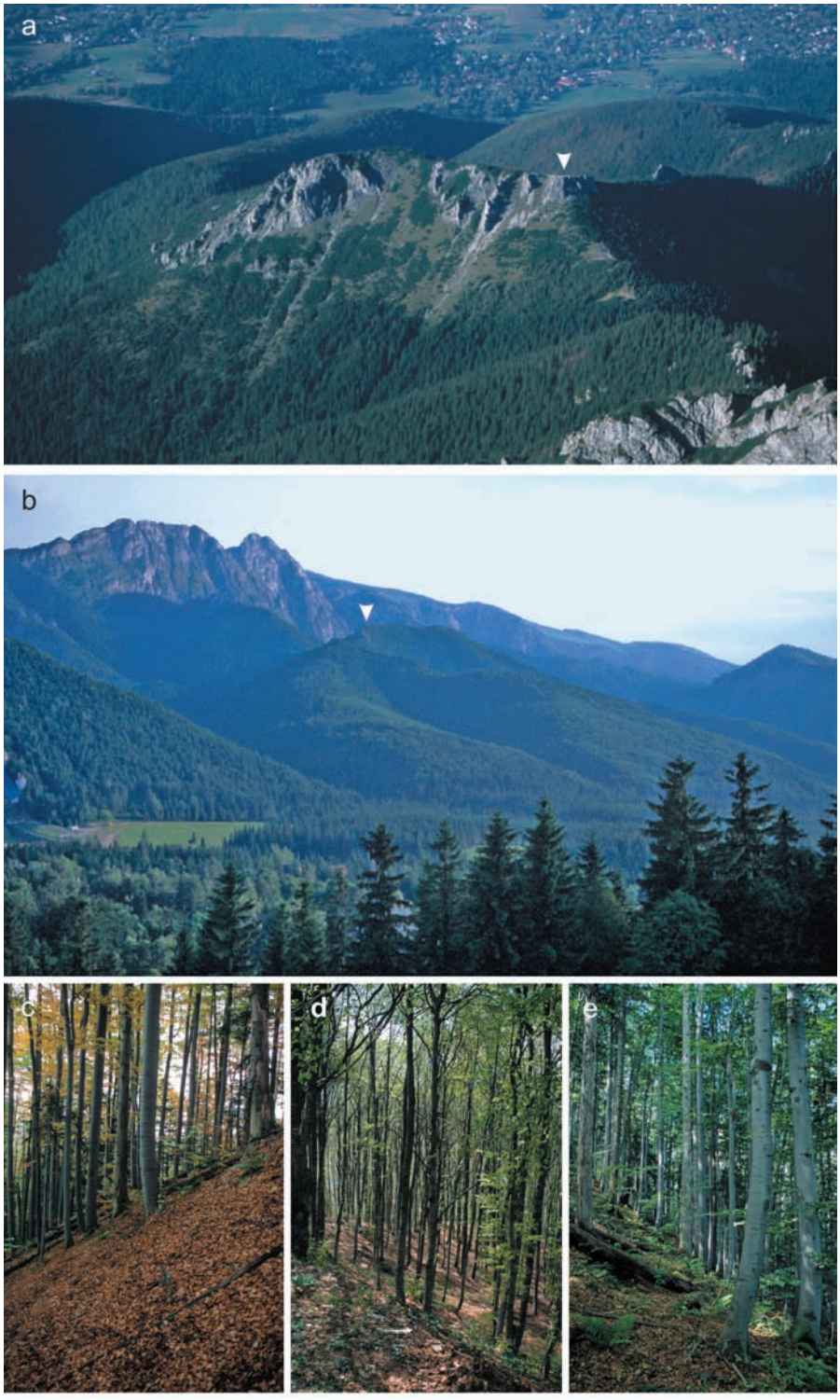
Year	Months						
	May	June	July	Aug.	Sept.	Oct.	Nov.
2001	12.0	11.9	16.1	15.9	9.0	8.6	–1.1
2002	13.8	15.1	16.9	15.5	8.8	4.2	3.9
2003	13.4	16.1	15.9	16.7	10.4	2.7	3.4

Table 2. Mean monthly precipitation [mm] for the main period of the research.

Year	Months						
	May	June	July	Aug.	Sept.	Oct.	Nov.
2001	102	254	439	75	123	26	74
2002	160	195	141	132	130	142	27
2003	201	51	222	36	90	73	21

→

Fig. 3. Sarnia Skała massif: a – summit ridge of the massif and its southern slopes (the summit marked with an arrow head) – view from the Długi Giewont Mt, b – northern slopes of the massif (the summit marked with an arrow head), c, d, e – patches of *Dentario glandulosae-Fagetum* association, c – permanent plot A1, d – permanent plot A2, e – permanent plot A3. (Photos: Michał Ronikier).


a
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e

summer does not occur, as the mean temperature did not exceed 15°C in any month (Orlicz 1962). Mean annual temperatures for 1931–1960 give four thermic seasons for Sarnia Skała: (*i*) winter (mean monthly temperature < 0°C) from mid-November to late March or early April depending on altitude, (*ii*) early spring (0–5°C) lasting about a month from mid-April to mid-May, (*iii*) spring and autumn (5–15°C) ending in mid-October, (*iv*) and early winter (0–5°C) lasting until mid-November (Orlicz 1962).

As temperatures have increased in Zakopane since 1973, probably due to the warming influence of the town, and have increased throughout the Tatras since 1988 (Niedźwiedź 1996), thermic summer may occur in the study area at present. Based on mean monthly air temperatures registered during the study period (Table 1) and definition of thermic summer (Orlicz 1962) I assumed that it occurred from June to August.

VEGETATION BELTS

Although the Sarnia Skała massif reaches only 1377 m a.s.l., as many as three vegetation belts can be distinguished: lower montane, upper montane and subalpine (Figs 1c, 6). The altitudinal limits of both the upper and lower montane belts are considerably lower (by *ca* 100 m) than on neighboring massifs (Fig. 1c) as well as in other parts of the Tatra Mts. As studies on the distribution of montane plants in the area show, the vegetation belt lowering is natural and probably the result of climatic factors having to do mostly with wind patterns (Piękoś 1968). The borders between altitudinal belts are usually not clear-cut and mosaic vegetation is observed in the transition zones.

In the study area the upper limit of the lower montane belt runs at 1100–1200 m a.s.l. and descends to even 1030 m a.s.l. at the bottom of the Dolina ku Dziurze valley (Piękoś 1968). Fertile Carpathian beech forest *Dentario glandulosae-Fagetum* dominated by beech, fir or both species is typical of the lower montane belt, where it develops on rendzinas. Its most fertile subassociation, *Dentario glandulosae-Fagetum cardaminetosum trifoliae*, dominates in the area, and *Dentario glandulosae-Fagetum calamagrostietosum arundinaceae* occupies small patches (Horvat *et al.* 1980). The former is distinguished by a high contribution of *Cardamine trifolia* in the herb layer. The presence of *Soldanella carpatica* is a special feature of Carpathian beech forests in the Tatra Mts. Acidophilous plant species of the class *Vaccinio-Piceetea* and calciphilous montane plants often co-occur here (Horvat *et al.* 1980; Dzwonko 1986). *Larix decidua* and *Pinus sylvestris*, introduced in this area, are on the western slopes of Grześkówki ridge (Piękoś 1968). *Abieti-Piceetum* occurs in the lower montane belt where the upper soil layers have been acidified. Patches of the association occur on the lower part of valley slopes and by the Droga pod Reglami hiking trail (Horvat *et al.* 1980). The association defined by Horvat *et al.* (1980) as *Carici-Festucetum tatrae* (current name *Carici sempervirentis-Festucetum tatrae*), with artificial spruce plantings, occupied a large area in the lower montane belt. Over recent decades it has changed to dense spruce forest. The azonal association *Petasitetum kablikiani* occurs in valley bottoms along streams.

The upper montane belt reaches up to *ca* 1300–1340 m a.s.l. On the Sarnia Skała massif (Piękoś 1968) and is dominated by calciphilous spruce forest *Polysticho-Piceetum* (= *Piceetum tatricum normale*). *Picea abies* dominates here and *Sorbus aucuparia* occurs in the shrub layer as an admixture. The relatively high contribution of species characteristic of fertile Carpathian beech forests in the herb layer is an important feature of this association (Dzwonko 1986; Matuszkiewicz W. 2001; Matuszkiewicz J.M. 2001), and *Huperzia*

→

Fig. 4. Permanent plots: a – patch of *Dentario glandulosae-Fagetum* association (permanent plot A4), b, c, d, e – patches of *Polysticho-Piceetum*, b – permanent plot B1, c – permanent plot B2, d – permanent plot B3, – permanent plot B4, f, g, h – patches of *Pinetum mugo carpaticum*, f – permanent plot C2, g – permanent plot C3, h – permanent plot C4. (Photos: Michał Ronikier).


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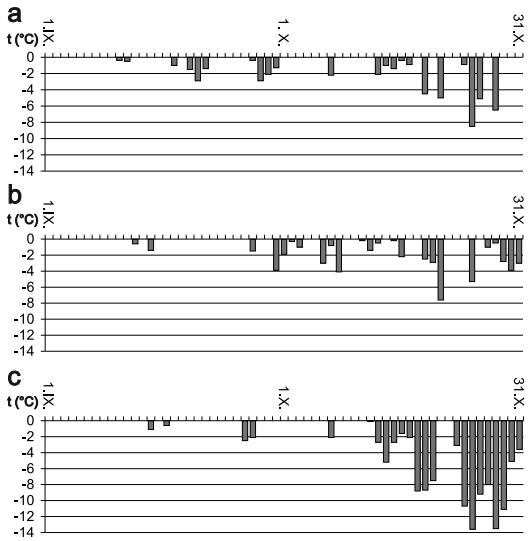

Fig. 5. Diagrams of days with ground frost in September and October: a – 2001, b – 2002, c – 2003.

selago is one of its characteristic species. Fallen trees (windfalls) cover a large expanse of the upper part of Grześkówki ridge and above the spring area in the Dolina ku Dziurze valley. The grassland association *Carici sempervirentis-Festucetum tatrae* occupies small patches of open rocky habitats, and is of lesser importance here. The upper limit of montane forest descends to 1264 m a.s.l., one of the lowest timberlines in the Tatra Mts, on the western slopes of Sarnia Skała (Piękoś 1968).

The subalpine belt, dominated by *Pinetum mugo carpaticum*, occupies 4.5% of the Sarnia Skała area (Piękoś 1968). The association is mostly composed of *Pinus mugo*; *Sorbus aucuparia* subsp. *glabrata* and *S. chamaemespilus,* characteristic of the association, occur as admixtures (Horvat *et al.* 1980). *Pinetum mugo carpaticum* is distinguished by the presence of endemic Carpathian species such as *Soldanella carpatica* and *Leucanthemum waldsteinii*, as well as species of the class *Betulo-Adenostyletea* (Matuszkiewicz W. 2001). A dense patch of *Pinetum mugo carpaticum* descending from the summit to 1300 m a.s.l. covers the northern slope. Subalpine grassland, mostly *Carici sempervirentis-Festucetum tatrae*, and patches of *Caricetum firmae* (= *Firmetum carpaticum*), occur on the southern slope between patches of dwarf mountain pine shrubland. *Silenetum prostratae*, typical of such habitats, is formed on screes.

HUMAN ACTIVITY

The earliest information on settlement in the Polish Tatra foothills, known as Podhale, dates to the early 13th century. Local population growth increased in the 14th century, and as villages developed the forest was increasingly exploited. The majority of the more valuable tree species, such as larch, yew and stone pine, may have been cut down as early as the 16th century (Liberak 1929). Local forests suffered large-scale damage during intensive development of mining and steelmaking in the Tatra Mts in the mid-19th century, when timber was harvested as fuel for mills and construction material for miners' houses (Liberak 1927, 1929). The original Carpathian beech forest was supplanted mostly by spruce; single fir, planted larch and old sycamore trees occurred on the Sarnia Skała massif in the mid-19th century (Piękoś 1968). The Droga pod Reglami hiking trail was a farm road, used for delivering ore from the Dolina Kościeliska valley to the smelter in Kuźnice (Liberak 1927).

Pasturing was another important factor contributing to forest depletion in the study area. The Polana Białego meadow and the Polana Strążyska meadow, two of the most important mountain pastures in the 19th century and early 20th century, are in the upper part of the Dolina Białego and Dolina Strążyska valleys (Liberak 1928). The forest was cut down and dwarf mountain pine was burnt on the western slope of Sarnia Skała on the Dolina Strążyska valley side to create more pasture (Piękoś 1968, after Eljasz 1874). Excessive cattle and sheep grazing in the Tatra Mts until 1925 helped degrade the forest, as sheep were also driven through the forests (Liberak 1928). Oxen were pastured on the small, flat, grassy plain in the Czerwona Przełęcz pass (Szczepanek 2003). Sheep have not been grazed for many years now, and the vigorous synanthropic vegetation in the slowly overgrowing glades is a remnant of former pasturing.

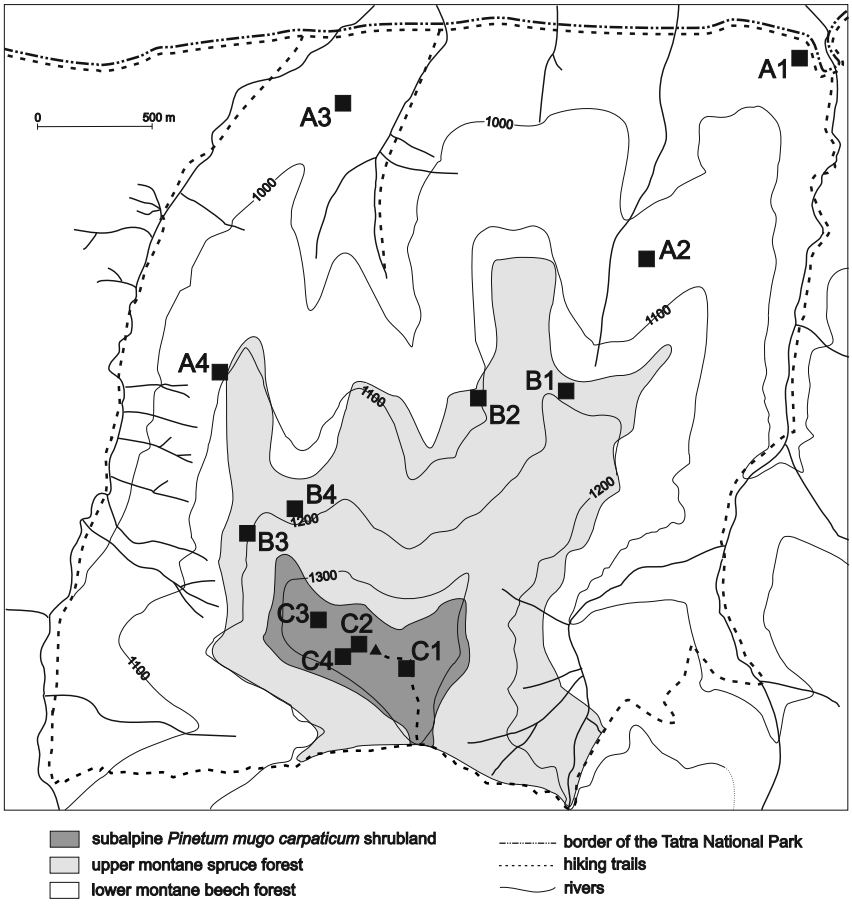

Fig. 6. Localization of permanent plots in the study area (explanations – see MATERIAL AND METHODS).

Wasteful harvesting of the lower montane forest has contributed to the elimination of old beech-fir forest stands. On the other hand, forest management has led to impoverishment of the original forest species composition through the artificial introduction of spruce stands, mostly of foreign origin, in the natural habitats of beech and fir. These monocultures, which were not hardy, were eliminated by woodworm and bark beetle infestations and diseases in the 1920s and the 1930s, after which beech naturally replaced the spruce trees (Piękoś 1968).

The forests on Sarnia Skała are now in significantly better condition and are less adversely impacted than neighboring massifs such as Krokiew or Łysanki (Piękoś 1968). Forest synanthropization is minimal (Myczkowski *et al.* 1985a). The majority of associations are primeval or natural, especially in the upper parts of the massif (Piękoś-Mirkowa 1985). Patches of old beech stands (over 100 years old) occur in the upper part of the Dolina ku Dziurze valley and on the western slopes of Spaleniec ridge, while a significant area of the upper montane belt is occupied by spruce forest over 100 years old (Myczkowski *et al.* 1985b).

Tourism is currently the main form of human activity in the area. Nearly all hiking trails run along the roads delineating the area borders. Only two short sections of trail cutting into the massif stretch along the Ścieżka nad Reglami hiking trail to the summit and along the Dolina ku Dziurze valley, leading to a rocky wall, Ściana ku Dziurze,

and its three caves. Located near Zakopane and built of solid, calcareous rock, Ściana ku Dziurze has been very popular with rock climbers and cavers in recent years (Cywiński 1994). Off-trail tourism is banned, and the former shepherds' paths have been disappearing. The lower part of the Dolina Białego valley, one of the most beautiful valleys in the Tatra Mts, comprises the Stanisław Sokołowski Reserve established in 1965, under strict protection (Szczepanek 2003).

Material and methods

Subject of study

Agaricoid, boletoid, cyphelloid and cantharelloid fungi are examined in the present study. They can be described as forming ephemeral, fleshy basidiomes that usually can be divided into a pileus and a more or less developed stem, sometimes absent. The hymenophore is composed of lamellae or tubes, although infrequently it can be formed by veins or be smooth. The fungi presented here represent the following families belonging to the class Agaricomycetes (cf. Hibbett *et al.* 2007; Knudsen & Vesterholt 2008): Agaricaceae, Amanitaceae, Auriscalpiaceae, Bolbitiaceae, Boletaceae, Cantharellaceae, Cortinariaceae, Crepidotaceae, Cyphellaceae, Entolomataceae, Favolaschiaceae, Gomphidiaceae, Hydnangiaceae, Hygrophoraceae, Hymenogasteraceae, Lyophyllaceae, Marasmiaceae, Omphalotaceae, Physalacriaceae, Pleurotaceae, Pluteaceae, Porotheleaceae, Psathyrellaceae, Pterulaceae, Russulaceae, Squamanitaceae, Strophariaceae, Tricholomataceae, Tubariaceae and Typhulaceae. The families are placed in four orders: Agaricales, Boletales, Cantharellales and Russulales. Agaricoid boletoid, cyphelloid and cantharelloid fungi will be referred to as 'fungi' below.

Field study methods

Investigations were conducted between May and November as well as sporadically in March, April and December in 1999–2004. Preliminary studies were carried out in the first two years, when fungi were collected from the entire area and permanent plot sites were selected. Observations in the area and systematic examination of permanent plots were conducted between 2001 and 2003. Supplementary investigations were performed in 2004. If not otherwise stated, the specimens were collected by the author or (in the case of field observations) their presence was noted by the author. The frequency of observations depended on factors including weather conditions, but the area was visited on average every two weeks, alternating between observations in the entire study area once a month and at permanent plots once a month (localities of all species found outside the plots were also recorded on these occasions).

The route method was used to investigate fungal species diversity and the entire area was examined. Whenever possible, a different route was chosen for each trip to ensure that all accessible parts of the massif were visited repeatedly and that the majority of typical and azonal plant communities as well as the transition zones between individual communities were examined. The habitat and substrate were recorded for each locality, and the altitude and coordinates were read on a 1:10,000-scale topographic map of the Tatra Mts.

Observations at permanent research plots played an auxiliary role and served to identify groups of species locally characteristic of associations typical of vegetation belts. Twelve square observation plots measuring 20 × 20 m were set up. Four plots were established in each plant association typical of individual vegetation belts (Figs 3c–e, 4, 6). Plots in the lower montane belt established in the *Dentario glandulosae-Fagetum cardaminetosum trifoliae* were assigned the letter A and coded A1 to A4. Plots in the upper montane belt established in the *Polysticho-Piceetum* were coded B1 to B4, and those in the subalpine belt (*Pinetum mugo carpaticum*) C1 to C4 (Fig. 6).

The plots were examined once a month between June and October in three successive vegetation seasons. The results of all the observations at the research plots are presented in mycocoenological tables (cf. Tables 4, 6, 8, pages 171, 174, 177 respectively). The results are given as values indicating the number of times species were recorded at a plot throughout the study; the range of degrees of abundance that the species reached is given as an exponent. Abundance was scored on a five-degree scale: + = 1 basidiome, 1 = 2–5 basidiomes, 2 = 6–50 basidiomes, 3 = 51–100 basidiomes, 4 = 101–500 basidiomes, and 5 = > 500 basidiomes (Moser 1949). Tables were prepared following the method used by researchers including Lisiewska (1972), Ławrynowicz (1973), Bujakiewicz (1981) and Friedrich (1994), with a few modifications, distinguishing five ecological groups of species: (*i*) mycorrhizal soil fungi; (*ii*) saprotrophic soil fungi; (*iii*) litter-inhabiting fungi, that is, fungi growing on fallen needles, leaves, fruits, cones and small twigs; (*iv*) fungi occurring on/among mosses; and (*v*) lignicolous fungi, that is, fungi growing on pieces of wood buried in the soil, trunks, stumps, logs and fallen branches. Whenever a species grew on more than one type of

substrate it was classified in the category in which it occurred most frequently. As the growth manner (solitary, gregarious) are usually features characteristic of a species (Nespiak 1968), special attention was paid not to abundance but to constancy and fidelity when species locally characteristic of typical plant associations were identified. The number of records of a species at a plot and its abundance were included when it helped to define its relationship with the association. As the observations covered a small number of plots, the number of plots in which a species occurred is given in a summary mycocoenological table providing the total occurrence of selected fungal species, without calculating the degree of phytosociological constancy according to the Braun-Blanquet method (cf. Table 9, page 178). Species that occurred only once at any plot were omitted in the summary table unless they occurred additionally at many localities in the same plant association outside the plot but did not occur at all or occurred sporadically in other associations. Species not recorded at the plots but occurring commonly in a plant association outside the plots were included only exceptionally. The number of their localities is given in parentheses (Table 9).

LABORATORY METHODS

Some species were determined in the field. Only their localities were recorded, and basidiomes were not collected from all the localities (cf. FIELD OBSERVATIONS for every species on the list). At least one collection of each species was gathered for herbarium documentation. Problematic and critical species as well as species that could not be determined without microscopic examination were collected from all the localities at which they were found. Basidiomes were transported to the laboratory. Some collections were determined fresh, and others were described, dried and determined later. The material is deposited in the Herbarium of the W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków (KRAM), and in the Herbarium of the T. Chałubiński Tatra Museum, Zakopane (ZAMU).

The data were entered into the specially designed *Tatry* database (©Jakub Cieślak). The package was also used to map species distributions in the study area. Altitudinal ranges for individual species were plotted with Microsoft Excel 7.0.

Macroscopic characteristics of basidiomes were used for determination. Macro- and micro-chemical reactions conventionally used in the taxonomy of agaricoid fungi were performed. Specimens were examined and most of the microscope preparations were made under a Nikon SMZ 1500 stereomicroscope. Preparations were observed under a Nikon Eclipse E600 light microscope by standard optical microscopy or with Nomarski contrast. The majority of measurements were done in 5% KOH, and sometimes in Melzer's reagent or Congo red solution. If not otherwise stated, spore measurements include ornamentation. Siderophilous granulation was checked using the method described by Breitenbach and Kränzlin (1991). Drawings of anatomical structures were made using a Nikon Y-IDT drawing tube.

Species are listed alphabetically. Most species that are rare or very rare in Poland (cf. Wojewoda 2003) are described and their micromorphological characters are illustrated. Descriptions are based on specimens from the study area. Dimensions of micromorphological elements are usually presented as length × width at the widest place. For some cystidia (e.g., lageniform with an elongated neck) a third measure is given for neck width, and for those with a capitate or swollen apex a fourth measure is given for width at apex. The color codes used in describing some specimens follow Kornerup and Wanscher (1965).

Ecodiagrams and maps of distribution in the study area (see ECODIAGRAMS AND DISTRIBUTION MAPS OF SPECIES chapter) were prepared for every species based on collected specimens and field observaions.

The general distribution in the Tatra Mts is presented for all species. It is based on the available literature; no specimens were revised. Three regions of the Tatra Mts are recognized, following the accepted physiographical division: West Tatras, High (East) Tatras, and Belanské Tatry (Fig. 1b). The names of plant communities follow W. Matuszkiewicz (2001). The names and taxonomic placement of fungi follow Knudsen and Vesterholt (2008) with some exceptions. The systematics and nomenclature of higher taxonomic units of fungi follow Kirk *et al.* (2008) and Knudsen and Vesterholt (2008). This work is based on the doctoral thesis (Ronikier 2005d). Some results of the present work were published in the following papers: Ronikier (2002, 2003a, b, 2005a, b, c, 2007, 2009), Ronikier and Aronsen (2007), Ronikier and Moreau (2007), Ronikier and Adamčík (2009a), and Ronikier and Borgen (2010). They are cited at the entries for the relevant species.

EXPLANATION OF ABBREVIATIONS

AP – Abieti-Piceetum
DgF – Dentario glandulosae-Fagetum
Pk – Petasitetum kablikiani
Pmc – Pinetum mugo carpaticum
PP – Polysticho-Piceetum
* – habitat close to a given plant association

Results and discussion

List of species, with notes on their distribution in the Tatra Mts

Agrocybe Fayod

1. ***Agrocybe praecox*** (Pers.) Fayod

Specimens examined. Dolina Spadowiec valley, orographically right side of valley, on path, 1040 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′15″E, 4 July 2000 (KRAM F-50033).

Distribution in the Tatra Mts. This is the first report of the fungus in the Tatra Mts.

Amanita Pers.

2. ***Amanita argentea*** Huijsman Fig. 7

Pileus 40 mm broad, convex, with a small, flat umbo, silver-grey, pale greyish-cream with a grey-lilac tint, surface smooth, without veil remnants, margin sulcate. Lamellae crowded, free, broad, white, edge whitish, ciliate. Stem 70 × 8 mm, cylindrical, slightly enlarged toward base, whitish, hollow, fragile, with membranous, whitish volva at base. Flesh white, smell none, taste mild. Spores 10–12 × 7.5–9.5 µm, broadly ellipsoid, smooth, nonamyloid. Basidia 50–60 × 12–15 µm, 4-spored. Marginal cells 23–42 × 12–22 µm, broadly clavate. Volva made up of densely packed, cylindrical hyphae interspersed with sparse sphaerocysts. Pileipellis an ixocutis made up of cylindrical hyphae. Clamps lacking.

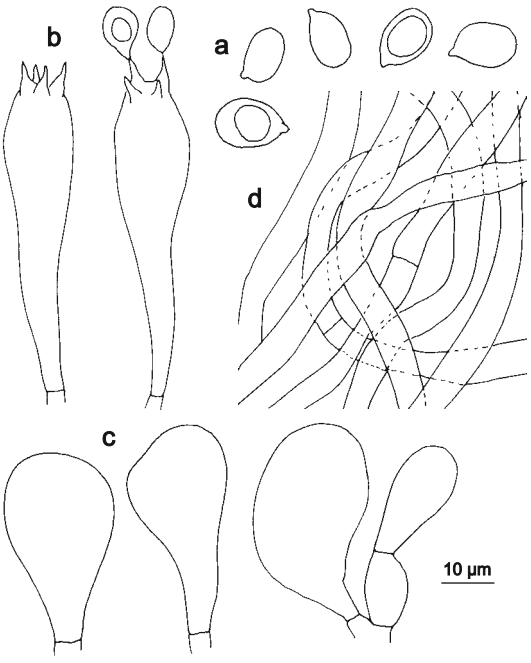

Fig. 7. *Amanita argentea* Huijsman: a – spores, b – basidia, c – marginal cells, d – elements of volva (KRAM F-51601).

Specimens examined. Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′22″E, 22 Aug. 2001 (KRAM F-51601); upper part of Dolina ku Dziurze valley, above caves, 1050 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-54311).

Distribution in the Tatra Mts. This is the first report of the fungus in the Tatra Mts.

3. ***Amanita battarrae*** (Boud.) Bon Fig. 8

Pileus 40–70 mm broad, first ovoid, then expanded with a small and flat umbo, olive-brown, grey-brown, dark brown, slightly paler at margin, surface smooth, usually without veil remnants, margin sulcate. Lamellae crowded, free, broad, first white, then cream, edge brownish. Stem 100–150 × 8–12 mm, cylindrical, grey-brown, with distinct brown girdles on the whole length, hollow, fragile, with membranous volva at base, volva relatively thick, greyish-brown at inner side, with red-brown spots outside. Flesh white, smell none, taste mild. Spores 9–11 × 8.0–10.5 µm, ovoid, smooth, nonamyloid. Basidia 50–60 × 12–15 µm, 4-spored. Marginal cells 28–42 × 15–32 µm, broadly clavate. Volva made up of densely packed cylindrical hyphae interspersed with sparse sphaerocysts. Pileipellis an ixocutis made up of cylindrical hyphae. Clamps lacking.

Specimens examined. Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′25″E, 6 July 2001 (ZAMU 4224); upper part of Dolina Białego valley, 990 m a.s.l., spruce forest (planted), on soil, 49°15′51″N, 19°57′17″E, 5 Sept. 2000 (KRAM F-54309); middle part of Dolina Spadowiec valley, orographically right side of valley, 1040 m a.s.l., *DgF*, on soil, 49°16′30″N,

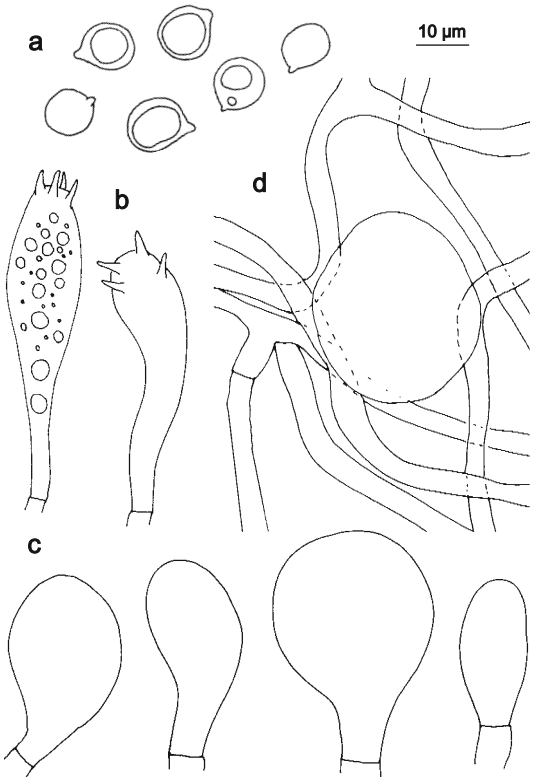

Fig. 8. *Amanita battarrae* (Boud.) Bon: a – spores, b – basidia, c – marginal cells, d – elements of volva (a, b, c – KRAM F-39934; d – KRAM F-54309).

19°57′07″E, 20 June 2000 (KRAM F-39934); lower part of Dolina ku Dziurze valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′42″E, 3 July 2002 (KRAM F-52332).

FIELD OBSERVATIONS. At Droga pod Regalmi hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 925 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′18″E, 7 Aug. 2000; at Droga pod Reglami hiking trail, slopes of Grześkówki ridge, 930 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°56′35″E, 22 Aug. 2000; lower part of Grześkówki ridge, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°56′38″E, 4 July 2000; at Droga pod Reglami hiking trail, mouth of Dolina Białego valley, orographically left side of valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′27″E, 7 July 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2001; N slopes of Grześkówki ridge, at Droga pod Reglami hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°56′27″E, 21 Aug. 2002; upper part of Dolina Białego valley, 990 m a.s.l., spruce forest (planted), on soil, 49°15′51″N, 19°57′17″E, 3 Oct. 2003; N slopes of Sarnia Skała massif, 1150 m a.s.l., *DgF*/*PP*, on soil, 49°16′08″N, 19°56′27″E, 21 Aug. 2002; ridge between Dolina Białego valley and Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°57′17″E, 30 June 2003.

DISTRIBUTION IN THE TATRA MTS. The species is known from the locality in the Dolina Miętusia valley, Polish West Tatras (Anonymous 1968, as *A. umbrinolutea*) and from the Zadná Tichá Dolina valley at the border between the West and High Tatras on the Slovak side (Lizoň & Kautmanová 2004). It has also been reported from the peripheries of the Slovak West Tatras (Kuthan 1989a, b, as *A. umbrinolutea* Secr.).

4. ***Amanita excelsa*** (Fr.: Fr.) Bertill.

SPECIMENS EXAMINED: At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 930 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°57′07″E, 5 Sept. 2000 (KRAM F-50603).

DISTRIBUTION IN THE TATRA MTS. The species is known from the Slovak part of the mountains: High Tatras (Pilát 1926, as *A. spissa* Fr.), West Tatras in Račková Dolina valley (Dermek 1977, as *A. spissa* Fr.), Belanské Tatry (Škubla 1998a), and from the peripheries of the Slovak West Tatras (Kuthan 1989b, as *A. spissa* Fr.).

5. ***Amanita muscaria*** (L.: Fr.) Lam.

SPECIMENS EXAMINED. Dolina Strążyska valley, W slope of Grześkówki ridge, vis a vis Skała Jelinka cliff, 980 m a.s.l., spruce forest, on soil, 49°16′11″N, 19°56′10″E, 4 July 2000 (KRAM F-50036); W slope of Grześkówki ridge, 1100 m a.s.l., spruce forest with *Larix*, on soil, 49°16′04″N, 19°56′12″E, 16 Aug. 2003, *leg. A. Ronikier & M. Ronikier* (ZAMU 4344).

FIELD OBSERVATIONS. Grześkówki ridge, 1120 m a.s.l., windthrow with young forest: *Larix*, *Fagus*, *Picea*, on soil, 49°16′15″N, 19°56′17″E, 21 July 2000; mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′27″E, 7 Aug. 2000; upper part of Dolina ku Dziurze valley, 1080 m a.s.l., *DgF*/*PP*, on soil, 49°16′17″N, 19°56′42″E, 20 Aug. 2001; mouth

of Dolina Strążyska valley, at Droga pod Reglami hiking trail, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 21 Aug. 2001; upper part of Dolina Białego valley, S slope of Igła mount, 1180 m a.s.l., spruce forest, on soil, 49°15′47″N, 19°57′07″E, 22 Aug. 2001; upper part of Dolina Białego valley, SW slope of Igła mount, 1190 m a.s.l., spruce forest, on soil, 49°15′48″N, 19°57′02″E, 8 Sept. 2001; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002; 9 Sept. 2003; 14 Oct. 2003; upper part of Dolina Spadowiec valley, near 'Łomik', 1200 m a.s.l., *DgF*/*PP*, on soil, 49°16′11″N, 19°56′57″E, 21 Aug. 2002; Spaleniec ridge, 1150 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′52″E, 3 Oct. 2002; upper part of Dolina Białego valley, at Ścieżka nad Reglami hiking trail, 1250 m a.s.l., *PP*, on soil, 49°15′45″N, 19°57′02″E, 9 Sept. 2003.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts, reported as occurring on calcareous as well as on siliceous bedrock, in the High Tatra, West Tatra and Belanské Tatry (Pilát 1926; Dominik & Nespiak 1953; Dominik & Pachlewski 1956; Nespiak 1960; Rudnicka-Jezierska 1965; Frejlak 1973; Lizoň 1989; Wojewoda 1996; Škubla 1998a, b; Lizoň & Kautmanová 2004). The fungus has also been reported from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

6. ***Amanita rubescens*** (Pers.: Fr.) Gray

SPECIMENS EXAMINED. Mouth of Dolina Strążyska valley, at Droga pod Reglami hiking trail, 910 m a.s.l., *AP/DgF*, on soil, 49°16′43″N, 19°56′27″E, 3 July 2002 (KRAM F-52331).

FIELD OBSERVATIONS. Lower part of Dolina Strążyska valley, orographically right side of valley, 950 m a.s.l., *DgF* with planted *Pinus sylvestris*, on soil, 49°16′37″N, 19°56′17″E, 21 July 2000; SE slope of Sarnia Skała massif, N of Czerwona Przełęcz pass, 1300 m a.s.l., *PP*, on soil, 49°15′51″N, 19°56′42″E, 19 Sept. 2000; at Droga pod Reglami hiking trail, about 100 m W of mouth of Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′57″E, 7 July 2001; upper part of Dolina Białego valley, edge of Polana Białego meadow, 1150 m a.s.l., *DgF*/*PP*, on soil, 49°15′55″N, 19°56′57″E, 21 Aug. 2001; mouth of Dolina Spadowiec valley, 940 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the Polish High Tatras, Slovak West Tatras (Dominik & Pachlewski 1956; Nespiak 1962c, 1966; Frejlak 1973; Škubla 1998b) and the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

7. ***Amanita submembranacea*** (Bon) Gröger

Fig. 9

Pileus 50–80 mm broad, convex, then expanded with small, flat umbo, grey-brown, olive-brown, yellow-brown, surface smooth, without veil remnants, margin sulcate. Lamellae crowded, free, broad, white, edge ciliate. Stem 70–100 × 7–10 mm, cylindrical, whitish with brownish girdles, hollow, fragile, with membranous greyish volva at base. Flesh white, smell none, taste mild.

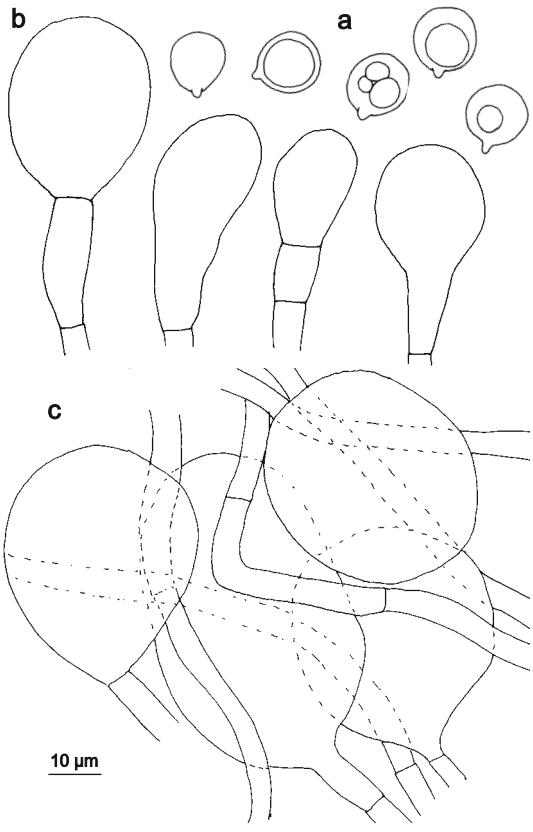

Fig. 9. *Amanita submembranacea* (Bon) Gröger: a – spores, b – marginal cells, c – elements of volva (KRAM F-39947).

Spores 10–12 µm, globose, smooth, nonamyloid. Basidia 50–57 × 14–15 µm, 4-spored. Marginal cells 20–40 × 16–30 µm, broadly clavate. Volva made up mostly of round cells interspersed with few hyphal elements. Pileipellis an (ixo) cutis made up of cylindrical hyphae. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°56′35″E, 20 June 2000 (KRAM F-39947); at Droga pod Reglami hiking trail, N slopes of Grześkówki ridge, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′35″E, 4 July 2000 (KRAM F-50021); at Droga pod Reglami hiking trail, mouth of Dolina Strążyska valley, 940 m a.s.l., *AP/DgF*, on soil, 49°16′43″N, 19°56′27″E, 3 July 2002 (KRAM F-54314); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 20 Aug. 2002 (KRAM F-54315); 16 Aug. 2003 (KRAM F-54316).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

8. ***Amanita vaginata*** (Bull.: Fr.) Lam.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°57′07″E, 4 July 2000 (KRAM F-50020); lower part of Dolina ku Dziurze valley, 930 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′37″E, 4 July 2000 (KRAM F-50037); middle part of Grześkówki ridge, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′22″E, 19 Sept. 2000 (KRAM F-54312); upper part of Dolina Spadowiec valley, orographically right side of valley, 1040 m a.s.l., *DgF*, on soil, 49°16′28″N, 19°57′07″E, 9 Sept. 2001 (KRAM F-54313).

FIELD OBSERVATIONS. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°57′17″,11 July 2000; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1150 m a.s.l., *DgF*/*PP*, on soil, 49°16′24″N, 19°56′52″E, 20 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The species in known from several localities in the High Tatra, West Tatra and Belanské Tatry [Pilát 1926, as *Amanitopsis vaginata* (Bull.) Roze; Dominik & Nespiak 1953, as *Amanitopsis vaginata* (Bull.) Roze; Dominik & Pachlewski 1956, as *Amanitopsis vaginata* Bull.; Nespiak 1953, as *Amanitopsis vaginata*, Nespiak 1960, 1962a, c; Rudnicka-Jezierska 1965; Frejlak 1973; Wojewoda 1996; Škubla 1998b] as well as from the peripheries of the Slovak West Tatras (Kuthan 1989b).

Armillaria (Fr.: Fr.) Staude

9. ***Armillaria lutea*** Gillet Fig. 10

Pileus 50–80 mm broad, convex with involute margin, then expanded, sometimes slightly depressed at center, ochraceous-yellow, cream-pinkish-yellow, yellow-brown, hygrophanous, pallescent on dying, when moist translucently striate at margin, surface covered with fibrils forming delicate, squamules, more densely arranged and erect in center, more sparse and ascending at margin of the pileus. Fibrils concolorous with pileus or darker, brown to olive-brown. Lamellae medium spaced, broadly adnate or with a decurrent tooth, broad, first pale cream, then pinkish-cream with red-brown spots, edge uneven. Stem 50–80 × 7–12 mm, cylindrical or

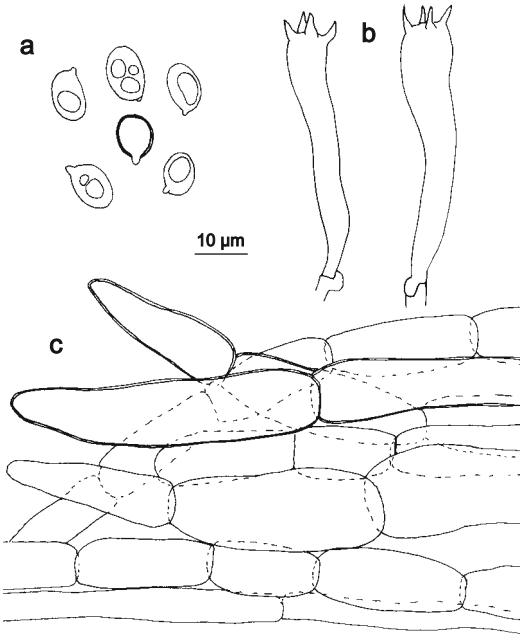

Fig. 10. *Armillaria lutea* Gillet: a – spores, b – basidia, c – pileipellis (KRAM F-54300).

with bulb-like swollen base, annulate, pinkish-cream-brownish and longitudinally grooved or smooth above the annulus, pinkish-orange-brown and covered with whitish or yellow flocci below annulus, base with greenish-yellow tint. Annulus about 10 mm below the stem apex, woolly-fibrillose, cream-whitish, with yellowish flocci outside. Flesh cream, smell and taste fungoid. Spores 8–9 × 6.5–8.0 µm, broadly ellipsoid, smooth, slightly thick-walled, nonamyloid. Basidia 35–55 × 7–10 µm, 4-spored, clamped. Pileipellis a cutis to trichoderm, scales made up of cylindrical and slightly thick-walled elements (20–)30–77(–90) × 11–30 µm. Clamps present.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, E from mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on wood, 49°16′45″N, 19°56′47″E, 12 Oct. 2001 (KRAM F-54300, ZAMU 4408); left side of orographically left branch of Dolina ku Dziurze valley, 1000 m a.s.l., *DgF*, on soil, 49°16′27″N, 19°56′27″E, 22 Aug. 2000 (KRAM F-54301); at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadoweic valley, 920 m a.s.l., *DgF*, on wood (at spruce root), 49°16′44″N, 19°57′17″E, 12 Oct. 2001 (KRAM F-54302); upper part of Dolina ku Dziurze valley, vicinity of caves, 1050 m a.s.l., *DgF*, on wood (beech log), 49°16′20″N, 19°56′42″E, 3 Oct. 2002 (KRAM F-54303).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

10. ***Armillaria ostoyae*** (Romagn.) Herink

SPECIMENS EXAMINED. Mouth of Dolina Białego valley, orographically left side of valley, 950 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′25″E, 14 Oct. 2001 (KRAM F-51474, ZAMU 4409); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 1020 m a.s.l., *DgF*, on wood (log of a coniferous tree), 49°16′37″N, 19°57′17″E, 14 Oct. 2003 (KRAM F-54299).

DISTRIBUTION IN THE TATRA MTS. The species was reported so far only from the Tichá Dolina valley, Slovak West Tatras (Škubla 1998b) and from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some records of *Armillaria mellea* (Vahl) P. Kumm. from other regions of the Tatra Mts may refer to *Armillaria ostoyae*.

Arrhenia Fr.

11. ***Arrhenia epichysium*** (Pers.: Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys Fig. 11

Pileus 15–40 mm broad, deeply infundibuliform, hygrophanous, when moist greyish-brown, dark brown, darker in center, translucently striate almost to center, pallescent on drying. Lamellae rather distant, deeply decurrent, grey-beige. Stem 10–20 × 2 mm, cylindrical, grey-beige, with white mycelium at base. Flesh grey-beige, smell and taste none. Spores 7–8(10) × 4.5–6.0 µm, ellipsoid, nonamyloid. Basidia 21–27 × 5–6 µm, 4-spored, clamped. Cystidia lacking. Pileipellis a cutis made up of cylindrical hyphae. Pigment incrusting. Clamps numerous.

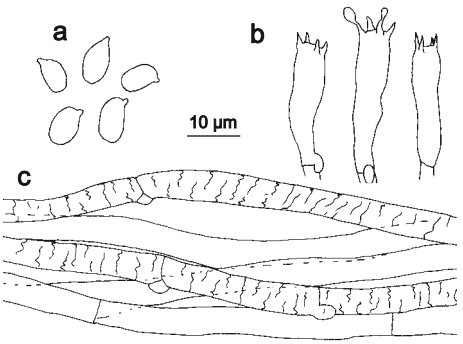

Fig. 11. *Arrhenia epichysium* (Pers.: Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys: a – spores, b – basidia, c – pileipellis (KRAM F-51581).

SPECIMENS EXAMINED. Upper part of orographically left branch of Dolina Białego valley, from Polana Białego valley, at a stream, 1100 m a.s.l., *DgF/PP*, on wood, 49°15′54″N, 19°56′57″E, 21 Aug. 2001 (KRAM F-51581); upper part of Dolina Białego valley, 1050 m a.s.l., *DgF*, on wood, 49°15′58″N, 19°57′17″E, 5 Nov. 2001 (KRAM F-54522, ZAMU 4410).

DISTRIBUTION IN THE TATRA MTS. The species has already been reported [as *Omphalina epichysium* (Pers.: Fr.) Quél.] from the West Tatra Mts (Wojewoda 1996; Domański 1997; Lizoň & Kautmanová 2004) and Belanské Tatry (Nespiak 1960).

Baeospora Singer

12. ***Baeospora myosura*** (Fr.: Fr.) Singer

Fig. 12

Pileus 5–10 mm broad, convex, then slightly expanded, ochraceous, paler at margin, nonhygrophanous, surface smooth. Lamellae very crowded, emarginate, pale, then greyish-ochraceous, edge finely ciliate. Stem 15–30 × 1–2 mm, cylindrical, pale reddish-brown, entirely covered with white hairs (distinctly pruinose). Flesh whitish, smell and taste none. Spores 3.2–4.0 × 1.5–2.5 µm, ellipsoid, smooth, amyloid. Basidia 12–13 × 3–4 µm, 4-spored. Cheilocystidia 16–34 × 6.5–8.0 µm, cylindrical, narrowly utriform, fusiform, numerous. Pleurocystidia similar to cheilocystidia, scattered. Caulocystidia 30–65 × 5–10 µm, cylindrical to narrowly fusiform, abundant. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Mouth of Dolina Białego valley, at hiking trail, 920 m a.s.l., among *Petasites*, on a spruce cone, 49°16′38″N, 19°57′30″E, 5 Sept. 2000 (KRAM F-50587); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on a cone of *Pinus mugo*, 49°15′57″N, 19°56′27″E, 8 Sept. 2001 (KRAM F-51676); S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on a cone burried in soil, 49°15′54″N, 19°56′30″E, 8 Sept. 2001 (KRAM F-51682); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on a cone of *Pinus mugo*, 49°15′53″N, 19°56′38″E, 3 Oct. 2002 (ZAMU 4376).

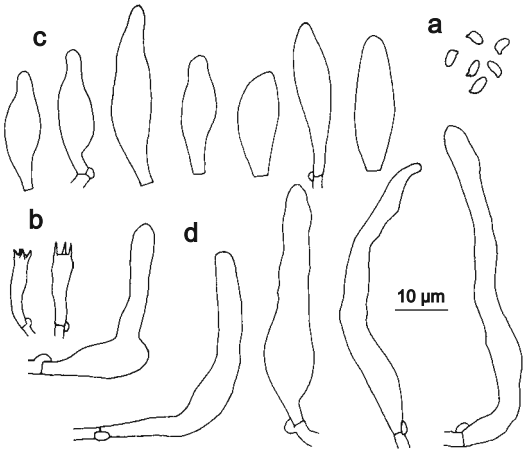

Fig. 12. *Baeospora myosura* (Fr.: Fr.) Singer: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia (KRAM F-51682).

DISTRIBUTION IN THE TATRA MTS. The species has been reported so far only from the Slovak West Tatras (Škubla 1998b; Lizoň & Kautmanová 2004) and the peripheries of the Slovak High Tatras (Kuthan & Singer 1987). Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Boletus L.: Fr.

13. ***Boletus luridiformis*** Rostk.

SPECIMENS EXAMINED. No herbarium specimen preserved.

FIELD OBSERVATIONS. At Droga pod Reglami hikihg trail, mouth of Dolina Białego valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is known from a few localities in the High Tatras and West Tatras (Pilát 1926, as *Boletus erythropus* Pers.; Dominik & Pachlewski 1956, as *Boletus miniatoporus* Secr.; Dominik 1963, as *Boletus erythropus* Fr.; Rudnicka-Jezierska 1965, as *Boletus erythropus* Pers.) as well as from the peripheries of the Slovak Tatras (Kuthan & Singer 1987, as *Boletus erythropus* Pers.; Kuthan 1989b, as *Boletus erythropus* Pers.).

14. ***Boletus luridus*** Schaeff.: Fr.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 22 Aug. 2000 (KRAM F-50560); upper part of Dolina ku Dziurze valley, above Dziura Wyżnia cave, 1070 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′45″E, 16 Aug. 2003 (KRAM F-54006).

FIELD OBSERVATIONS. Lower part of Dolina ku Dziurze valley, E slope of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′18″N, 19°56′28″E, 22 Aug. 2000; upper part of Dolina Białego valley, mouth of orographically left branch of valley, 1060 m a.s.l., *DgF*, on soil, 49°16′04″N, 19°57′17″E, 21 Aug. 2001; Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported a few times in the Tatra Mts, but

in most cases without a precise locality (Dominik 1963; Dominik *et al*. 1954; Dominik & Pachlewski 1956; Wojewoda 1996). Since Dominik and Pachlewski (1956) worked, among others, in the area of Sarnia Skała, the fungus could have been found in the study area before.

Cantharellus Adans. *ex* Fr.

15. ***Cantharellus cibarius*** Fr.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 22 Aug. 2001 (KRAM F-54082); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 3 Oct. 2002 (KRAM F-54322); Dolina Spadowiec valley, W slope, 1022 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001 (ZAMU 4229).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, mouth of Dolina ku Dziurze valley, N slopes of Grześkówki ridge, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 22 Aug. 2001; middle part of Dolina Spadowiec valley, orographically right side of valley, at a path, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′11″E, 9 Sept. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001; middle part of Grześkówki ridge, 1040 m a.s.l., *DgF*, on soil, 49°16′27″N, 19°56′21″E, 21 Aug. 2002; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts, reported from the High Tatras, West Tatras (Pilát 1926; Dominik & Pachlewski 1956; Nespiak 1962c, 1966; Rudnicka-Jezierska 1965; Frejlak 1973; Škubla 1998b; Lizoň & Kautmanová 2004) and the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

16. ***Cantharellus cibarius*** var. ***amethysteus*** Quél.

SPECIMENS EXAMINED. Middle part of Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 5 Sept. 2001 (KRAM F-51646); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 1040 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′07″E, 9 Sept. 2001 (ZAMU 4313).

FIELD OBSERVATIONS. Mouth of Dolina spadowiec valley, at Droga pod Reglami hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′11″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported so far from Belanské Tatry [Škubla 1998a, as *Cantharellus amethysteus* (Quél.) Sacc.] and the peripheries of the Slovak High Tatras (Pilát 1926, as *Cantharellus amethysteus* Quél.).

Chalciporus Bataille

17. ***Chalciporus piperatus*** (Bull.: Fr.) Bataille

SPECIMENS EXAMINED. Mouth of Dolina Strążyska valley, at Droga pod Reglami hiking trail, 900 m a.s.l., *DgF*, on soil (under spruce), 49°16′43″N, 19°56′27″E, 4 July 2000 (KRAM F-50023).

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts [Pilát 1926; as *Boletus piperatus* Bull.; Dominik *et al*. 1954, as *Boletus piperatus* Bull.; Dominik & Pachlewski 1956, as *Boletus piperatus* Fr.; Nespiak 1960, as *Suillus piperatus* (Bull. *ex* Fr.) Kuntze; Rudnicka-Jezierska 1965, as *Suillus piperatus* (Bull. *ex* Fr.) Kuntze; Anonymous 1968, as *Suillus piperatus*; Frejlak 1973, as *Suillus piperatus* (Bull. *ex* Fr.) Kuntze var. *piperatus*; Wojewoda 1996, as *Boletus piperatus* Bull.: Fr.; Škubla 1998b; Lizoň & Kautmanová 2004]. It has also been reported from the peripheries of the Slovak West Tatras (Kuthan 1989b).

Chroogomphus (Siger) O. K. Mill.

18. ***Chroogomphus helveticus*** (Singer) M. M. Moser subsp. ***tatrensis*** (Pilát) Kuthan & Singer
Fig. 13

Pileus 20–40 mm broad, hemispherical, then conico-convex, bright orange, salmon-orange, sometimes with a slight violet tint, edge paler, cream, in young specimens connected with a stem with a cream cortina, surface fiblilous-woolly, dry, slightly lubricous when moist. Lamellae first orange, salmon-orange, then dark brown, blackish-brown, arcuately decurrent. Stem bright orange, yellowish-orange, cylindrical, surface finely fibrillose. Flesh bright orange. Whole basidiome

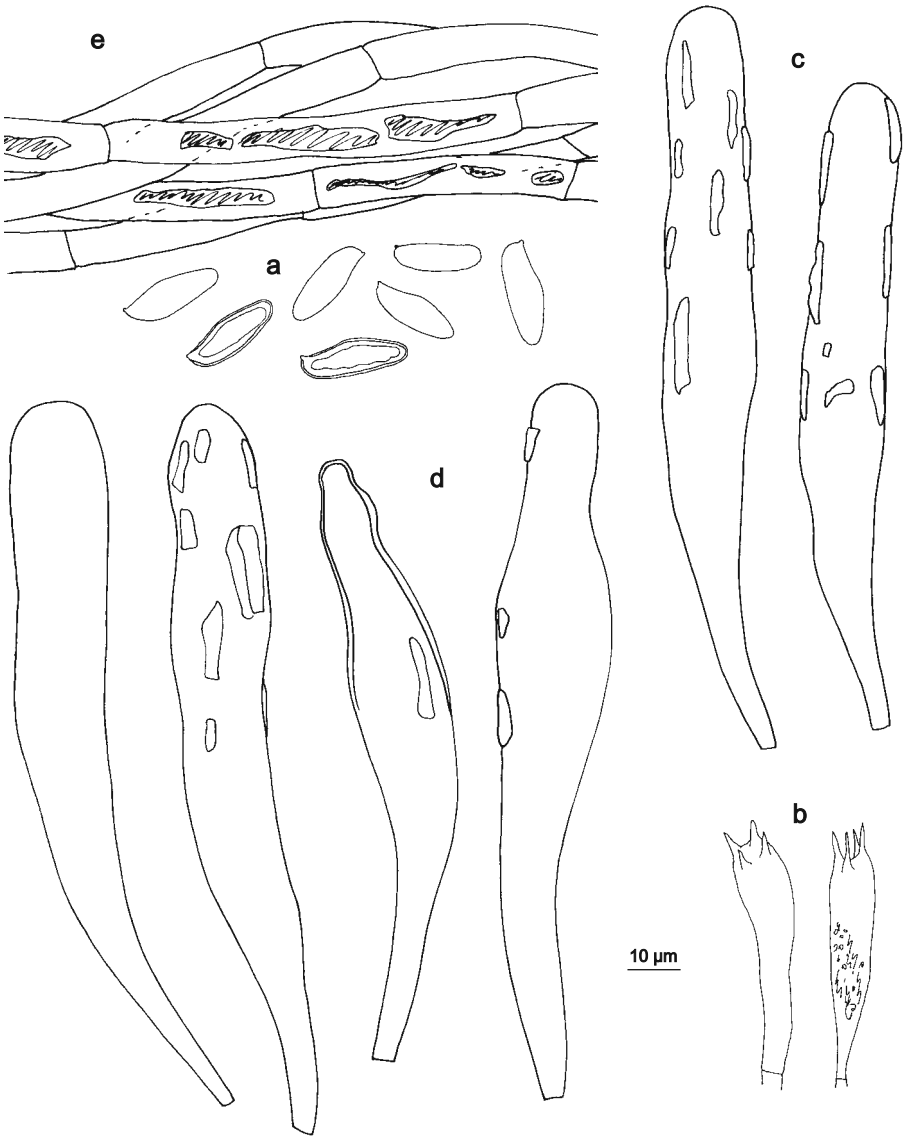

Fig. 13. *Chroogomphus helveticus* (Singer) M. M. Moser ssp. *tatrensis* (Pilát) Kuthan & Singer: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – pileipellis (KRAM F-54180).

changing violet-purple on drying. Spores 18.5–22.0 × 6.0–7.5 µm, cylindrical-fusiform, slightly thick-walled, pale yellow-brown in transmitted light, dextrinoid. Basidia 40–45 × 8–10 µm, narrowly clavate, 4-spored. Cheilocystidia and pleurocystidia 100–150 × 15–20 µm, cylindrical, often covered with patches of a brown matter. Hymenial elements nonamyloid or very weakly amyloid. Some hyphae of context strongly amyloid. Pileipellis a cutis, built up of cylindrical hyphae, up to 10 µm wide with yellow-brown pigment, with weakly amyloid walls and with strong incrustation. Clamps lacking.

SPECIMENS EXAMINED. NW slopes of Sarnia Skała massif, 1290 m a.s.l., *PP*, on soil, 49°15′59″N, 19°56′22″E, 21 July 2000, *leg. A. Ronikier & Z. Mirek*

(KRAM F-50176); upper part of Dolina Białego valley, at hiking trail, between Igła mount and Polana Białego meadow, 1180 m a.s.l., *PP*, on soil, 49°15′47″N, 19°57′02″E, 8 Sept. 2001 (KRAM F-51672); upper part of Dolina ku Dziurze valley, W slope of Spaleniec ridge, 1150 m a.s.l., *DgF/PP*, on soil, 49°16′17″N, 19°56′52″E, 20 Aug. 2002 (KRAM F-54180); upper part of Dolina ku Dziurze valley, above caves, 1080 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′57″E, 9 Sept. 2001, (ZAMU 4318).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported a few times from the Tatra Mts (Pilát 1926, as *Gomphidius viscidus* L. var. *tatrensis*; Nespiak 1960, as *Gomphidius viscidus* var. *tatrensis* Pilát; Kuthan 1973, as *Chroogomphus helveticus* (Sing.) Mos. – see Singer & Kuthan 1976; Wojewoda 1996; Škubla 1998b; Lizoň & Kautmanová 2004) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b).

19. ***Chroogomphus rutilus*** (Schaeff.: Fr.) O. K. Mill.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 8 Sept. 2001 (KRAM F-51677); 20 Aug. 2002 (KRAM F-54179); S slope of Sarnia Skała massif, about 100 m below the top, 1350 m a.s.l., *Pmc*, on soil, 49°15′54″N, 19°56′30″E, 6 July 2001 (ZAMU 4319).

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in the vicinity of the Morskie Oko lake, Polish High Tatras (Anonymous 1968) and from a few localities in Belanské Tatry (Škubla 1998a). It has also been noted from the peripheries of the Slovak West Tatras (Kuthan 1989b). Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Chrysomphalina Clémençon

20. ***Chrysomphalina chrysophylla*** (Fr.: Fr.) Clémençon Fig. 14

Pileus 20–40 mm broad, first flat, then infundibuliform, yellow-brown, olive-brown, darker in center, slightly translucently striate when moist, surface smooth, finely squamulose in center. Lamellae bright yellow, golden-yellow, arcuately decurrent, edge smooth. Stem 10–20 × 2–4 mm, yellow-brown, concolorous or slightly paler than pileus, cylindrical, sometimes laterally compressed, smooth, hollow. Flesh yellow-brown in pileus, yellow in stem, elastic, smell and taste none. Spores 10–14 × 5.0–6.5 µm, ellipsoid or slightly phaseoliform, nonamyloid. Basidia 32–45 × 7–8 µm, narrowly clavate, 4-spored. Cystidia lacking. Lamellar trama irregular. Pileipellis a cutis, made up of cylindrical hyphae up to 7µm broad, with brown inrtacellular pigment. Clamps lacking.

SPECIMENS EXAMINED. Upper part of orographically left branch of Dolina Białego valley, above a stream, 1120 m a.s.l., *DgF*, on wood (stump of a coniferous tree), 49°15′57″N, 19°56′57″E, 21 Aug. 2001 (KRAM F-51565, ZAMU 4310).

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in the vicinity of the Morskie Oko lake, Polish High Tatras (Frejlak 1973). It has also been noted from

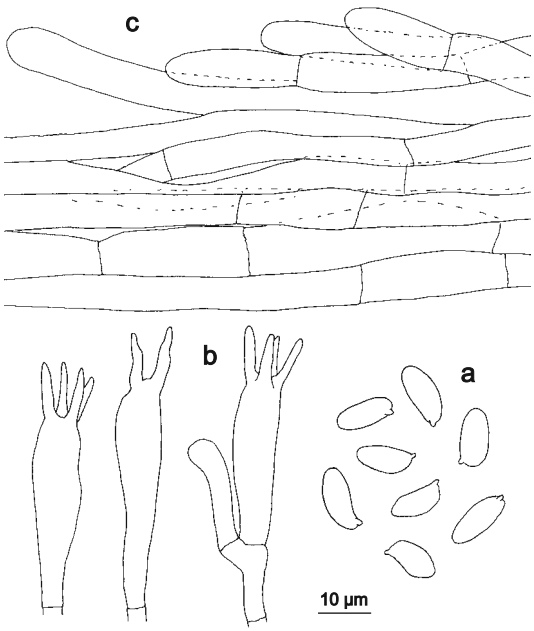

Fig. 14. *Chrysomphalina chrysophylla* (Fr.: Fr.) Clémençon: a – spores, b – basidia, c – pileipellis (KRAM F-51565).

the peripheries of thr Slovak Tatras [Kuthan & Singer 1987, as *Gerronema chrysophyllum* (Fr.) Singer].

Clitocybe (Fr.) Staude

21. ***Clitocybe candicans*** (Pers.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Middle part of Dolina Białego valley, 990 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′17″N, 19°57′27″E, 5 Sept. 2000 (KRAM F-50606); lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′37″N, 19°56′27″E, 19 Sept. 2000 (KRAM F-50710).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the peripheries of the Slovak High Tatras (Pilát 1926, as *Pholiota candicans* Schaeff.) and Slovak West Tatras (Kuthan 1989b).

22. ***Clitocybe*** cf. ***concava*** (Scop.: Fr.) Gillet Fig. 15

Pileus 50 mm broad, deeply umbilicate, strongly hygrophanous, moderately brown when moist, paler, coffee-with-milk, beige when dry, surface smooth. Lamellae medium spaced, arcuate, decurrent, beige-grey, beige-brown, edge smooth. Stem 45 × 5 mm, cylindrical, sometimes slightly wider at base, covered with whitish silky pruina more distinct at the stem apex, where it forms white annular zone just below the lamellae, stem base slightly strigose, with coarse mycelim. Flesh beige, smell none, taste none. Spores 6.5–8.5 × 4.0–4.5 µm, ellipsoid, hyaline, nonamyloid. Basidia 25–32 × 5–6 µm, 4-spored, clamped. Cystidia none. Pileipellis a cutis. Pigment incrusting in pileipellis. Clamps numerous.

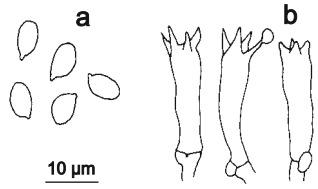

Fig. 15. *Clitocybe* cf. *concava* (Scop.: Fr.) Gillet: a – spores, b – basidia (KRAM F-54385).

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1230 m a.s.l., *Pmc*/subalpine meadow, on soil, 49°15′57″N, 19°56′22″E, 22 Aug. 2001 (KRAM F-54385).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

23. ***Clitocybe ditopa*** (Fr.: Fr.) Gillet Fig. 16

Pileus 20–40 mm broad, first hemispherical, then expanded, sometimes slightly depressed in center, strongly hygrophanous, dark brown, grey-brown and not translucently striate when moist, much paler, grey-beige when dry, surface pruinose. Lamellae medium spaced, broadly adnate or shortly decurrent, grey-brown, edge smooth. Stem 40–60 × 3–5 mm, cylindrical, concolorous with pileus, pruinose, with white mycelim at base. Flesh grey-brown, smell and taste strong, farinaceous. Spores 3.5–4.8 × 2.5–3.0 µm, subglobose to ovoid, nonamyloid. Basidia 20–25 × 4.5–5.0 µm, 4-spored, clamped. Cystidia none. Pileipellis a cutis. Clamps present.

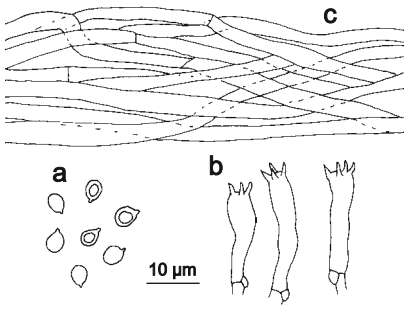

Fig. 16. *Clitocybe ditopa* (Fr.: Fr.) Gillet: a – spores, b – basidia, c – pileipellis (KRAM F-50598).

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, 1050 m, *DgF* (with *Acer pseudoplatanus*), on litter, 49°15′58″N, 19°57′17″E, 5 Sept. 2000 (KRAM F-50598).

DISTRIBUTION IN THE TATRA MTS. The fungus is known only from the peripheries of the Slovak West Tatras (Kuthan 1989b).

24. ***Clitocybe fragrans*** (With.: Fr.) P. Kumm. Fig. 17

Pileus 20–40 mm broad, first hemispherical, then convex and expanded and slightly depressed in center, first moderately dark brown (5E4, 5F4), then paler, brown (5D5, 5D6, 5E5, 5E6) to beige (4B4), darker in center, paler at margin, hygrophanous, distinctly translucently striate almost to center when moist, surface smooth, not pruinose. Lamellae medium spaced, broadly adnate to shortly decurrent, whitish to cream, edge smooth. Stem 40–60 × 3–4 mm, cylindrical, concolorous with pileus (5D6, 5E5, 4B4), slightly pruinose, with white mycelium at base. Flesh beige (4B4), smell strong, of aniseed, taste not recorded. Spores 6.5–8.5 × 4–5 µm, ellipsoid, hyaline, nonamyloid. Basidia 27–35 × 6–7 µm, 4-spored, clamped. Cystidia none. Pileipellis a trichoderm, terminal elements coralloid. Clamps numerous.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°56′32″E, 14 Oct. 2003 (KRAM F-54384).

DISTRIBUTION IN THE TATRA MTS. The species is known from Belanské Tatry [Škubla 1998a, as *Clitocybe suaveolens* (Schum.: Fr.) P. Kumm.], from the Polish High Tatras (Dominik & Nespiak 1953) and the Slovak West Tatras (Lizoň & Kautmanová 2004). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989b).

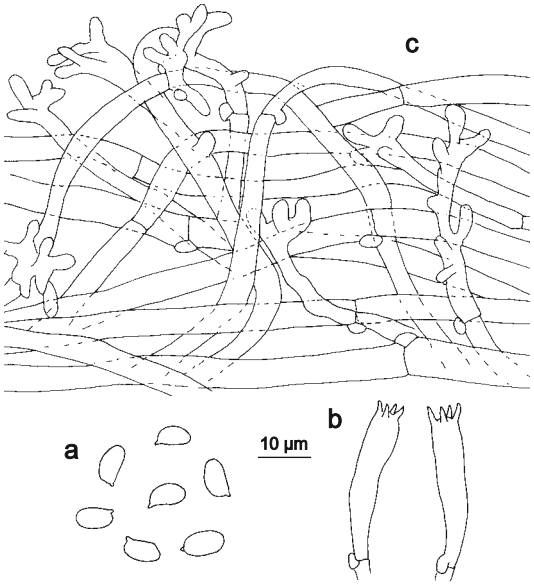

Fig. 17. *Clitocybe fragrans* (With.: Fr.) P. Kumm.: a – spores, b – basidia, c – pileipellis (KRAM F-54384).

25. ***Clitocybe nebularis*** (Batsch: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°57′12″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54345); lower part of Grześkówki ridge, 1030 m a.s.l., *DgF*, on soil, 49°16′30″,E 19°56′20″E, 12 Oct. 2001 (KRAM F-54344); lower part of Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°56′32″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54346, ZAMU 4404); middle part of Dolina Białego valley, 970 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°57′27″E, 5 Sept. 2000 (KRAM F-50608).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, 1050 m a.s.l., *DgF*, on soil, 49°15′58″N, 19°57′17″E, 13 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is known only from the peripheries of the Slovak West Tatras (Kuthan 1989b).

26. ***Clitocybe vibecina*** (Fr.) Quél.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 13 Oct. 2001 (KRAM F-53307); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 13 Oct. 2001 (KRAM F-53319).

DISTRIBUTION IN THE TATRA MTS. The species is known from two localities in the Slovak West Tatras: from the Zadná Tichá Dolina valley and the Tomanová Dolina valley (Lizoň & Kautmanová 2004).

Clitopilus (Fr.: Fr.) P. Kumm.

27. ***Clitopilus hobsonii*** (Berk. & Broome) P. D. Orton Fig. 18

Pileus 20–30 mm broad, first more or less circular and convex, then flabelliform-reniform with involute margin, surface matt, slightly tomentose, white. Lamellae medium spaced, narrowly adnate,

whitish, then pink, edge smooth. Stem reduced, lateral, rudimental, pileus laterally or dorsally attached to the substratum. Flesh whitish, smell and taste not recorded. Spores 6–10 × 4–5 µm, ellipsoid, with usually eight distinct, longitudinal ribs, pale in transmitted light. Basidia 19–25 × 7.0–8.5 µm, 4-spored. Cheilocystidia lacking, but filiform elements 3–4 µm wide present in the hymenium. Pileipellis a cutis, made up of cylindrical elements. Clamps lacking.

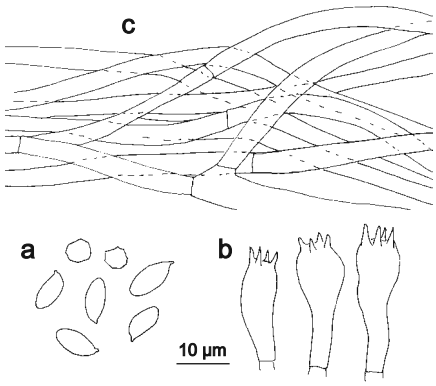

Fig. 18. *Clitopilus hobsonii* (Berk. & Broome) P.D. Orton: a – spores, b – basidia, c – pileipellis (KRAM F-54531).

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, 1080 m a.s.l., windthrow, on plant debris, 49°16′12″N, 19°56′39″E, 20 Aug. 2002 (KRAM F-54531).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

28. ***Clitopilus prunulus*** (Scop.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, E slope of Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′18″N, 19°56′28″E, 19 Aug. 2000 (KRAM F-50683); lower part of Dolina Strążyska valley, 920 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′12″E, 9 Sept. 2003 (KRAM F-54340); at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 22 Aug. 2001 (ZAMU 4227).

FIELD OBSERVATIONS. Lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 5 Sept. 2001; upper part of Dolina ku Dziurze valley, above the caves, 1070 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′42″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is known from a few localities at both sides of the border (Pilát 1926; Kubička 1964; Škubla 1998a) and from the peripheries of the Slovak West Tatras (Kuthan 1989b).

29. ***Clitopilus*** sp. Figs 19 & 20

Pileus 80–100 mm broad, irregularly flabelliform, whitish, cream, surface woolly, margin first slightly involute, then straight. Stem excentric, reduced 15 × 7–10 mm, whitish. Lamellae distant, ochraceous-pink, narrow, decurrent. Flesh thin, white, smell pleasant, fungoid, taste very bitter. Spores 8–12 × 5–7 µm, shortly fusiform to fusiform with 6–8 distinct, longitudinal ribs. Basidia 28–30 × 8–11 µm, 4-spored. Cheilocystidia cylindrical, septate, 3–7 µm wide. Pileipellis a loose cutis to trichoderm built up of 3–5 µm wide hyphae. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, orographically left side of valley, at Droga pod Reglami hiking trail, 920 m a.s.l., *AP/DgF*, on wood remnants buried in soil, 49°16′43″N, 19°57′07″E, 5 Sept. 2001, *leg. A. Ronikier & M. Piątek* (KRAM F-51620).

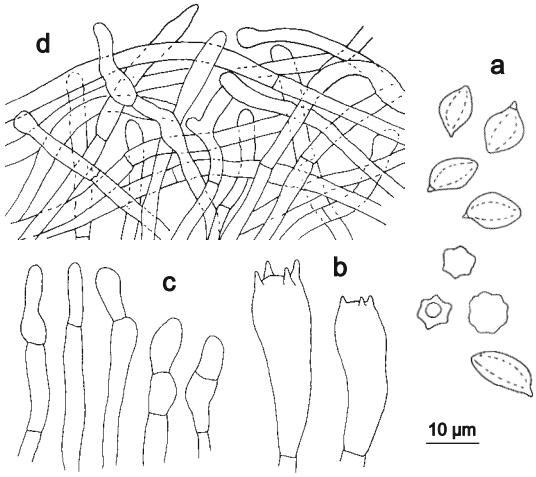

Fig. 19. *Clitopilus* sp.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-51620).

Fig. 20. *Clitopilus* sp. (KRAM F-51620). Scale bar = 50 mm.

NOTES. The specimen is characterised by relatively large basidiomes, reduced stipe, occurrence on wood remnants buried in soil and presence of cystidia-like, cylindrical, septate elements in hymenium. Colour of pileus as well as spore size and shape are similar to those of *C. prunulus*.

Collybia (Fr.) Staude

30. ***Collybia tuberosa*** (Bull.: Fr.) P. Kumm.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif (upper part of Grześkówki ridge), 1200 m a.s.l., *PP*, on litter, 49°15′59″N, 19°56′17″E, 21 July 2000 (KRAM F-50175); Grześkówki ridge, 1080 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′17″E, 5 Sept. 2001 (KRAM F-51642); upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-53824); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 22 Aug. 2001 (KRAM F-53826); at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′07″E, 5 Sept. 2001 (ZAMU 4235).

FIELD OBSERVATIONS. NE slope of Sarnia Skała massif, E slope of Zawieszka ridge, 1250 m a.s.l., *PP*/*Pmc*, on litter, 49°15′57″N, 19°56′47″E, 19 Sept. 2000; Spaleniec ridge, 950 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′57″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is known from two localities in the Polish High Tatras: in the Dolinia Pańszczycy valley and in the vicinity of the Morskie Oko lake (Nespiak 1960), as well as from the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004). It has also been noted by Wojewoda (1996) in the Polish Tatras, without a locality and in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b; Antonín & Noordeloos 1997, 2010). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Conocybe Fayod

31. ***Conocybe rickeniana*** P. D. Orton

SPECIMENS EXAMINED. Grześkówki ridge, lower part of Dolina Strążyska valley, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′26″E, 3 Oct. 2002 (KRAM F-52861).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Coprinellus P. Karst

32. ***Coprinellus micaceus*** (Bull.: Fr.) Vilgalys, Hopple & Jacq. Johnson

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, on wood remnants, 49°16′17″N, 19°56′15″E, 15 June 2002 (KRAM F-52307); Grześkówki ridge, 1060 m a.s.l., *DgF*, on wood, 49°16′19″N, 19°56′13″E, 15 June 2002 (ZAMU 4360); Grześkówki ridge, 1120 m a.s.l., windthrow with young spruce forest with *Larix*, on wood (beech log), 49°16′15″N, 19°56′17″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-53812).

FIELD OBSERVATIONS. Grześkówki ridge, 970 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′27″E, 21 July 2000.

DISTRIBUTION IN THE TATRA MTS. The species is known only from the peripheries of the Slovak Tatras (Pilát 1926; Kuthan 1989b).

33. ***Coprinellus xanthothrix*** (Romagn.) Vilgalys, Hopple & Jacq. Johnson

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1060 m a.s.l., *DgF*, on litter (small twig), 49°16′24″N, 19°57′07″E, 20 July 2000 (KRAM F-54342).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Coprinopsis P. Karst

34. ***Coprinopsis*** cf. ***narcotica*** (Batsch: Fr.) Redhead, Vilgalys & Moncalvo Fig. 21

Pileus 10–20 mm broad, first ovoid, then conical to narrowly campanulate with involute margin, grey, grey-beige, longitudinally grooved, surface covered with a thick layer of persistent, powdery velum layer. Lamellae rather crowded, free, first white, then grey and finally black, only slightly deliquescing. Stem 20–35 × 2–4 mm, cylindrical, white-grey, covered with a powdery velum. Flesh thin, smell and taste none. Spores 9.5–12.0 × 5–6 µm, amygdaliform, with a tapering base, truncate apex and central germ pore 1.5–2.0 µm broad, perisporium strongly developed, up to 2 µm thick, wrinkled. Basidia 15–25 × 7.0–7.5 µm, 4-spored. Cheilocystidia 26–60 × 26–33 µm broadly clavate, ventricose, Pleurocystidia 60–80 × 20–32 µm, broadly cylindrical, venrticose. Pileipellis a cutis. Veil in a form of spherical cells, 57–100 µm broad, loosely warted (ornamentation not soluble in 10% HCl) and diverticulate hyphae. Clamps not observed.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, N slopes, 960 m a.s.l., *DgF*, on litter (in moist place), 49°16′41″N, 19°57′17″E, 4 July 2000 (KRAM F-54343).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2002, as *Coprinus* cf. *laanii* Kits van Wav.).

NOTES. The specimen is characterized by features similar to those of *C. narcotica* apart from smell that was absent. Another species having similar features, including wrinkled perispore covering spores and lack of smell is *C. laanii*, but it occurs on wood.

Cortinarius (Pers.) Gray

35. ***Cortinarius acutus*** (Pers.) Fr. Fig. 22

Pileus 10–20 mm broad, conico-campanulate, with distinct, acute umbo, strongly hygrophanous, rusty-orange to rusty-brown and translucently striate almost to center of the pileus when moist, much paler, cream-ochraceous when dry, margin first involute, then almost straight, connected with a stem with white velar fibrils, which are also present on a pileus surface close to the margin, surface smooth. Lamellae distant, emarginate or broadly adnate, rusty-orange, concolorous with pileus, edge paler, ciliate. Stem 20–50 × 2 mm, first cream-whitish, densely covered with pale velar fibrils, then glabrescent, concolorous with pileus, with velar fibrils present in places, not forming any ring zone. Flesh thin, rusty-orange, smell none or weak, not defined, taste mild. Spores 8–10 × 4.5–6.0 µm, ellipsoid, pale yellowish in transmitted light, finely verrucose. Basidia 28–31 × 9–10 µm, 4-spored, clamped. Marginal cells 30–80 × 15–25 µm cylindrical, broadly clavate, broadly fusiform,

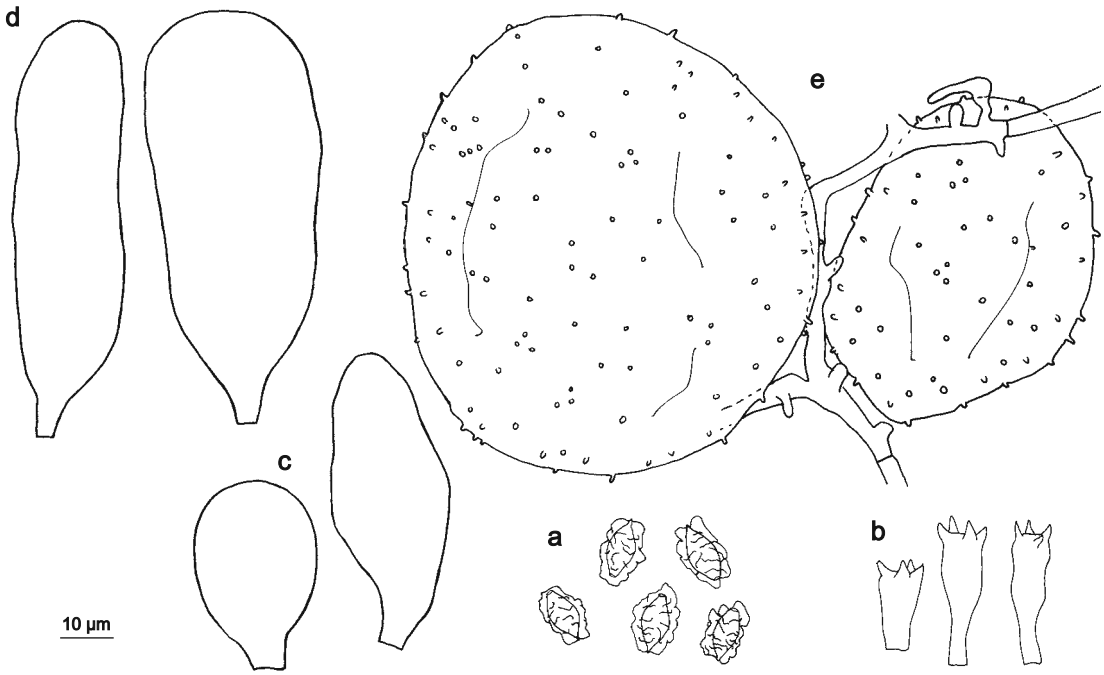

Fig. 21. *Coprinopsis* cf. *narcotica* (Batsch: Fr.) Redhead, Vilgalys & Moncalvo: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – pileipellis (KRAM F-54343).

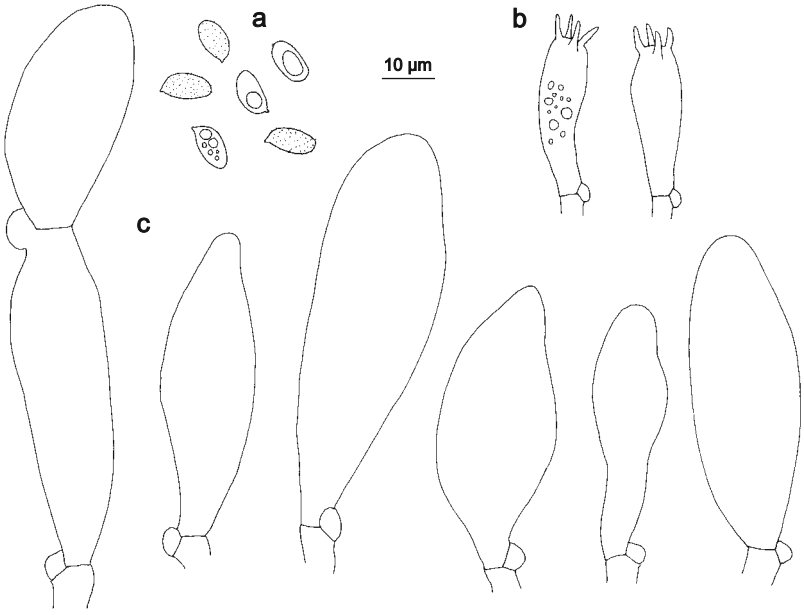

Fig. 22. *Cortinarius acutus* (Pers.) Fr.: a – spores, b – basidia, c – marginal cells (KRAM F-51751).

abundant. Pleurocystidia not seen. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically left side of valley, 1200 m a.s.l., *PP*, among mosses, 49°16′13″N, 19°56′57″E, 13 Oct. 2001 (KRAM F-51751); upper part of Grześkówki ridge, 1200 m a.s.l., spruce forest, among mosses, 49°16′04″N, 19°56′22″E, 20 Aug. 2002 (ZAMU 4394).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*/*PP*, among mosses, 49°16′18″N, 19°56′17″E, 21 Aug. 2002; NE ridge of Sarnia Skała massif, NW slopes of Zawieszka ridge, 1280 m a.s.l., *PP*, among mosses, 49°16′00″N, 19°56′47″E, 21 Aug. 2002; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, among mosses, 49°16′15″N, 19°56′58, 21 Aug. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, among mosses, 49°16′15″N, 19°56′47″E, 21 Aug. 2002; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, among mosses, 49°16′06″N, 19°56′24″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the Tatra Mts (without a locality) by Nespiak (1981) and from one locality in the Tichá Dolina valley, Slovak West Tatras (Škubla 1998b). It is also known from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b).

36. ***Cortinarius azureus*** Fr. Fig. 23

Pileus 30–50 mm broad, first hemispherical, then convex, purely lilac-violet when young, then silvery-lilac, ochraceous-lilac, brownish-lilac, nonhygrophanous, surface dry, smooth, silky, margin involute, in young specimens connected with a stem with abundant white cortina. Lamellae medium spaced, narrow, narrowly adnate, purely lilac when young, then rusty-lilac, edge smooth. Stem 50–90 × 8–13 mm, pale cream-ochraceous, covered with thick layer of veil, then cream-lilac and glabrescent, cylindrical or slightly swollen at base, more rarely slightly rooting. Flesh thick, lilac in pileus and upper half of the stem, whitish at stem base, smell and taste not recorded. Spores 8–9 × 6–7 µm, ovoid, yellowish-brown in transmitted light, distinctly verrucose. Basidia 28–35 × 8–9 µm, 4-spored, clamped. Pileipellis a cutis,

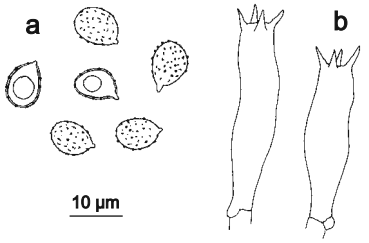

Fig. 23. *Cortinarius azureus* Fr.: a – spores, b – basidia (KRAM F-54375).

subpellis made up of short and wide elements. Clamps present.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′12″E, 9 Sept. 2001 (KRAM F-54375, ZAMU 4411).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

37. ***Cortinarius brunneus*** (Pers.: Fr.) Fr.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 20 Aug. 2001 (KRAM F-51597); 9. Sept. 2001 (KRAM F-54170); upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-51691); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 20 Aug. 2002 (ZAMU 4334).

FIELD OBSERVATIONS. Upper part of Dolina Spadowiec valley, 1200 m a.s.l., *PP*, on soil, 49°16′14″N, 19°16′57″E, 20 Aug. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 5 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus is known from the Polish and Slovak West Tatras (Anonymous 1968; Škubla 1998b, c; Lizoň & Kautmanová 2004) and from their peripheries (Kuthan 1989a, b).

38. ***Cortinarius camphoratus*** (Fr.) Fr. Fig. 24

Pileus 40–60 mm broad, first hemispherical, then convex, nonhygrophanous, violet-lilac when young, then ochraceous-lilac, surface dry, silky, edge involute, connected with stem with thick, pale

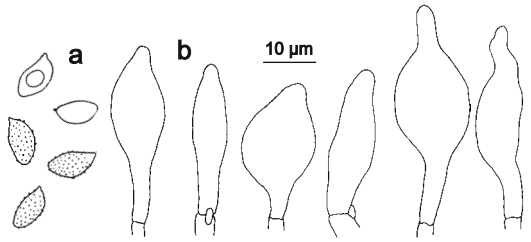

Fig. 24. *Cortinarius camphoratus* (Fr.) Fr.: a – spores, b – marginal cells (KRAM F-51592).

lilac cortina. Lamellae medium spaced, narrowly adnate, violet-lilac, then rusty-lilac, edge paler, finely ciliate. Stem 50–100 × 10–20 mm, violet-lilac, covered with a thick layer of whitish-ochraceous veil, then glabrescent, with veil remnants in places, cylindrical or slightly swollen at base. Flesh violet-lilac, ochraceous at stem base, smell strong, unpleasant of rotten potatoes, taste mild. Spores 9.0–10.5 × 5.0–6.5 µm, ellipsoid-amygdaliform, yellow in transmitted light, finely verrucose. Basidia 21–25 × 6–7 µm, 4-spored, clamped. Marginal cells 25–40 × 7–15 µm cylindrical, broadly fusiform. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1200 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′22″E, 22 Aug. 2001 (KRAM F-51592); upper part of Dolina Spadowiec valley, 'Łomik', 1250 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′57″E, 20 Aug. 2002 (KRAM F-54165); upper part of Dolina Spadowiec valley, 1146 m a.s.l., *PP*, on soil, 49°16′17″N, 19°56′57″E, 9 Sept. 2001 (ZAMU 4226).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is known from two localities in the West Tatras: in the Wantule forest at the Polish side and the Tomanová Dolina valley at the Slovak side (Kotlaba & Lazebníček 1967; Anonymous 1968; Škubla 1998b).

39. ***Cortinarius caperatus*** (Pers.: Fr.) Fr.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 20 Aug. 2001 (KRAM F-51577).

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts, reported under the name *Rozites caperata* (Pers.: Fr.) P. Karst. (Pilát 1926; Dominik & Nespiak 1953; Dominik *et al*. 1954; Dominik & Pachlewski 1956; Nespiak 1960, 1962b, c, 1966; Kubička 1964; Skirgiełło 1970; Frejlak 1973; Dermek 1977; Wojewoda 1996; Škubla 1998b); it has also been reported from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

40. ***Cortinarius dionysae*** Rob. Henry Fig. 25

Pileus 20–70 mm broad, first hemispherical, then convex to broadly conical, ochraceous-brown, surface slimy, in young specimens whitish-lilac cortina present. Lamellae medium spaced, broad, narrowly adnate, fist pale lilac, then clay-coloured, brown, edge smooth. Stem 60–80 × 10–13 mm, white-cream with lilac tint well visible especially at stem apex, cylindrical with emarginate bulb (sometimes poorly developed). Flesh whitish, lilac in stem, especially at apex, smell and taste distinct, farinaceous, flesh reaction with KOH and NH_3 negative. Spores 9–11 × 5–7 µm, amygdaliform to citriform, yellow-brown in transmitted light, distinctly ornamented. Basidia 28–30 × 9–10 µm, clavate, 4-spored, clamped. Pileipellis an ixocutis. Clamps present.

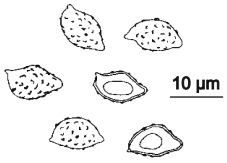

Fig. 25. *Cortinarius dionysae* Rob. Henry: spores (KRAM F-54173).

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, N slopes, 1370 m a.s.l., *Pmc*, on soil, 49º15′53″N, 19º56′38″E, 8 Sept. 2001 (KRAM F-54173).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

41. ***Cortinarius flexipes*** (Pers.: Fr.) Fr. Fig. 26

Pileus 15–30 mm broad, conical, then campanulate, expanded, with distinct, usually acute umbo, hygrophanous, dark brown, dark violet-brown when moist, ochraceous-brown when dry, surface entirely covered with ochraceous-whitish scales and fibrils, margin involute in young specimens and connected with a stem with whitish cortina. Lamellae rather distant, broad, adnate, first clay-coloured, then rusty-brown, edge smooth. Stem 40–70 × 2–3 mm, dark brown, in young specimens violet at apex, in lower part covered with remnants of whitish veil forming irregular bands and usually also annular zone. Flesh thin, dark brown, violet at stem apex, smell weak of *Pelargonium* leaves. Spores 8–9 × 5–6 µm, ellipsoid, yellow-brown in transmitted light, distinctly verrucose. Basidia 25–30 × 7–8 µm, 4-spored, clamped, some with brownish content. Pileipellis a cutis. Clamps present.

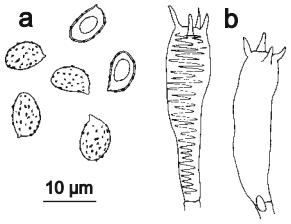

Fig. 26. *Cortinarius flexipes* (Pers.: Fr.) Fr.: a – spores, b – basidia (KRAM F-54351).

SPECIMENS EXAMINED. NE ridge of Sarnia Skała massif, below Zawieszka ridge, 'Wymyte', 1250 m a.s.l., *PP*, on soil, 49°16′00″N, 19°56′47″E, 20 Aug. 2002 (KRAM F-54351).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

42. ***Cortinarius illibatus*** Fr. Fig. 27

Pileus 20–30 mm broad, first hemispherical, then expanded with slightly involute margin. yellow-brown, slightly paler at margin, cream-ochraceous, surface slimy, margin connected with a stem with whitish cortina. Lamellae medium spaced, narrow, broadly adnate, first clay-coloured

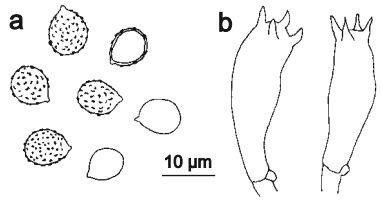

Fig. 27. *Cortinarius illibatus* Fr.: a – spores, b – basidia (KRAM F-51664).

without lilac tint, then rusty-brown, edge smooth, Stem 40–60 × 5–8 mm, cream-whitish, darker, beige above a cortina zone, surface slimy. Flesh whitish, smell none, taste mild. Spores 7–8 × 7.0–7.5 µm, ovoid, yellow-brown in transmitted light, distinctly verrucose. Basidia 25–32 × 7–10 µm, 4-spored, clamped. Pileipellis an ixocutis. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, at hiking trail, 1010 m a.s.l., *DgF*, on soil, 49°16′11″N, 19°57′27″E, 8 Sept. 2001 (KRAM F-51664).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

43. ***Cortinarius infractus*** Berk. Fig. 28

Pileus 40–70 mm broad, first hemispherical, then broadly conical, convex to expanded, non-hygrophanous, grey-brown, grey-beige-brownish, surface slimy, margin involute, in young specimens connected with a stem with greyish cortina. Lamellae medium spaced, narrow, broadly adnate, beige with a slight lilac tint, then grey-brown, edge smooth. Stem 50–80 × 10–20 mm, beige, ochraceous-grey, steel-bluish at apex especially in young specimens, cylindrical, surface covered with veil fibrils. Flesh thick, greyish-beige with a slight lilac tint, smell fungoid, taste bitter. Spores 7–8 × 6–7 µm, ovoid, subglobose, yellow-brown in transmitted light, distinctly verrucose. Basidia 28–30 × 7.0–8.5 µm, 4-spored, clamped. Pileipellis an ixocutis. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, at hiking trail, 1000 m a.s.l., *DgF*, on soil, 49°16′11″N, 19°57′22″E, 8 Sept. 2001 (KRAM F-51662); middle part of Dolina Białego valley, 980 m

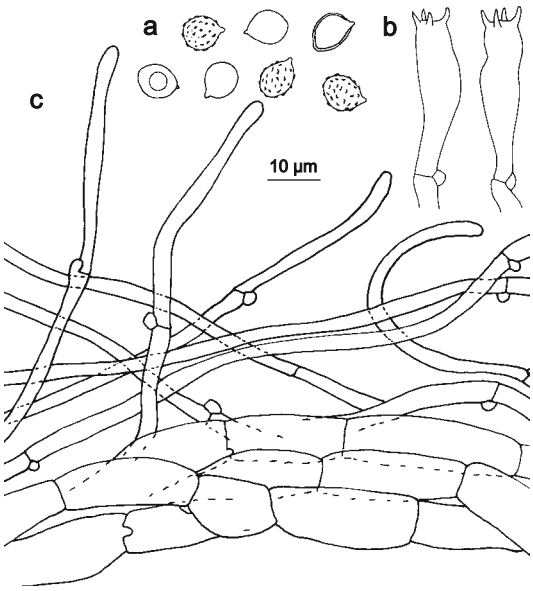

Fig. 28. *Cortinarius infractus* Berk.: a – spores, b – basidia, c – pileipellis (KRAM F-51663).

a.s.l., *DgF*, on soil, 49°16′23″N, 19°57′27″E, 8 Sept. 2001 (KRAM F-51663); middle part of Dolina Białego valley, at hiking trail, orographically right side of valley, 990 m a.s.l., *DgF*, on soil, 49°16′19″N, 19°57′27″E, 8 Sept. 2001 (KRAM F-61685); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 20 Aug. 2002 (KRAM F-54167); at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001 (ZAMU 4236).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, Spaleniec ridge, 950 m a.s.l., *AP/DgF*, on soil, 49°16′43″N, 19°56′57″E, 7 Aug. 2000.

DISTRIBUTION IN THE TATRA MTS. The species is known from the Dolina Miętusia valley, Polish West Tatras [Anonymous 1968; Škubla 1998b, c, as *Cortinarius infractus* (Pers.: Fr.) Fr. var. *obscurocyaneus*]. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

44. ***Cortinarius largus*** Fr.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 910 m a.s.l., *AP*, on soil, 49°16′43″N, 19°57′12″E, 9 Sept. 2001 (KRAM F-51684); the Sarnia Skała massif, no data about precise locality, 20 Aug. 2002 (KRAM F-55456).

DISTRIBUTION IN THE TATRA MTS. The species has already been reported from the study area, in the Dolina Strążyska valley (Domański 1997).

45. ***Cortinarius*** cf. ***mussivus*** (Fr.) Melot

Fig. 29

Pileus 40–70 mm broad, first hemispherical, then convex and expanded, first olive-beige, yellowish-beige, then yellow-brown, surface slimy. Lamellae medium spaced, broad, adnate, yellow-green, then yellow-brown, rusty-brown, edge smooth. Stem 40–60 × 10–20 mm, greyish-yellow, greenish-yellow, cylindrical or slightly swollen at base, cortina pale yellow. Flesh yellow-green, smell strong, unpleasant, earthy, taste not recorded, reaction with KOH brownish, with $FeSO_4$ dark olive-green. Spores 12–15 × 7–8 µm, ellipsoid, yellow-brown in transmitted light, distinctly verrucose. Basidia 45–60 × 8–11 µm, 4-spored. Pileipellis an ixocutis. Clamps present.

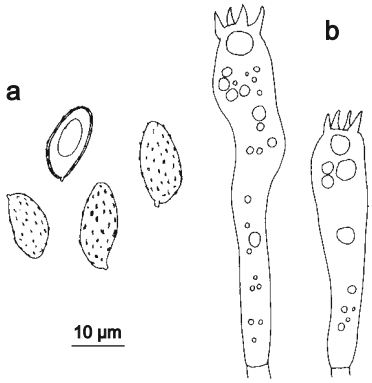

Fig. 29. *Cortinarius* cf. *mussivus* (Fr.) Melot: a – spores, b – basidia (KRAM F-54353).

SPECIMENS EXAMINED. Sarnia Skała massif, no data about precise locality and habitat (KRAM F-54353).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

46. ***Cortinarius odorifer*** Britzelm. Fig. 30

Pileus 40–80 mm broad, first hemispherical, then convex, orange-brown, copper-brown, surface sticky, margin involute, in young specimens connected with stem with a yellow-greenish cortina. Lamellae medium spaced, broad, narrowly adnate, greenish-yellow, then greenish-brown, edge smooth. Stem 40–60 × 10–15 mm, greenish-yellow, cylindrical with emarginate bulb at base up to 25 mm wide. Flesh thick, pale yellowish in pileus, yellow in stem, smell strong of aniseed, taste mild. Spores 11–12 × 6–7 µm, amygdaliform, citriform, yellow-brown in transmitted light, distinctly verrucose. Basidia 35–40 × 8–9 µm, 4-spored, with brownish content. Pileipellis an ixocutis. Clamps present.

SPECIMENS EXAMINED. Between Spaleniec ridge and 'Łomik', 1180 m a.s.l., *PP*, on soil, 49°16′10.5″N, 19°56′57″E, 20 Aug. 2001 (KRAM F-51578, ZAMU 4234); upper part of Grześkówki ridge, 1140 m a.s.l., *DgF/PP*, on soil, 49°16′11″N, 19°56′17″E, 21 July 2000 (KRAM F-50122).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, 1150 m a.s.l., spruce monoculture, 49°15′51″N, 19°57′07″E, 5 Sept. 2000; at Ścieżka nad Reglami hiking trail, about 200 m W from Czerwona Przełęcz pass, 1220 m a.s.l., *PP*, on soil, 49°15′45″N, 19°56′27″E, 5 Sept. 2000; W slope of Sarnia Skała massif, 1200 m a.s.l., *PP*/*Pmc*, on soil, 49°15′57″N, 19°56′17″E, 19 Sept. 2000; NE slopes of Sarnia Skała massif, E slope of Zawieszka ridge, 1300 m a.s.l., *PP*, on soil, 49°15′57″N, 19°56′47″E, 19 Sept. 2000; upper part of Dolina ku Dziurze valley, W slope of Spaleniec ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′47″E, 20 Aug. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′54″E, 20 Aug. 2001; 9 Sept. 2001; 13 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; 16 Aug. 2003; 9 Sept. 2003; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′37″E, 21 Aug. 2001; 9 Sept. 2001; 13 Oct. 2001; edge of Polana Białego meadow, 1160 m a.s.l., *DgF*/*PP*, on soil, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 21 Aug. 2001; 8 Sept. 2001; 3 Oct. 2002; upper part of Grześkówki ridge, NW slope of Sarnia Skała massif, 1200 m a.s.l., *PP*, on soil, 49°16′ E 19°56′17″E, 22 Aug. 2001; N slope of Sarnia Skała massif, 1320 m a.s.l., *PP*, on soil, 49°15′58″N, 19°56′32″E, 22 Aug. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 22 Aug. 2001; 5 Sept. 2001; 21 Aug. 2002; Grześkówki ridge, 1150 m a.s.l., *DgF*/*PP*, on soil, 49°16′11″N, 19°56′17″E, 22 Aug. 2001; Grześkówki ridge, 1100 m a.s.l., windthrow, on soil, 49°16′17″N, 19°56′17″E, 22 Aug. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 5 Sept. 2001; 3 Oct. 2002; middle part of Dolina Białego valley, at hiking trail, 1000 m a.s.l., *DgF*, on soil, 49°16′11″N, 19°57′27″E, 8 Sept. 2001; at Ścieżka nad Reglami hiking trail, SE from Polana Białego meadow, 1190 m a.s.l., *DgF*/*PP*, on soil, 49°15′45″N, 19°56′57″E, 8 Sept. 2001; S slope of Sarnia Skała massif, 1300 m a.s.l., *PP*, on soil, 49°15′51″N, 19°56′27″E, 8 Sept. 2001; upper part of Dolina ku Dziurze valley, S from Dziura wyżnia cave, 1130 m a.s.l., *PP*, on soil, 49°16′17″N, 19°56′42″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, above Dziura Wyżnia cave, 1050 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, at Dziura Wyżnia cave, 1050 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′42″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, E slope of Spaleniec ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′57″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, E slope of Spaleniec ridge, alt, 1160 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′57″E, 9 Sept. 2001; upper part of orographically left branch of Dolina ku Dziurze valley, 1100 m a.s.l., spruce forest with *Larix* (?planted), on soil, 49°16′11″N, 19°56′27″E, 12 Oct. 2001; N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 13 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 13 Oct. 2001; NE slope of Sarnia Skała massif, 1300 m a.s.l., *Pmc*, on soil, 49°15′59″N, 19°56′37″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley, NW slope of Zawieszka ridge, 1250 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′47″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley,

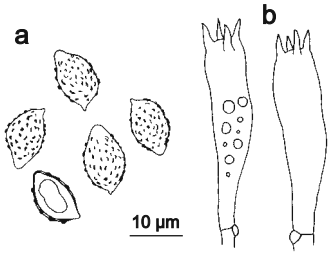

Fig. 30. *Cortinarius odorifer* Britzelm.: a – spores, b – basidia (KRAM F-51578).

orographically right side of valley, 1100 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′42″E, 13 Oct. 2001; Grześkówki ridge, 1120 m a.s.l., windthrow, on soil, 49°16′15″N, 19°56′17″E, 21 Aug. 2002; upper part of orographically left branch of Dolina ku Dziurze valley, 1170 m a.s.l., *DgF*/*PP*, on soil, 49°16′06″N, 19°56′28″E, 21 Aug. 2002; Zawieszka ridge, 1250 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′52″E, 21 Aug. 2002; Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 3 Oct. 2002; upper part of Grześkówki ridge, 1170 m a.s.l., *DgF*/*PP*, on soil, 49°16′07″N, 19°56′17″E, 3 Oct. 2002; upper part of Dolina ku Dziurze valley, 1050 m a.s.l., *PP*, on soil, 49°16′17″N, 19°56′37″E, 16 Aug. 2003; upper part of Dolina Spadowiec valley, orographically left side of valley, above a source of a stream, 1150 m a.s.l., *PP*, on soil, 49°16′17″N, 19°57′02″E, 9 Sept. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported a few times from the West Tatras (Kotlaba & Lazebníček 1967; Anonymous 1968; Nespiak *et al*. 1973; Škubla 1998b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

47. ***Cortinarius percomis*** Fr. Fig. 31

Pileus 40–60 mm broad, first hemispherical, then convex to expanded, ochraceous-yellow, yellowish-brown, surface slimy. Lamellae medium spaced, broad, adnate, yellow-green, then yellow-brown, edge smooth. Stem 40–60 × 10–15 mm, green-yellow, swollen at base, with a yellowish cortina. Flesh thick, yellow-green, smell distinct, aromatic, taste mild, reaction with KOH red-brown. Spores 11–13 × 6–7 µm, narrowly amygdaliform, citriform, yellow-brown in transmitted light, distinctly verrucose. Basidia 35–40 × 8–9 µm, 4-spored. Pileipellis an ixocutis. Clamps present.

SPECIMENS EXAMINED. S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on soil, 49°15′54″N, 19°56′30″E, 3 Oct. 2001 (KRAM F-54354); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 3 Oct. 2002 (KRAM F-54355, 54347); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 20 Aug. 2002 (KRAM F-54356).

FIELD OBSERVATIONS. S slope of Sarnia Skała massif, 1350 m a.s.l., at the top, *Pmc*, on soil, 49°15′54″N, 19°56′30″E, 3 Oct. 2002.

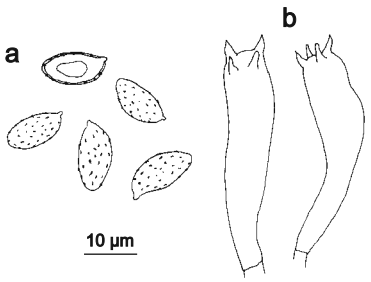

Fig. 31. *Cortinarius percomis* Fr.: a – spores, b – basidia (KRAM F-54356).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

48. ***Cortinarius piceae*** Frøslev, T. S. Jeppesen & Brandrud Fig. 32

Pileus 60–80 mm broad, first hemispherical, then convex, nonhygrophanous, sordid-yellow, ochraceous-yellow, slightly darker in center, surface slimy. Lamellae medium spaced, first lilac, then coffee-with-milk, and finally rusty-brown, edge smooth. Stem 50–60 × 10–15 mm, whitish, cylindrical, with 25 mm wide, emarginate bulb at base. Flesh thick, whitish, smell and taste none, reaction with KOH: pileus conetxt and pileipellis – brown, stem context – none. Spores 11–12 × 6.0–6.5 µm, amygdaliform, citriform, yellow-brown in transmitted light, distinctly verrucose. Basidia 26–32 × 9–10 µm, 4-spored, clamped. Pileipellis an ixocutis, built up of 4–7 µm wide, incrusted hyphae. Clamps present.

SPECIMENS EXAMINED. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 20 Aug. 2002 (KRAM F-54352).

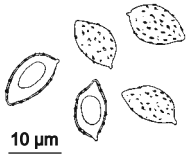

Fig. 32. *Cortinarius piceae* Frøslev, T. S. Jeppesen & Brandrud: spores (KRAM F-54352).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

49. ***Cortinarius salor*** Fr. Fig. 33

Pileus 40 mm broad, convex, pale violet-lilac, ochraceous in center, surface slimy. Lamellae rather distant, narrow, narrowly adnate, ochraceous-brown with a lilac tint, edge smooth. Stem 50 × 8 mm, whitish, lilac at apex, cortina scanty, surface slimy. Flesh whitish, smell none, taste mild. Spores 9–10 × 8–9 µm, ovoid, subglobose, yellow-brown in transmitted light, distinctly verrucose. Basidia 35–37 × 9–11 µm, 4-spored, clamped. Pileipellis an ixocutis. Clamps present.

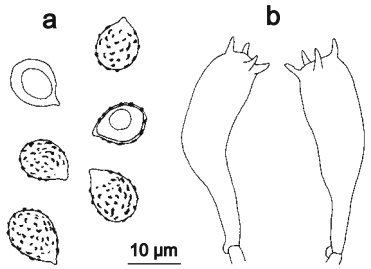

Fig. 33. *Cortinarius salor* Fr.: a – spores, b – basidia (KRAM F-54168).

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically right side of valley, 920 m a.s.l., *AP/DgF*, on soil, 49°16′44″N, 19°57′12″E, 9 Sept. 2001 (KRAM F-54168).

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality at the Droga pod Reglami hiking trail, possibly in the area of the Sarnia Skała massif (Domański 1997) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987).

50. ***Cortinarius sanguineus*** (Wulfen: Fr.) Fr.

SPECIMENS EXAMINED. S edge of Polana Białego meadow, 1150 m a.s.l., *PP*, on soil, 49°15′51″N, 19°56′57″E, 21 Aug. 2001 (KRAM F-51590, ZAMU 4312).

FIELD OBSERVATIONS. Lower part of Grześkówki ridge, E slopes, 950 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°56′27″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, N slopes of Grześkówki ridge, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported several times from the Tatra Mts, also from the Dolina Strążyska valley in the study area [Nespiak 1962c; Anonymous 1968; Frejlak 1973, as *Dermocybe sanguinea* (Wulfen *ex* Fr.) Ricken; Škubla 1998a, as *Dermocybe sanguinea* (Wulfen *ex* Fr.) Wünsche, Škubla 1998b]. It has also been noted in the peripheries of the Slovak West Tatras [Kuthan 1989b, as *Dermocybe sanguinea* (Wulfen *ex* Fr.) Wünsche].

51. ***Cortinarius spilomeus*** (Fr.: Fr.) Fr. Fig. 34

Pileus 30–60 mm broad, convex, then expanded, nonhygrophanous, grey-beige with a reddish tint, surface silky, covered with delicate, appressed, reddish squamules and fibrils of veil remnants. Lamellae medium spaced, broad, broadly adnate, rusty-brown, edge smooth. Stem 60–90 × 5–8 mm, narrowly clavate, greyish-beige, with a slight steel-bluish tint at apex, covered with rusty-red veil remnants. Flesh beige, sometimes with a violet tint at stem apex, smell and taste not recorded. Spores 7–8 × 6.0–7.5 µm, ovoid, subglobose, broadly ellipsoid, yellow-brown in transmitted light, distinctly verrucose. Basidia 28–30 × 7–9 µm, 4-spored and clamped. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, vicinity of caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 20 Aug. 2002 (ZAMU 4336); upper part of Dolina Białego valley, by Ścieżka nad Reglami hiking trail, 1250 m a.s.l., *PP*, under spruce, 49°15′41″N, 19°57′17″E, 20 Oct. 2001, (KRAM F-54215).

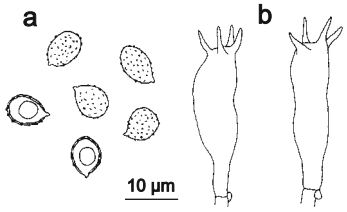

Fig. 34. *Cortinarius spilomeus* (Fr.: Fr.) Fr.: a – spores, b – basidia (KRAM F-54215).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

52. ***Cortinarius splendens*** Rob. Henry Fig. 35

Pileus 40–60 mm broad, hemispherical, then convex and expanded, not uniformly coloured, sulphur-greenish-yellow at margin, yellow-brown, orange-brown in center, surface fibrillose-slimy. Lamellae medium spaced, broad, adnate, yellow, then greyish-yellow-brown, edge smooth. Stem 40–60 × 10–15 mm, yellow, greenish-yellow, with emarginate bulb at base, up to 20 mm wide, cortina yellow. Flesh yellow, smell fungoid, taste mild. Spores 10–12 × 6–7 µm, amygdaliform, citriform, yellow-brown in transmitted light, distinctly verrucose. Basidia 27–35 × 9–10 µm, 4-spored. Pileipellis an ixocutis. Clamps present.

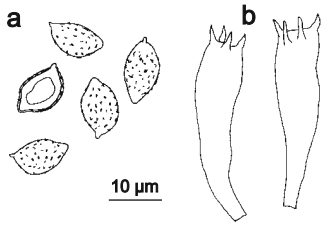

Fig. 35. *Cortinarius splendens* Rob. Henry: a – spores, b – basidia (KRAM F-51653).

SPECIMENS EXAMINED. N slopes of Sarnia Skała massif, 1200 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′27″E, 5 Sept. 2001 (KRAM F-51653); mouth of Dolina Białego valley, orographically left side of valley, 950 m a.s.l., beech forest with *Acer pseudoplatanus*, on soil, 49°16′43″N, 19°57′27″E, 8 Sept. 2001 (KRAM F-51658); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 9 Sept. 2001 (ZAMU 4317).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, 1070 m a.s.l., *DgF*, on soil, 49°15′58″N, 19°57′17″E, 8 Sept. 2001; upper part of Dolina Białego valley, 1090 m a.s.l., spruce forest (planted), on soil, 49°15′51″N, 19°57′22″E, 8 Sept. 2001; upper part of Dolina ku Dziurze valley, vicinity of caves, 1150 m a.s.l., *DgF*, on soil, 49°16′18″N, 19°56′52″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; upper part of Spaleniec ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′57″E, 9 Sept. 2001; upper part of Spaleniec ridge, 1150 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′57″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

53. ***Cortinarius stillatitius*** Fr. Fig. 36

Pileus 30–60 mm broad, hemispherical, red-brown, slightly darker in center, surface very slimy. Lamellae medium spaced, broad, adnate, clay-ochraceous, edge finely ciliate. Stem 50–80 × 8–10 mm, tapering toward base, whitish, covered with violet-lilac slime layer. Flesh whitish, smell and taste not recorded. Spores 13–14 × 7–8 µm, amygdaliform. citriform, yellow-brown in transmitted light, finely verrucose. Basidia 35–42 × 12–13 µm, clavate, 4-spored. Marginal cells 25–46 × 13–28 µm, broadly clavate. Pileipellis an ixocutis made up of cylindrical hyphae 4–6 µm in diameter. Clamps lacking in all parts of basidiome.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1130 m a.s.l., young spruce forest with fir and beech, *Calamagrostis arundinacea*, *C. varia* and *Vaccinium* spp., on soil, 49°16′17″N, 19°56′17″E, 21 July 2000 (KRAM F-50143).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported so far only from the Tichá Dolina

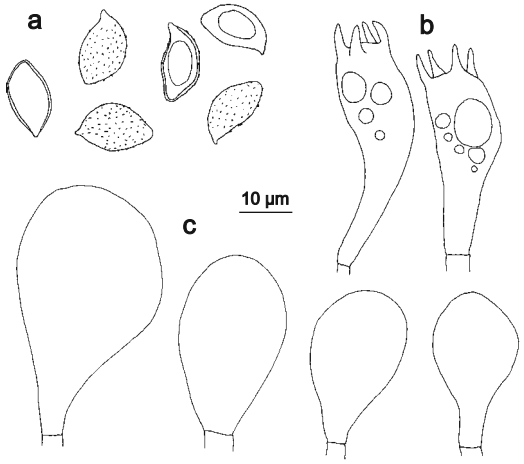

Fig. 36. *Cortinarius stillatitius* Fr.: a – spores, b – basidia, c – marginal cells (KRAM F-50143).

valley, Slovak West Tatras (Škubla 1998a, c, as *Cortinarius pseudosalor* J. E. Lange).

54. ***Cortinarius varius*** (Schaeff.: Fr.) Fr. Fig. 37

Pileus 30–40 mm broad, hemispherical, then expanded with small, flat umbo and involute margin, yellow-ochraceous, slightly darker in center, surface very slimy. Lamellae medium spaced, emarginate, violet-lilac, then with rusty tint from spores, edge smooth. Stem 40–60 × 5–10 mm, whitish, cream, cylindrical or narrowly clavate. Flesh whitish, in central part of stem watery-whitish, smell and taste not recorded. Spores 11–12 × 6–7 µm, amygdaliform, pale yellow-brown in transmitted light, verrucose. Basidia 33–38 × 7–9 µm, 4-spored. Pileipellis an ixocutis. Clamps present.

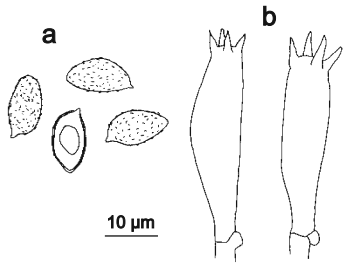

Fig. 37. *Cortinarius varius* (Schaeff.: Fr.) Fr.: a – spores, b – basidia (KRAM F-54216).

SPECIMENS EXAMINED. Upper part of Dolina Strążyska valley, orographically right side of valley, at Ścieżka nad Reglami hiking trail, 1100 m a.s.l., spruce forest, on soil, 49°15′45″N, 19°55′57″E, 3 Oct. 2002 (KRAM F-54216); upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *PP*, on soil, 49°16′17″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-54358).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from a few localities, mostly in the area of the High Tatras [Dominik & Nespiak 1953; Dominik & Pachlewski 1956, as *Phlegmacium varium* (Schaeff.) Fr.; Pilát 1926, as *Phlegmatium varium* Scgaeff.] and from the peripheries of the Slovak West Tatras (Kuthan 1989b).

55. ***Cortinarius vibratilis*** (Fr.: Fr.) Fr. Fig. 38

Pileus 20–30 mm broad, convex, rusty-orange, margin paler, whitish, surface slimy. Lamellae medium spaced, broad, narrowly adnate, rusty-brown, edge smooth. Stem 20–40 × 4–5 mm, whitish, cortina white, surface slimy. Flesh whitish, smell none, taste very bitter. Spores 6.5–7.0 × 4–4.5 µm, ellipsoid, slightly amygdaliform, yellow-brown in transmitted light, finely verrucose. Basidia 27–32 × 7–8 µm, 4-spored, clamped. Pileipellis an ixocutis. Clamps present.

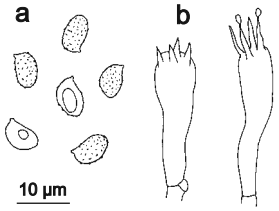

Fig. 38. *Cortinarius vibratilis* (Fr.: Fr.) Fr.: a – spores, b – basidia (KRAM F-54171).

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, W slopes of Spaleniec ridge, 1060 m a.s.l., *DgF/PP*, on soil, 49°16′13″N, 19°56′42″E, 5 Sept. 2001 (KRAM F-54171).

DISTRIBUTION IN THE TATRA MTS. The fungus is known only from the peripheries of the Slovak West Tatras (Kuthan 1989b).

Craterellus Pers.

56. ***Craterellus cornucopioides*** (L.: Fr.) Pers.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope, at a path, 1000 m a.s.l., *DgF*, on soil, 49°16′36.5″N, 19°57′17″E, 20 Aug. 2001 (KRAM F-51576, ZAMU 4231).

FIELD OBSERVATIONS. Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 5 Sept. 2001; Grześkówki ridge, 1080 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′17″E, 5 Sept. 2001; Dolina Spadowiec valley, orographicaly right side of valley, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′14″E, 9 Sept. 2001; Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′17″E, 12 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has already been reported from the study area, in

the Dolina Spadowiec valley (Wojewoda *et al*. 1986), it is also known from the Slovak High Tatras (Pilát 1926).

57. ***Craterellus lutescens*** (Pers.: Fr.) Fr. Fig. 39

Solitary or a few pilei growing together. Pileus deeply infundibuliform, 20–30 mm broad, yellow-brown, olive-brown, surface covered with radially arranged, ascending squamules. Hymenium bright yellow, orange-yellow, smooth or slightly wrinkled, decurrent. Stem 30–50 × 3–5 mm, bright orange-yellow, cylindrical, first solid, then hollow, smooth. Flesh yellow in pileus and marginal area of stem, whitish in central part of stem. Spores 10–11 × 7–8 µm, broadly ellipsoid to ovoid, slightly thick-walled, with granular content. Basidia 70–100 × 8.5–12.0 µm, cylindrical, 4–5-spored. Cystidia lacking. Pileipellis a cutis to trichoderm, made up of slightly thick-walled elements in tufts. Clamps numerous.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, above Jama Wyżnia cave, 1070 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-51694, ZAMU 4233).

DISTRIBUTION IN THE TATRA MTS. The species has been reported so far from the vicinity of the Morskie Oko lake, Polish High Tatras (Dominik & Nespiak 1953; Dominik & Pachlewski 1956, as *Cantharellus lutescens* Bull.; Anonymous 1968) and from the peripheries of the Slovak West Tatras (Kuthan 1989a).

58. ***Craterellus sinuosus*** (Fr.) Fr. Fig. 40

Pileus clavate, infundibuliform, 20–30 mm broad, with irregular margin, surface smooth, grey-brown, slightly paler at margin. Hymenium ochraceous, grey-brown, smooth or slightly rugose, decurring. Stem grey-brown, ochraceous-brown, cylindrical or flattened, first solid, then hollow. Flesh grey-brown in pileus, whitish in stem. Spores 9.5–11.0 × 6.5–7.0 µm, broadly ellipsoid, slightly thick-walled, with granular content. Basidia 68–80 × 8–10 µm, cylindrical, 4–5-spored. Cystidia none. Pileipellis a cutis, made up of short, cylindrical elements. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 20 Aug. 2001 (KRAM F-51564); ridge between Dolina Białego

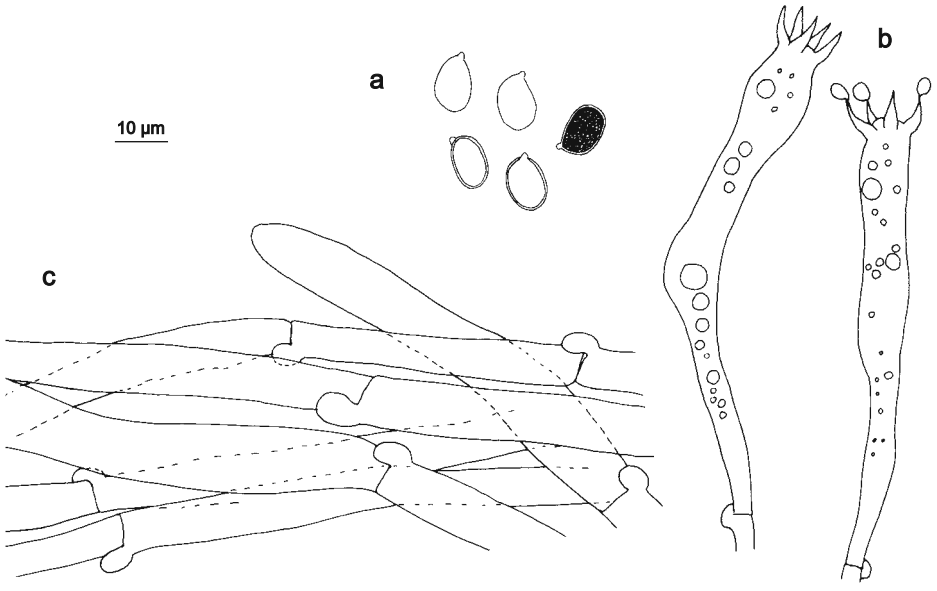

Fig. 39. *Craterellus lutescens* (Pers. : Fr.) Fr.: a – spores, b – basidia, c – pileipellis (KRAM F-51694).

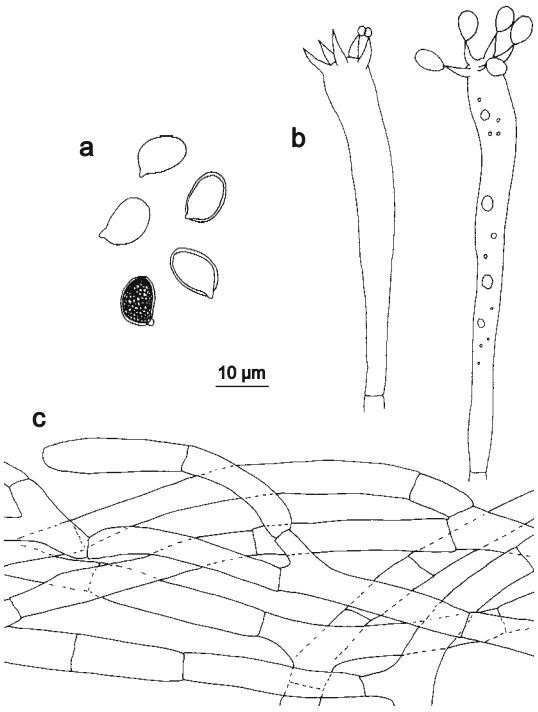

Fig. 40. *Craterellus sinuosus* (Fr.) Fr.: a – spores, b – basidia, c – pileipellis (KRAM F-51564).

valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′17″E, 20 Aug. 2001 (ZAMU 4297).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001; upper part of Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′18″E, 5 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

59. ***Craterellus tubaeformis*** (Fr.) Quél. Fig. 41

Pileus 20–30 mm broad, flat and slightly depressed in center or infundibuliform, yellow-brown, red-brown, surface covered with ascending squamules, edge finely ciliate. Hymenium bright golden-yellow, in form of thick, distant, regular, narrow, usually forked, slightly decurrent ribs. Stem 20–40 × 3–4 mm, bright yellow, brownish-yellow, cylindrical or slightly swollen at base, smooth, hollow. Flesh bright yellow, smell none, taste mild. Spores 9.5–11.0 × 6–7 µm, broadly ellipsoid to ovoid, with granular content. Basidia 65–80 × 9–11 µm, cylindrical, 4-spored. Cystidia lacking. Pileipellis a cutis to trichoderm. Clamps numerous.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 21 Aug. 2001 (KRAM F-51575); W slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′17″E, 22 Aug. 2001 (ZAMU 4230).

FIELD OBSERVATIONS. Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″*N,* 19°56′15″*E,* 5 Sept. 2001; 12 Oct. 2001; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″*N,* 19°56′32″*E,* 8 Sept. 2001; 21 Aug. 2002; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″*N,* 19°56′27″*E,* 8 Sept. 2001; 12 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″*N,* 19°56′47″*E,* 9 Sept. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking

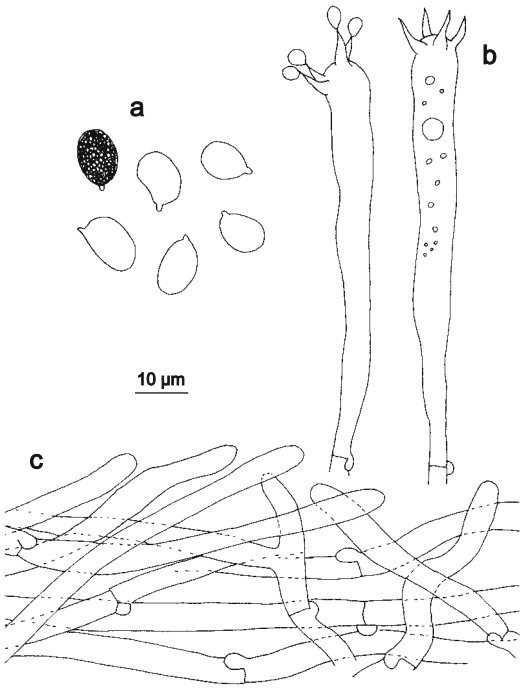

Fig. 41. *Craterellus tubaeformis* (Fr.) Quél.: a – spores, b – basidia, c – pileipellis (KRAM F-51575).

trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″*N,* 19°57′27″*E,* 9 Sept. 2001; middle part of Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″*N,* 19°56′17″*E,* 5 Sept. 2001; upper part of Dolina Białego valley, at hiking trail, 1050 m a.s.l., *DgF*, on soil, 49°15′58″*N,* 19°57′17″*E,* 8 Sept. 2001; upper part of Dolina ku Dziurze valley, NW slopes, 1090 m a.s.l., *PP*, on soil, 49°16′11″*N,* 19°56′42″*E,* 13 Oct. 2001; NE ridge of Sarnia Skała massif, Zawieszka ridge, 1300 m a.s.l., *PP*/*Pmc*, on soil, 49°15′58″*N,* 19°56′47″*E,* 21 Aug. 2002; upper part of Grześkówki ridge, 1170 m a.s.l., *DgF*/*PP*, on soil, 49°16′08″N, 19°56′17″*E,* 3 Oct. 2002.

Distribution in the Tatra Mts. The fungus is known from several localities in the High Tatras and Belanské Tatry [Dominik & Nespiak 1953, as *Cantharelus tubiformis* Fr.; Dominik & Pachlewski 1956, as *Cantharellus infundibuliformis* (Scop.) Fr.; Svrček 1987, as *Cantharellus tubaeformis*] and from the peripheries of the West Tatras [Rudnicka-Jezierska 1965, as *Cantharellus tubaeformis* (Bull.) Fr.; Kuthan 1989b, as *Cantharellus tubaeformis* Fr.]. Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Crepidotus (Fr.) P. Kumm.

60. ***Crepidotus applanatus*** (Pers.) P. Kumm.
Fig. 42

Pileus 5–50 mm broad, spathuliform, circular, first convex with involute margin, then expanded, hygrophanous, translucently striate at margin, surface smooth, whitish to cream, pale yellowish-ochraceous when dry. Lamellae medium spaced, narrow (up to 2 mm broad), narrowly adnate or slightly decurrent, first white, then cream and finally cinnamon, edge smooth. Stipe reduced, pileus laterally attached to the substrate, tomentose at the point of the attachment, in young basidiomata short stipe (up to a few mm long) present. Flesh watery-white, elastic, smell none, taste mild. Spore print ochraceous-brown. Spores 4.5–5.5 µm in diameter, globose, warted, pale yellow in transmitted light. Basidia 22–27 × 6–7 µm, 4-spored. Cheilocystidia 27–40 × 8–15 µm, cylindrical, clavate, abundant. Pileipellis a cutis, built up of cylindrical, 4–6 µm broad hyphae. Pileocystidia 30–45 × 6–7 µm, cylindrical. Clamps present.

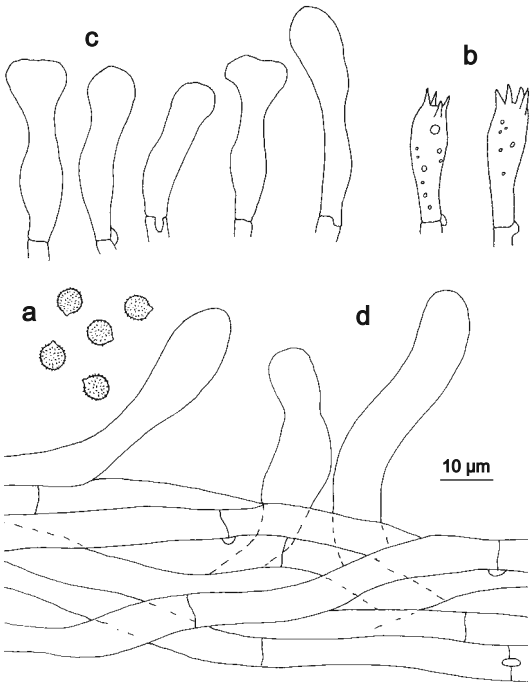

Fig. 42. *Crepidotus applanatus* (Pers.) P. Kumm.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (ZAMU 4337).

Specimens examined. Lower part of Dolina ku Dziurze valley, E slope, 950 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°56′32″E, 24 Sept. 1999 (KRAM F-50051); Grześkówki ridge, 1050 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°56′17″E, 5 Sept. 2001 (KRAM F-51645); Dolina Spadowiec valley, W slope (right side of valley), 1050 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°57′07″E, 9 Sept. 2001 (KRAM F-51702); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 20 Aug. 2002 (KRAM F-53292), 20 Aug. 2001 (KRAM F-53297); Grześkówki ridge, lower part of Dolina Strążyska valley, 960 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-53291), on fallen log (beech?), 14 Oct. 2003 (KRAM F-53773); Dolina Spadowiec valley, the right side of valley, at a path, 1050 m a.s.l., *DgF*, on wood of beech, 49°16′26″N, 19°57′07″E, 12 July 2002 (KRAM F-53293); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′40″N, 19°56′27″E, 16 Sept. 2004 (KRAM F-54166); Grześkówki ridge, lower part of Dolina Strążyska valley, 960 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′25″E, 20 Aug. 2002 (ZAMU 4337).

FIELD OBSERVATIONS. Dolina Spadowiec valley, right side of valley, 1000 m a.s.l., *DgF*, on wood, 49°16′33″N, 19°57′12″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. The species is know from one locality in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004).

61. ***Crepidotus cesatii*** (Rabenh.) Sacc. var. ***subsphaerosporus*** (J. E. Lange) Senn-Irlet Fig. 43

Pileus 5–25 mm broad, spathuliform, circular, slightly convex, margin involute, surface matt, woolly, white. Lamellae rather distant, narrow (up to 3 mm broad), narrowly adnate, first whitish, then cream and cinnamon, edge smooth. Stipe reduced (absent), pileus laterally or dorsally attached to the substrate, tomentose at the point of the attachment, in young basidiomata short stipe (up to a few mm long) present. Flesh white, elastic, smell and taste none. Spore print ochraceous-cinnamon. Spores 6.0–8.5 × 5–6 µm, broadly ellipsoid, echinulate, pale yellowish-brown in transmitted light, Basidia 25–30 × 7.0–7.5 µm, 4-spored. Cheilocystidia 31–82 × 8–17 µm, clavate, irregular, sometimes forked at apex, numerous. Pileipellis a cutis, built up of cylindrical, 3–6 µm broad hyphae. Clamps present.

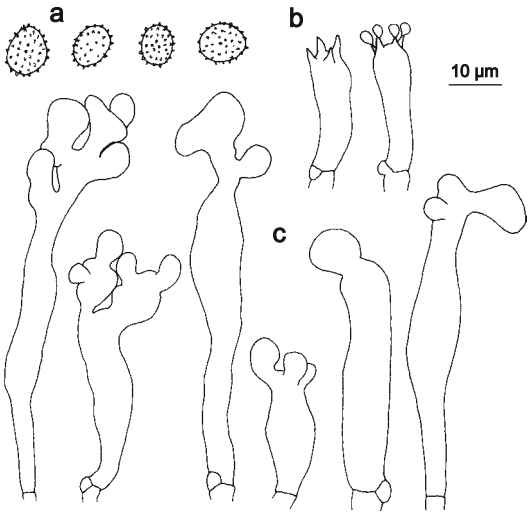

Fig. 43. *Crepidotus cesatii* (Rabenh.) Sacc. var. *subsphaerosporus* (J. E. Lange) Senn-Irlet: a – spores, b – basidia, c – cheilocystidia (KRAM F-53294).

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, near Droga pod Reglami hiking trail, 930 m a.s.l., ?*AP*, on trunk of *Picea abies*, 49°16′43″N, 19°57′07″E, 8 Nov. 2000 (KRAM F-50390); lower part of Dolina ku Dziurze valley, 920 m a.s.l., *DgF*, on wood (stump and roots) of *Picea abies*, 49°16′43″N, 19°56′37″E, 6 July 2001 (KRAM F-53295); Spaleniec ridge, 1150 m a.s.l., *DgF*, on wood and bark of *Picea abies*, 49°16′24″N, 19°56′52″E, 15 June 2001 (KRAM F-53294, ZAMU 4320).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ripková 2009, as *C. kubickae* Pilát).

62. ***Crepidotus epibryus*** (Fr.: Fr.) Quél. Fig. 44

Pileus 2–10 mm broad, spathuliform, reniform, first convex, campanulate, then expanded, margin involute, surface matt, woolly, whitish. Lamellae rather distant, narrow (up to 2 mm broad), narrowly attached, white, then cream and cinnamon, edge slightly ciliate. Stipe reduced, pileus dorsally or laterally attached to the substrate, tomentose at the point of attachment. Flesh white, smell and taste none. Spores 7.5–10.0 × 2.5–3.5 µm, cylindrical-fusiform, smooth, very pale in transmitted light, often in two or four together in preparation. Basidia 20–23 × 5.0–6.5 µm, 4-spored. Cheilocystidia 25–40 × 4–6 × 2–3 µm, elongated, cylindrical, with

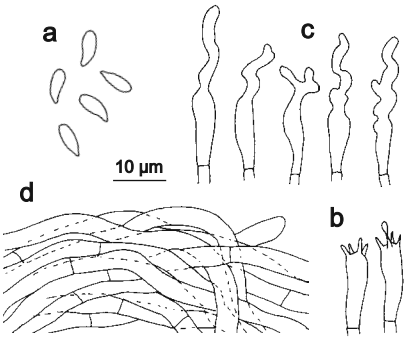

Fig. 44. *Crepidotus epibryus* (Fr.: Fr.) Quél.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53296).

long, narrow, flexuous outgrowths at apex, often forked. Pileipellis a loose cutis, built up of cylindrical, 3–5 µm broad hyphae. Clamps lacking.

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, near hiking trail, 1050 m a.s.l., *DgF* (with *Acer pseudoplatanus*), on leaves of *Fagus sylvatica*, 49°15′58″N, 19°57′17″E, 5 Sept. 2000 (KRAM F-53296).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Cystoderma Fayod

63. ***Cystoderma carcharias*** (Pers.: Fr.) Fayod

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *AP*, on soil, 49°16′43″N, 19°57′17″E, 7 Aug. 2000 (KRAM F-50207); 930 m a.s.l., 5 Sept. 2001 (ZAMU 4232); 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54160); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54159); middle part of Dolina ku Dziurze valley, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54158).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *AP*, on soil, 49°16′43″N, 19°57′17″E, 5 Sept. 2000; 9 Sept. 2001; 12 Oct. 2001; upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′47″E, 19 Sept. 2000; lower part of Dolina ku Dziurze valley, 920 m a.s.l., *AP/DgF*, on soil, 49°16′37″N, 19°56′37″E, 9 Sept. 2001; middle part of Dolina Spadowiec valley, orographically right side of valley, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′11″E, 9 Sept. 2001; mouth of Dolina Białego valley, 940 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′27″E, 9 Sept. 2001; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 12 Oct. 2001; upper part of Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 12 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from several localities in the Polish and Slovak Tatras (Kubička 1964; Anonymous 1968; Skirgiełło 1984; Škubla 1998a, b; Lizoň & Kautmanová 2004) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b).

64. ***Cystoderma jasonis*** (Cooke & Massee) Harmaja Fig. 45

Pileus 5–15 mm broad, first hemispherical, then convex to broadly parabolic, nonhygrophanous, rusty-orange, surface rough, granulose-squamulose, squamules made up of conglomerations of veil elements, staining dark brown in KOH, margin covered with veil remnants. Lamellae distant, broad, emarginate, cream with a rusty tint. Stem 10–25 × 2–3 mm, rusty-orange, cream at base, cylindrical to clavate, with distinctly swollen base up to 7 mm, squamulose-floccose below the annulus, annulus squamulose-floccose, fugacious. Flesh cream in pileus, cream-brownish in stem, smell and taste not recorded. Spores 6.5–8.0 × 3–4 µm, smooth, ellipsoid-fusiform, hyaline, amyloid. Basidia 20–22 × 6–7 µm, 4-spored. Cystidia lacking. Veil made up of thick-walled (walls up to 1.5 µm thick), subglobose, ovoid to broadly ellipsoid elements 15–30 × 15–45 µm, with clamps. Clamps present. Arthroconidia not observed.

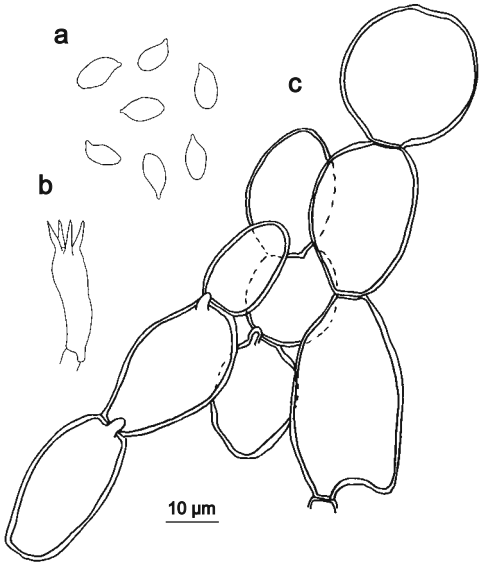

Fig. 45. *Cystoderma jasonis* (Cooke & Massee) Harmaja: a – spores, b – basidium, c – elements of velum (KRAM F-54161).

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 13 Oct. 2001 (KRAM F-54161); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 13 Oct. 2001 (KRAM F-54704); Sarnia Skała massif, *PP*, on litter, 15 Oct. 2000 (KRAM F-50281); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 13 Oct. 2001 (KRAM F-54705); 3 Oct. 2002 (KRAM F-54708); upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 3 Oct. 2002 (KRAM F-54706); Spaleniec ridge, 1170 m a.s.l., *DgF/PP*, on litter, 49°16′20″N, 19°56′52″E, 3 Oct. 2002 (KRAM F-54707).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Cystolepiota Singer

65. ***Cystolepiota seminuda*** (Lasch) Bon

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, orographically left side of valley, at a path, 950 m a.s.l., *DgF*, on soil, 49°16′28″N, 19°57′26″E, 5 Sept. 2000 (KRAM F-50589).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Entoloma (Fr.) P. Kumm.

66. ***Entoloma byssisedum*** (Pers.: Fr.) Donk
Fig. 46

Pileus 5–13 mm broad, reniform, fan-shaped, grey-beige, surface smooth. Lamellae distant, almost free, broad, grey-pinkish, edge smooth. Stem rudimental, excentric 2 × 1 mm, concolorous with pileus. Flesh thin, pale, smell and taste farinaceous. Spores 10–11 × 7–8 µm, 6–8-angled, with distinct angles, pale in transmitted light. Basidia 28–32 × 9–10 µm, 4-spored. Cystidia lacking. Pileipellis a cutis, made up of cylindrical hyphae. Clamps present but not numerous.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, W slope of Spaleniec ridge, 1100 m a.s.l., *DgF*, on wood, at underside of fallen branch of *Fagus sylvatica*, 49°16′17″N, 19°56′47″E, 10 Sept. 2003 (KRAM F-54359).

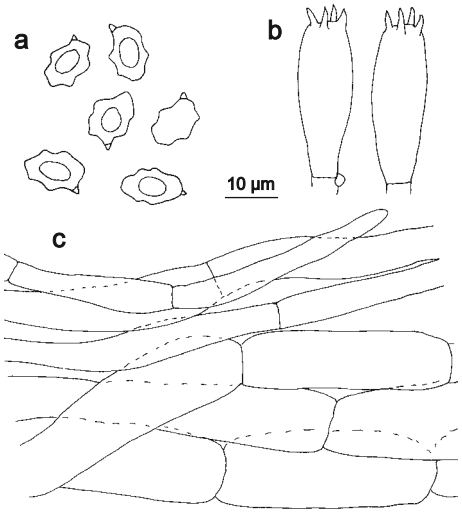

Fig. 46. *Entoloma byssisedum* (Pers.: Fr.) Donk: a – spores, b – basidia, c – pileipellis (KRAM F-54359).

DISTRIBUTION IN THE TATRA MTS. The species has been reported once from Belanské Tatry (Svrček 1987, as *Claudopus byssisedus*).

67. ***Entoloma cetratum*** (Fr.: Fr.) M. M. Moser
Fig. 47

Pileus 15–40 mm broad, conical, often with a truncate apex, then conico-expanded, hygrophanous, yellow-brownish, ochraceous, brownish and translucently striate almost to pileus center when moist, ochraceous-beige when dry. Lamellae medium spaced, almost free, broad, ochraceous-beige-pinkish, edge smooth. Stem 40–70 × 1–2 mm, beige, silvery fibrillose, cylindrical, base white tomentose. Flesh thin, pale, smell and taste farinaceous. Spores 11–13 × 7–9 µm, 5–6-angled, pale in transmitted light. Basidia 28–32 × 6.5– 7.0 µm, 2-spored. Cystidia lacking. Pileipellis a cutis, made up of cylindrical hyphae. Clamps lacking.

SPECIMENS EXAMINED. S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on soil, 49°15′54″N, 19°56′30″E, 12 Oct. 2001 (KRAM F-51752); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 13 Oct. 2001 (KRAM F-51753); 10 June 2002 (KRAM F-52304); 8 Sept. 2001 (KRAM F-53308); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*,

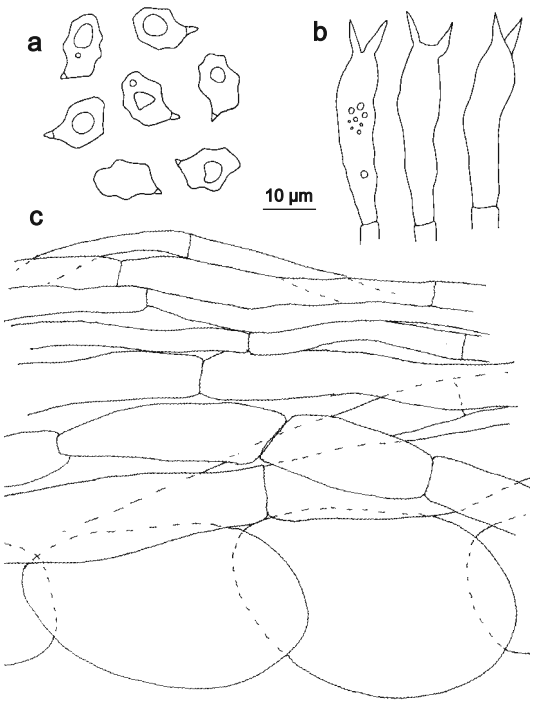

Fig. 47. *Entoloma cetratum* (Fr.: Fr.) M. M. Moser: a – spores, b – basidia, c – pileipellis (KRAM F-51752).

49°15′57″N, 19°56′27″E, 3 Oct. 2002 (KRAM F-53301); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 7 July 2000 (KRAM F-53320); 9 Sept. 2001 (KRAM F-51695).

DISTRIBUTION IN THE TATRA MTS. The fungus has been noted on a few localities in all three parts of the massif [Nespiak 1960, as *Rhodophyllus cetratus* (Fr.) Quél.; Škubla 1998a; Lizoň & Kautmanová 2004] and in the peripheries of the Slovak Tatras [Kuthan & Singer 1987, as *Rhodophyllus cetratus* (Fr. *ex* Fr.) Quél.; Kuthan 1989b]. Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

68. ***Entoloma conferendum*** (Britzelm.) Noordel.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, between Dolina Strążyska valley and Czerwona Przełęcz pass, 1150 m a.s.l., spruce forest, on soil, 49°15′45″N, 19°56′07″E, 1 Dec. 2000 (KRAM F-50462); mounth of Dolina Białego valley, at Droga pod Reglami hiking trail, 950 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′27″E, 15 June 2001 (KRAM F-53327, ZAMU 4275).

DISTRIBUTION IN THE TATRA MTS. The fungus has been noted a few times in the Tatra Mts (Nespiak 1960, as *Rhodophyllus staurospora* Bres.; Nespiak 1962a, as *Rhodophyllus staurosporus* (Bres.); Frejlak 1973, as *Rhodophyllus staurosporus* (Bres.) J. E. Lange; Wojewoda 1996; Lizoň & Kautmanová 2004) and in the peripheries of the Slovak West Tatras (Kuthan 1989a, b).

69. ***Entoloma*** cf. ***dichroum*** (Pers.: Fr.) P. Kumm. Fig. 48

Pileus 10 mm broad, campanulate with a distinct umbo, brown, fibrillose-squamulose, margin involute. Lamellae medium spaced, broad, narrowly adnate, whitish, edge concolorous, smooth. Stem 60 × 4 mm, violet, whitish at base, fibrillose. Flesh thin, pale, smell and taste not recorded. Spores 9–12 × 6.5–9.5 µm, 5–6-angled, heterodiametrical, Q = 1.2–1.5, pale in transmitted light. Basidia 34–40 × 11–12 µm, 2- or 4-spored. Cheilocystidia 21–48 × 5–10 µm cylindrical, lageniform-fusiform. Pileipellis a trichoderm, built

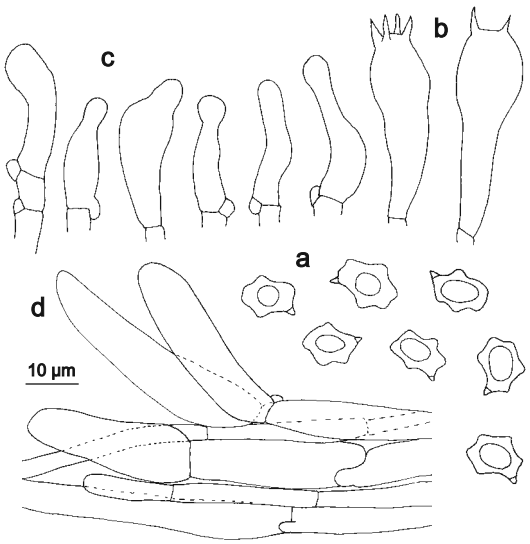

Fig. 48. *Entoloma* cf. *dichroum* (Pers.: Fr.) P. Kumm.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53313).

up of cylindrical hyphae. Pigment intracellular. Clamps numerous.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood (small fallen twig), 49°16′20″N, 19°57′07″E, 21 July 2000, *leg. A. Ronikier & Ł. Wilk* (KRAM F-53313).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

70. ***Entoloma excentricum*** Bres. Fig. 49

Pileus 20–40 mm broad, convex, then broadly-conical, expanded, cream, pale ochraceous, slightly darker in center, surface smooth. Lamellae medium spaced, broad, adnexed, beige, beige-pinkish, edge smooth. Stem 20–30 × 3–4 mm, cream. Flesh thin, whitish, smell and taste not recorded. Spores 10–13 × 7–9 µm, 5–8-angled (angles not very distinct), pale in transmitted light. Basidia 35–45 × 11–13 µm, 4-spored. Cheilocystidia 40–60 × 10–18 µm, lageniform-fusiform. Pileipellis a cutis, made up of cylindrical hyphae. Clamps numerous.

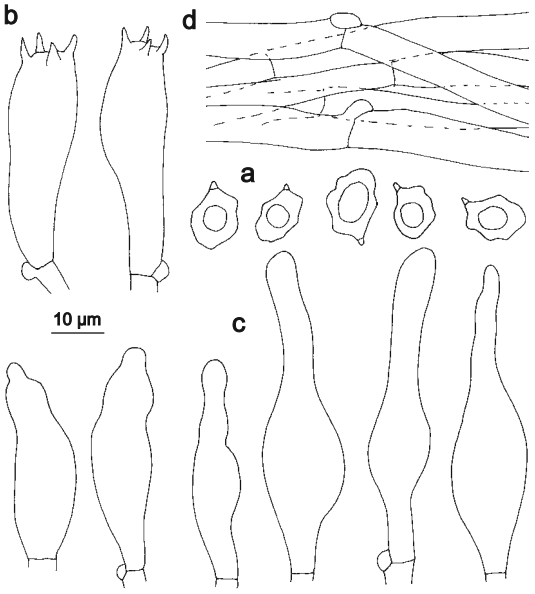

Fig. 49. *Entoloma excentricum* Bres.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53315).

SPECIMENS EXAMINED. S slopes of Sarnia Skała massif, 1370 m a.s.l., subalpine meadow, on soil, 49°15′54″N, 19°56′31″E, 8 Sept. 2001 (KRAM F-53315); 20 Aug. 2002, *leg. A. Ronikier & M. Ronikier* (KRAM F-55457).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

71. ***Entoloma hirtipes*** (Schumach.: Fr.) M. M. Moser Fig. 50

Pileus 25–50 mm broad, conico-campanulate, with broad, flat umbo, then expanded, hygrophanous, greyish-brown, red-brown and translucently striate to the half of pileus radiatus when moist, pallescent greyish-beige on drying, surface smooth,

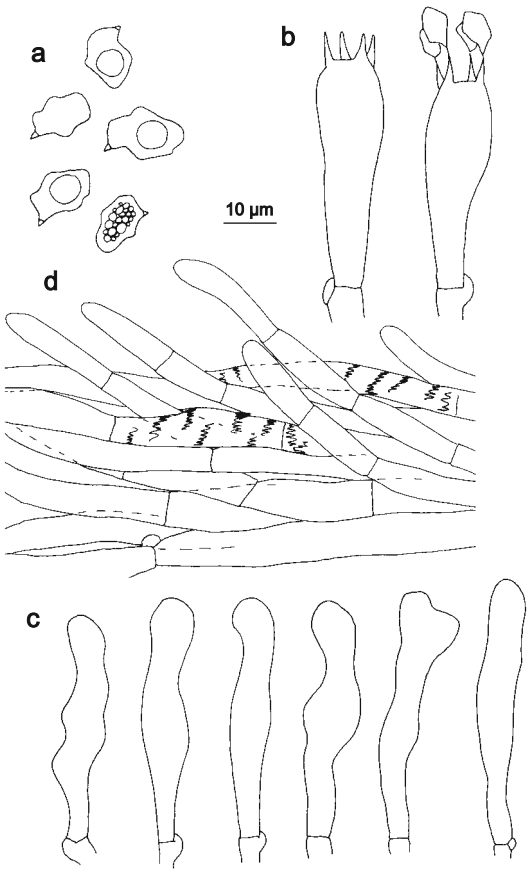

Fig. 50. *Entoloma hirtipes* (Schumach.: Fr.) M. M. Moser: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53328).

silky. Lamellae distant, very broad (up to 7 mm), narrowly adnate, emarginate, edge uneven, finely ciliate. Stem 80–120 × 4–5 mm, grey-beige, silvery fibrillose, cylindrical, slightly swollen at base (up to 8 mm), hollow, slightly pruinose in upper part, base white tomentose. Flesh thin, greyish-beige, smell and taste strong, farinaceous. Spores 11–14 × 8.5–9.5 µm, 5–6-angled, pale in transmitted light. Basidia 42–50 × 12–15 µm, 4-spored, clamped. Cheilocystidia 46–55 × 7–17 µm cylindrical, flexuous, narrowly utriform, often slightly swollen in middle part and at apex. Pileipellis a cutis, made up of cylindrical elements 6–22 µm wide. Pileus context made up of very long elements, 15–35 µm wide. Pigment incrusting (weakly) and in addition also intracellular. Clamps present in hymenium, in other parts rare.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 15 May 2001 (KRAM F-53304); about 50 m E from Czerwona Przełęcz pass, near Ścieżka nad Reglami hiking trail, 1298 m a.s.l., edge of spruce forest with *Sorbus aucuparia*, on soil, 49°15′44″N, 19°56′42″E, 15 May 2003 (KRAM F-53328); N slope of Sarnia Skała massif, 1250 m a.s.l., *PP*, on soil, 49°16′07″N, 19°56′32″E, 16 May 2001 (KRAM F-53329); W slope of Sarnia Skała massif, 1165 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′17″E, 16 June 2001 (ZAMU 4276).

FIELD OBSERVATIONS. Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 15 May 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus has been noted on a few localities in the West and High Tatras at Polish side of the border [Dominik & Nespiak 1953, as *Nolanea mammosa* Fr.; Rudnicka-Jezierska 1965, as *Rhodophyllus hirtipes* (Schum. *ex* Fr.) J. E. Lange; Wojewoda 1996].

72. ***Entoloma juncinum*** (Kühner & Romagn.) Noordel. Fig. 51

Pileus 5–15 mm broad, first conical, then expanded, hygrophanous, grey-brown, yellow-brown and translucently striate when moist, pale grey-brown, grey-beige when dry. Lamellae distant, broad, narrowly adnate or almost free, edge uneven. Stem 30–50 × 2–3 mm, grey-beige, cylindrical. Flesh thin, *ca* 1 mm thick, grey-brown,

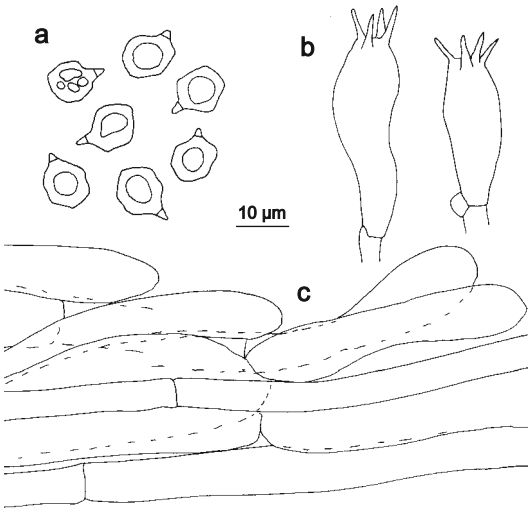

Fig. 51. *Entoloma juncinum* (Kühner & Romagn.) Noordel.: a – spores, b – basidia, c – pileipellis (KRAM F-53306).

smell weak, taste distinct, farinaceous. Spores 8.0–10.5 × 7.0–9.5 µm, 5–6-angled, isodiametrical, pale in transmitted light. Basidia 28–37 × 10–12 µm, 4-spored, clamped. Cheilocystidia lacking. Pileipellis a cutis. Pigment incrusting in pileipellis and in deeper layers, and intracellular. Clamps present in hymenium, lacking in other tissues.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, among mosses, 49°15′53″N, 19°56′38″E, 8 Sept. 2001 (KRAM F-53306).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

73. ***Entoloma myrmecophilum*** (Romagn.) M. M. Moser Fig. 52

Pileus 40–70 mm broad, conical, then expanded, brown, surface smooth. Lamellae distant, narrowly adnate, broad. Stem 40–60 × 7–10 mm, beige, cylindrical, hollow, slightly swollen toward base and with white mycelium. Flesh fragile, smell and taste not recorded. Spores 8–10 × 6.5–7.0 µm, 5–6-angled, pale in transmitted light. Basidia 30–39 ×

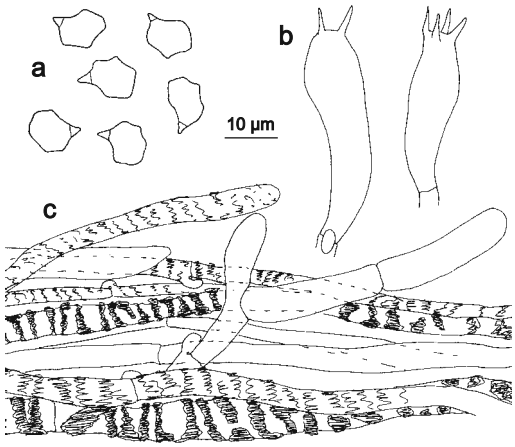

Fig. 52. *Entoloma myrmecophilum* (Romagn.) M. M. Moser: a – spores, b – basidia, c – pileipellis (KRAM F-53317).

8–11 µm, 2- or 4-spored, clamped. Cheilocystidia lacking. Pileipellis an (ixo)cutis, built up of cylindrical hyphae less than 10 µm wide, terminal elements cylindrical to clavate. Pigment strongly incrusting hyphae of the pileipellis. Clamps present in all tissues.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 5 Sept. 2001 (KRAM F-53317).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

74. ***Entoloma nitidum*** Quél. Fig. 53

Pileus 20–40 mm broad, broadly conical, then convex, dark black-blue, not hygrophanous, not translucently striate, surface slightly fibrillose. Lamellae distant, broad, narrowly adnate, first whitish, then pinkish, edge smooth, slightly greyish-blue in places. Stem 40–80 × 4–8 mm, narrowly clavate or fusiform, steel-blue, slightly paler than the pileus, slightly fibrillose, with white mycelium at base. Flesh thin, whitish, in cortical layers of pileus and stipe steel-blue, smell and taste none. Spores 7–8 × 6.5–8.0 µm, weakly 5–8-angled, isodiametrical, thin-walled, almost hyaline in transmitted light. Basidia 38–45 × 10–11 µm, 4-spored, clamped. Cheilocystidia lacking. Pileipellis a cutis, built up of cylindrical hyphae, some of them ascending to form a trichoderm-like structure, ascending elements cylindrical, clavate or capitate. Pigment intracellular. Clamps numerous.

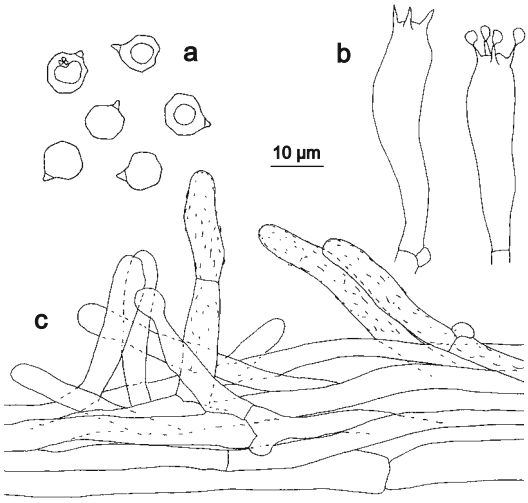

Fig. 53. *Entoloma nitidum* Quél.: a – spores, b – basidia, c – pileipellis (KRAM F-54365).

SPECIMENS EXAMINED. NE ridge of Sarnia Skała massif, upper part of Dolina Spadowiec valley, NW slopes, 1230 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′57″E, 20 Aug. 2002 (KRAM F-54365).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the Wantule forest, Polish West Tatras (Anonymous 1968, as *Rhodophyllus nitidus*) and from the peripheries of the Slovak West Tatras (Kuthan 1989a).

75. ***Entoloma pallescens*** (P. Karst.) Noordel. Fig. 54

Pileus 30–50 mm broad, conical, then conico-expanded, with small but distinct umbo and straight margin, hygrophanous, yellow-brown and translucently striate when moist, ochraceous-brownish when dry, surface smooth. Lamellae medium spaced, broad, adnexed to almost free, pale, beige to pale brownish with pinkish tint. Stem cylindrical, 70–90 × 3–4 mm, slightly swollen at base, slightly paler than the pileus, cream-beige, longitudinally silvery fibrillose. Flesh greyish-

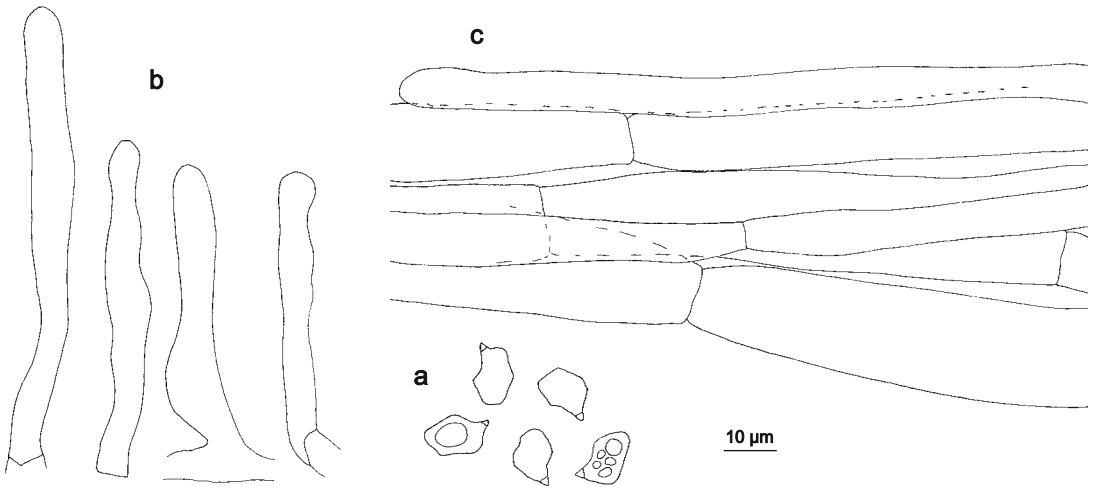

Fig. 54. *Entoloma pallescens* (P. Karst.) Noordel.: a – spores, b – caulocystidia, c – pileipellis (KRAM F-54370).

beige, smell and taste none. Spores 10–12 × 6–8 µm, heterodiametrical, 5–6-angled. Basidia 40–45 × 10–11 µm, 4-spored, clamped. Cheilocystidia lacking. Caulocystidia in upper part of a stem, cylindrical, 50–85 × 5–10 µm. Pileipellis a cutis. Pigment intracellular. Clamps numerous in hymenium, in other parts lacking.

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, N slopes, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 10 June 2002 (KRAM F-54370); W slope, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 15 June 2001, *leg. A. Ronikier & M. Ronikier* (KRAM F-54371); 7 June 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-53385).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

76. ***Entoloma rhodopolium*** (Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-54366); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2002 (KRAM F-54373).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

77. ***Entoloma sericellum*** (Fr.: Fr.) P. Kumm. Fig. 55

Pileus 10–20 mm broad, hemispherical, then convex or plano-convex, whitish-ochraceous, whitish-pinkish, surface silky, in older specimens slightly fibrillose-squamulose, especially in center, nonhygrophanous, not translucently striate. Lamellae distant, broadly adnate, broad, first whitish, then pink. Stem 40–60 × 2–3 mm, white, with a yellowish-ochraceous tint, smooth, cylindrical, with white mycelium at base. Flesh thin, white, smell and taste none. Spores 9.5–12.0 × 6.5–9.0 µm, 5–8-angled, pale in transmitted light. Basidia 32–36 × 11–14 µm, 4-spored, clamped. Cheilocystidia 36–57 × 8–19 µm, lageniform, fusiform, cylindrical. Pileipellis a cutis to trichoderm. Pigment not observed. Clamps present.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 22 Aug. 2001 (KRAM F-53322); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 20 Aug. 2002 (KRAM F-54360).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the peripheries of the Slovak High Tatras (Pilát 1926, as *Leptonia sericella* Fr.). Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

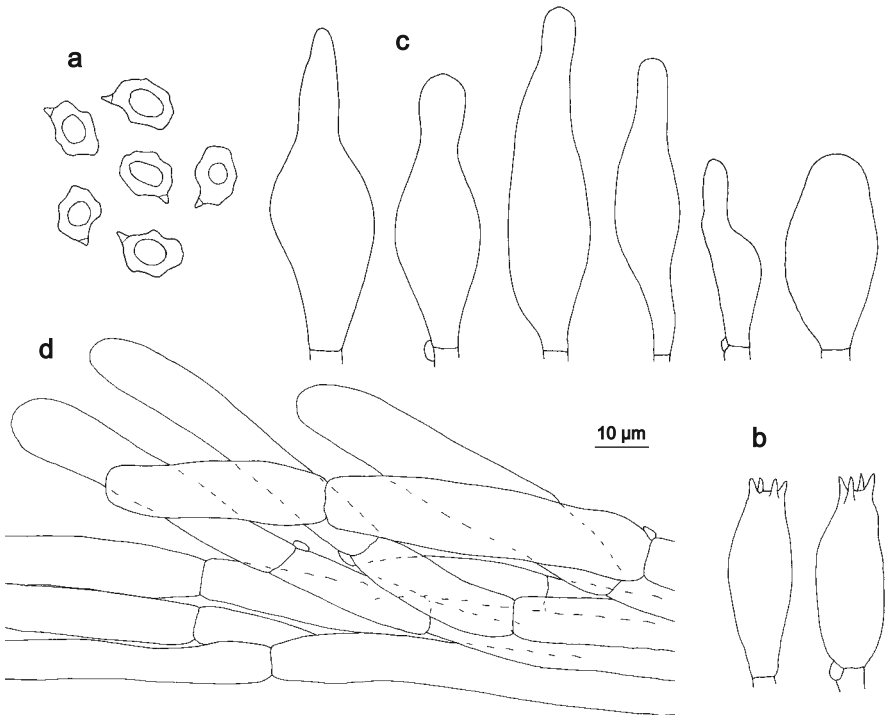

Fig. 55. *Entoloma sericellum* (Fr.: Fr.) P. Kumm.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53322).

78. ***Entoloma serrulatum*** (Fr.: Fr.) Hesler
Fig. 56

Pileus 15–30 mm broad, first hemispherical, then convex or expanded, often depressed or umbilicate in center, blue-black, steel-dark blue, rarely dark brown with blue-black fibrils or squamules, nonhygrophanous, not translucently striate, surface first smooth, then fibrillose and radially squamulose, especially in center, sometimes at margin, between blue-black fibrils paler trama is sometimes visible. Lamellae medium spaced, broad, broadly adnate, white, then pinkish, edge black serrulate on the entire length or only at pileus margin, more rarely concolorous with surface. Stem 40–90 × 2–3 mm, blue-black, slightly paler than the pileus, steel-blue, grey with a blue tint, slightly fibrillose, cylindrical, with white tomentum at base. Flesh pale grey-blue in pileus, paler in stipe, smell none or strong, of a soap (smell is persistent in dried specimens), taste none or unpleasant, of a soap. Spores 9.5–12.0 × 6.5–7.0 µm, 5–8-angled, pale in transmitted light. Basidia 32–40 × 10–11 µm, 4-spored. Lamellar edge sterile, built up of cylindrical hyphae going parallelly to the edge, terminal cells ascending in dense clusters, 20–60 × 5–10 µm, cylindrical to clavate, often with blue-black inrtacellular pigment. Pileipellis a cutis to trichoderm. Pigment intracellular. Clamps lacking.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 22 Aug. 2001 (KRAM F-51589); NE ridge of Sarnia Skała massif, Zawieszka ridge, 1300 m a.s.l., among *Dryas octopetala*, on calcareous rocks, on soil, 49°15′58″N, 19°56′42″E, 20 Aug. 2002 (KRAM F-54361, ZAMU 4406); upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF/PP*, on soil, 49°16′20″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-53321); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 20 Aug. 2002 (KRAM F-54362, 54363); upper part of Dolina ku Dziurze valley, 1130 m a.s.l., windthrow, on soil, 49°16′11″N, 19°56′42″E, 20 Aug. 2002 (KRAM F-54364).

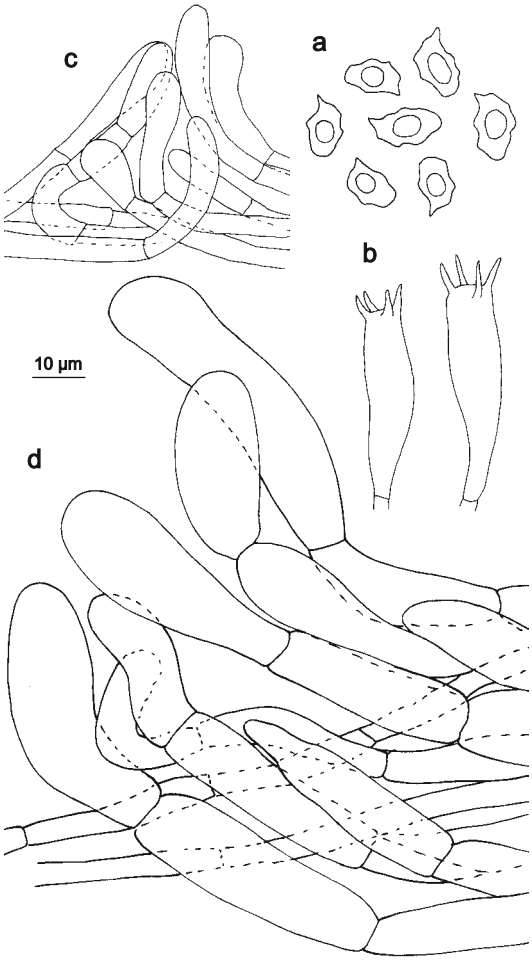

Fig. 56. *Entoloma serrulatum* (Fr.: Fr.) Hesler: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-54361).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

79. ***Entoloma sordidulum*** (Kühner & Romagn.) P. D. Orton Fig. 57

Pileus 20–40 mm broad, hemispherical, then convex to expanded, often slightly depressed in center, hygrophanous, brownish-grey-beige and translucently striate when moist, grey-ochraceous when dry. Lamellae crowded, broad, narrowly adnate, pink, edge uneven. Stem 20–40 × 3–4 mm, whitish, sordid-beige, longitudinally silvery striate. Flesh grey-beige, smell and taste farinaceous. Spores 8.0–9.5 × 6.5–8.0 µm, 5–6-angled, isodiametrical, pale in transmitted light. Basidia 43–67 × 10–14 µm, 4-spored, clamped. Cystydia lacking. Pileipellis a cutis. Pigment delicately incrusting narrow hyphae of pileipellis. Clamps numerous.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001 (KRAM F-53309); 13 Oct. 2001 (KRAM F-53311); 20 Aug. 2002 (KRAM F-54372); Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 5 Sept. 2001 (KRAM F-53310); 20 Aug. 2002 (KRAM F-54367 (KRAM F-54368).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

80. ***Entoloma winterhoffii*** Wölfel & Noordel. Fig. 58

Pileus 10 mm broad, hemispherical, then expanded, hygrophanous, grey-brown, olive-brown when moist, translucently striate, surface smooth. Lamellae rather distant, narrow, narrowly adnate, pale, whitish, edge even. Stem 35 × 2 mm, cylindrical, whitish, longitudinally fibrillose. Flesh thin, smell and taste farinaceous. Spores 9.0–12.0(–12.5) × (5.5–)6.0–7.0(–7.5) µm, Q = 1.5–2, elongated, nodulose-angular, 8–10-angled, thin-walled. Basidia 35–45 × 10–13 µm, 4-spored, clamped. Cheilocystidia none. Pileipellis a cutis, made up of cylindrical elements up to 10 µm wide. Pigment intracellular, brown, rather dark. Clamps numerous.

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, N slopes, 1370 m a.s.l., *Pmc*, among litter, 49º15′53″N, 19º56′38″E, 20 Aug. 2002 (KRAM F-54369).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

81. ***Entoloma*** sp. Fig. 59

Pileus 25 mm broad, expanded with a slightly depressed center, greyish-brown, squamulose,

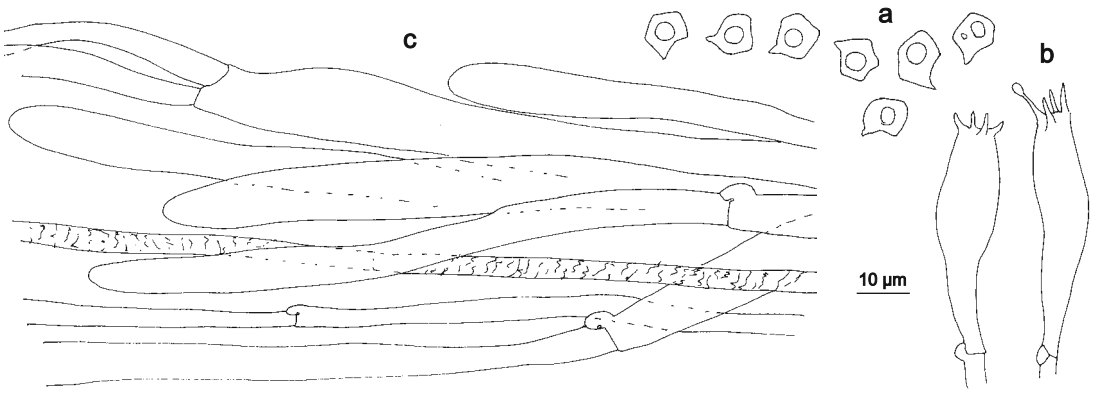

Fig. 57. *Entoloma sordidulum* (Kühner & Romagn.) P. D. Orton: a – spores, b – basidia, c – pileipellis (KRAM F-53309).

translucently striate up to half of a radiatus. Lamellae distant, broad, broadly adnate or slightly decurrent, greyish-pink, edge black. Stem central, 45 × 3 mm, steel-blue, glabrous. Flesh thin, smell and taste none. Spores 10–13 × 7–8 µm, 5–6-angled. Basidia 32–37 × 9–10 µm, 4-spored, without a clamp. Cheilocystidia 45–300 × 11–30 µm, broadly clavate, with blackish-brown content which does not dissolve in 5% KOH. Pileipellis a cutis to a trichoderm. Pigment intracellular, blackish-brown. Clamps absent.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, 'Łomik', 1220 m a.s.l., *PP*, on soil,

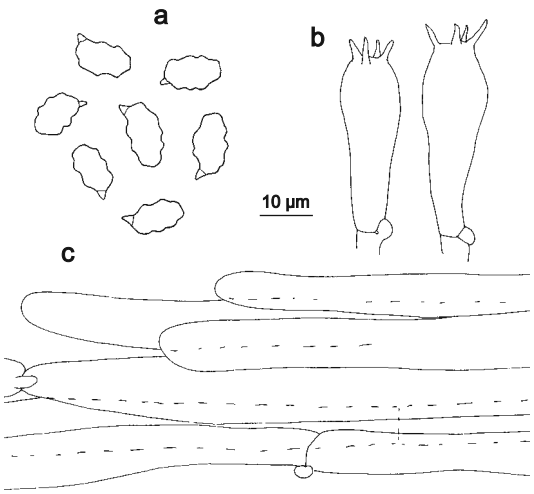

Fig. 58. *Entoloma winterhoffii* Wölfel & Noordel.: a – spores, b – basidia, c – pileipellis (KRAM F-54369).

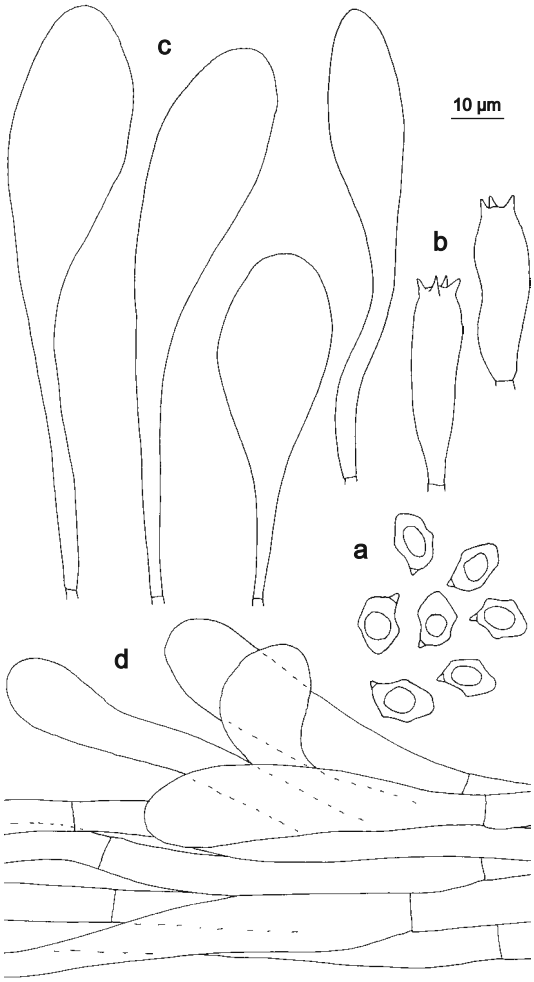

Fig. 59. *Entoloma* sp.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-54776).

49°16′13″N, 19°56′57″E, 20 Aug. 2002 (KRAM F-54776).

NOTES. The specimen is similar to *E. serrulatum*, however, it has unusually large cheilocystidia that are broadly clavate is shape.

Flammulaster Earle

82. ***Flammulaster carpophilus*** (Fr.) Earle Fig. 60

Pileus 3–10 mm broad, first hemispherical, then convex to expanded, cream-ochraceous with a slight pinkish tint, surface delicately granulose-squamulose (lupe). Lamellae distant, broadly adnate or slightly decurrent, 3 mm broad, concolorous with pileus, edge smooth. Stem 20–30 × 1.0–1.5 mm, concolorous with pileus, entirely pruinose, cylindrical, hollow. Flesh thin, about 1 mm thick in pileus, concolorous with pileus. Smell weak of *Pelargonium* leaves, taste mild. Spores 9–10 × 5–6 µm, amygdaliform, smooth, pale, almost hyaline in transmitted light. Basidia 25–30 × 5–8 µm, 2 or 4-spored. Cheilocystidia 38–60 × 5–8 × 2.5–4.0 µm, narrowly lageniform, with long, cylindrical neck. Pileipellis built up of round, ovoid, broadly ellipsoid cells 12–35 × 10–28 µm, with brownish incrusting pigment. Caulocystidia abundant, 40–60 × 4–8 µm, cylindrical, to narrowly fusiform-lageniform. Clamps present.

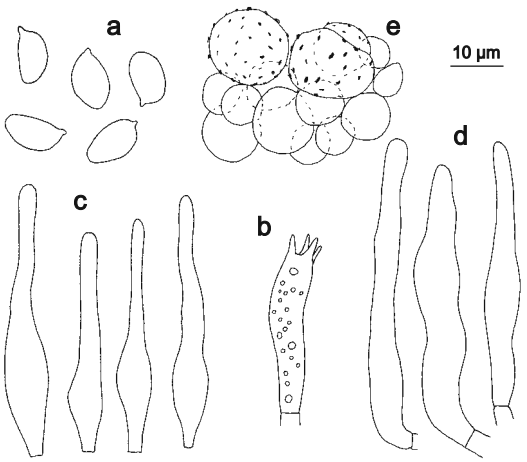

Fig. 60. *Flammulaster carpophilus* (Fr.) Earle: a – spores, b – basidium, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-53350).

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on beech leaves, 49°16′39″N, 19°56′30″E, 7 June 2003 (KRAM F-53350); on beech leaves and husks, 7 June 2000 (KRAM F-39952); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on leaves, 49°16′26″N, 19°57′08″E, 7 June 2003 (KRAM F-54055, ZAMU 4343).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

83. ***Flammulaster subincarnatus*** (Joss. & Kühner) Watling Fig. 61

Pileus 2–6 mm broad, first hemispherical, then convex to expanded, cream-ochraceous with a slight pinkish tint, slightly paler at margin, slightly translucently striate, surface delicately granulose-squamulose (lupe). Lamellae distant, broadly adnate or slightly decurrent, 1 mm broad, concolorous with pileus, edge slightly ciliate. Stem 10–30 × 0.5–1.0 mm, concolorous with the pileus, entirely pruinose, cylindrical, with a whitish mycelium at base. Flesh thin, about 1 mm in the

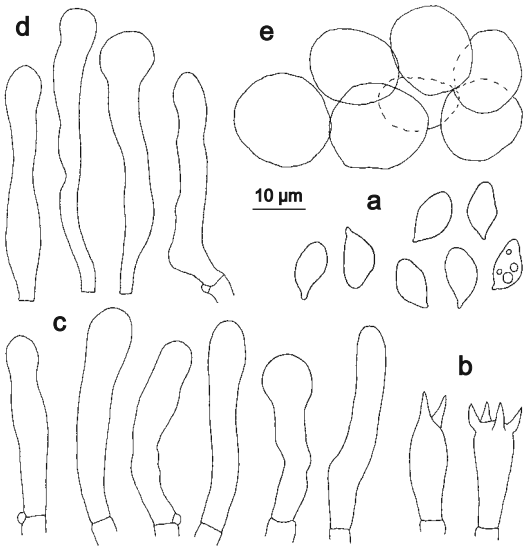

Fig. 61. *Flammulaster subincarnatus* (Joss. & Kühner) Watling: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-54003).

pileus, concolorous with pileus, smell and taste none. Spores 8–10 × 5–6 µm, amygdaliform to slightly fusiform, smooth, almost hyaline. Basidia 18–24 × 6.5–8.0 µm, 2- or 4-spored. Cheilocystidia 25–43 × 5.0–6.5 µm, cylindrical, narrowly clavate or capitate (up to 10 µm broad at apex). Pileipellis built up of ovoid or broadly ellipsoid cells 12–40 × 10–18 µm, with pale brown, weakly incrusting pigment. Caulocystidia abundant, 36–54 × 5–7 µm, cylindrical to narrowly clavate, sometimes capitate, similar to cheilocystidia. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on beech leaves, 49°16′42″N, 19°57′27″E, 14 Oct. 2001 (KRAM F-54003); Grześkówki ridge, 1060 m a.s.l., *DgF*, on beech litter, 49°16′17″N, 19°56′15″E, 12 Oct. 2001 (KRAM F-54004); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter (beech leaves), 49°16′39″N, 19°56′30″E, 13 Oct. 2001 (KRAM F-54005).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Flammulina P. Karst.

84. ***Flammulina velutipes*** (Curtis: Fr.) P. Karst.

SPECIMENS EXAMINED. Dolina Strążyska valley, W slope of Grześkówki ridge, 950 m a.s.l., *DgF*, on wood (fallen trunk of *Fagus sylvatica*), 49°16′37″N, 19°56′22″E, 24 Nov. 2000 (KRAM F-50454, ZAMU 4349); between Dolina Białego valley and Dolina Spadowiec valley, 960 m a.s.l., *DgF*, on wood (trunk of coniferous tree, ?*Abies*), 49°16′42″N, 19°57′22″E, 15 May 2001 (KRAM F-53772).

DISTRIBUTION IN THE TATRA MTS. The species is known from a few localities in the West and High Tatras (Pilát 1926, as *Collybia velutipes* Curtis; Rudnicka-Jezierska 1965; Wojewoda 1996; Škubla 1998b).

Galerina Earle

85. ***Galerina atkinsoniana*** A. H. Sm. Fig. 62

Pileus 2–6 mm broad, first convex, then parabolic to conical, hygrophanous, pale rusty-orange and translucently striate when moist, pale ochraceous when dry, surface pruinose. Lamellae distant, broad, narrowly attached, concolorous with pileus, edge white ciliate. Stem 10–50 × 0.5–1.0 mm, concolorous with pileus, cylindrical, entirely pruinose. Flesh thin, concolorous with pileus, smell and taste farinaceous or none. Spores 13–16 × 7–8 µm, amygdaliform, distinctly ornamented, with well visible plage, dextrinoid. Basidia 20–25 × 8.5–10.0 µm, 2-spored. Cheilocystidia 43–65 × 11–13 × 4.5–6.0 µm, lageniform, fusiform, thin-walled. Pleurocystidia similar to cheilocystidia, numerous. Caulocystidia 70–100 × 18–20 × 5–6 µm, numerous. Pileipellis a cutis. Pileocystidia similar to cheilocystidia, numerous. Pigment incrusting. Clamps numerous.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on mosses, 49°16′15″N, 19°56′47″E, 7 July 2001 (KRAM F-51505); 9 Sept. 2001 (KRAM F-51692); 3 Oct. 2002 (KRAM F-54763); N slope of Sarnia Skała massil, at the summit, 1360 m a.s.l., *Pmc*, on mosses, 49°15′57″N, 19°56′27″E, 4 July 2001 (KRAM F-51508); 3 Oct. 2002 (KRAM F-54764); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on mosses and plant debris, 49°16′04″N, 19°56′18″E, 6 July 2001 (KRAM F-51512); 5 Sept. 2001 (KRAM F-51649); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on mosses and plant debris, 49°15′55″N, 19°56′32″E, 8 Sept. 2001 (KRAM F-54760); upper part of Dolina Spadowiec valley, 1170 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 9 Sept. 2001 (KRAM F-51696); among mosses, 6 July 2001 (ZAMU 4303); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, among mosses, 49°15′53″N, 19°56′38″E, 20 Aug. 2002 (KRAM F-54761); 20 Aug. 2002 (KRAM F-54753); S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on litter and small piece of wood, 49°15′54″N, 19°56′30″E, 6 July 2001 (KRAM F-51509); 8 Sept. 2001 (KRAM F-51679).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on mosses and plant debris, 49°16′06″N, 19°56′24″E, 5 Sept. 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on mosses and plant debris, 49°15′57″N, 19°56′27″E, 8 Sept. 2001; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on mosses and plant debris, 49°15′55″N, 19°56′32″E, 12 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

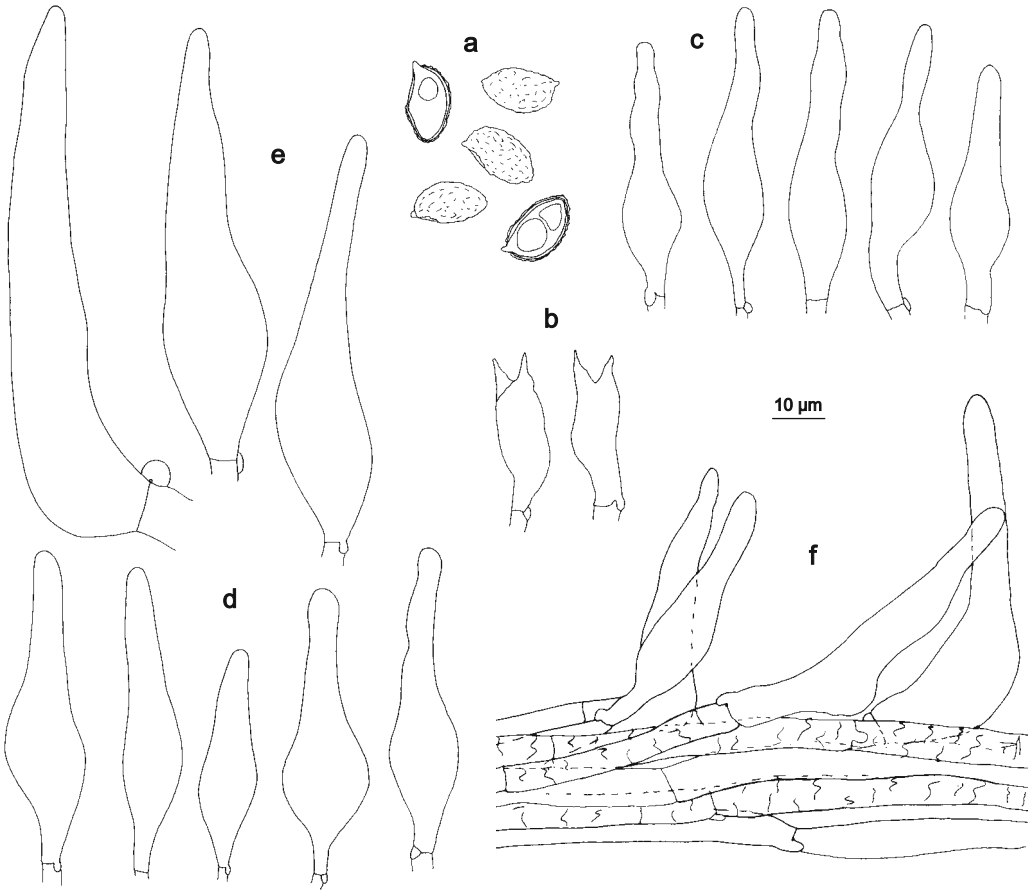

Fig. 62. *Galerina atkinsoniana* A. H. Sm.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia, f – pileipellis (KRAM F-51649).

86. ***Galerina calyptrata*** P. D. Orton Fig. 63

Pileus 2–5 mm broad, 4 mm high, first ovoid, then narrowly conical to conical, hygrophanous, pale honey-orange and translucently striate when moist, pale ochreaceous when dry, surface smooth, in young specimens white cortina visible at pileus margin. Lamellae distant, broad, broadly attached, concolorous with pileus, edge white ciliate. Stem 10–50 × 0.5–1.5 mm, concolorous with pileus, pruinose at apex, in lower part with pale fibrils, cylindrical, slightly broadened at base. Flesh thin, concolorous with pileus, smell and taste farinaceous. Spores 9–11 × 5–6 µm, amygdaliform, slightly citriform, almost smooth, with a loose perisporium well visible on most spores, weakly dextrinoid, rusty-brown in KOH. Basidia 20–25 × 7–9 µm, 4-spored. Cheilocystidia 32–40 × 4.5–8.5 × 2.5–4.5 × 2.5–6.0 µm, lageniform, cylindrical, often swollen at apex, thin-walled. Pleurocystidia none. Caulocystidia present in upper part of stem, 30–65 × 5–8 × 4.5–6.0 µm, cylindrical, narrowly lageniform. Pileipellis a cutis. Pileocystidia none. Pigment incusting. Clamps numerous.

Specimens examined. Upper part of Dolina Spadowiec valley, 1170 m a.s.l., *PP*, among mosses, 49°16′15″N, 19°56′58″E, 6 July 2001 (KRAM F-51507); 10 June 2002 (KRAM F-54728); upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, among mosses, 49°16′15″N, 19°56′47″E, 15 June 2001 (KRAM F-54725); 9 Sept. 2001 (KRAM F-51693, 54727); 7 July 2001 (KRAM F-54726); 6 July 2001 (ZAMU 4314);

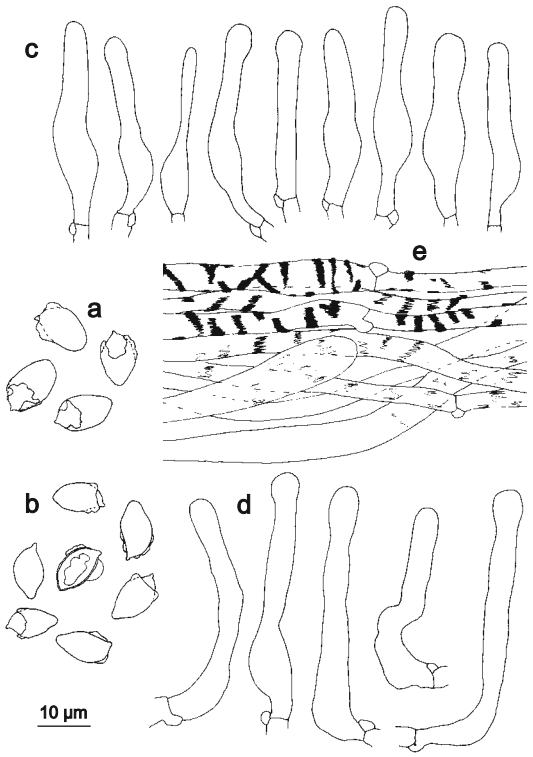

Fig. 63. *Galerina calyptrata* P. D. Orton: a, b – spores, c – cheilocystidia, d – caulocystidia, e – pileipellis (a – KRAM F-51693; b, c, d, e – KRAM F-54725).

10 June 2002 (KRAM F-54755); lower part of Dolina Białego valley, near Kazalnica rock, 950 m a.s.l., *DgF*, on wood, among mosses, 49°16′34″N, 19°57′30″E, 7 June 2000 (KRAM F-54746); Grześkówki ridge, 1200 m a.s.l., *PP*, on decayed log, among mosses, 49°16′04″N, 19°56′22″E, 7 June 2003 (KRAM F-53380); upper part of Dolina Spadowiec valley, orographically left side of valley, 1150 m a.s.l., *DgF/PP*, on stump covered with mosses, 49°16′17″N, 19°56′57″E, 12 July 2002 (KRAM F-54754).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

87. ***Galerina cephalotricha*** Kühner Fig. 64

Pileus 5–12 mm broad, parabolic, conical, hygrophanous, orange-brown and translucently striate when moist, ochraceous when dry, surface smooth. Lamellae distant, narrow, adnate, rusty-ochraceous, edge white ciliate. Stem filiform, 30–60 × 1–2 mm, pale yellowish, cylindrical, slightly swollen at base. Flesh thin, concolorous with cap, smell and taste not recorded. Spores 11.0–12.0(–13.5) × 6–7 µm, amygdaliform-fusiform, almost smooth, with poorly visible plage, pale yellow in KOH, weekly dextrinoid. Basidia 28–32 × 7–8 µm, 4-spored, clamped. Cheilocystidia 26–50 × 7–10 × 3–4 × 6–10 µm, ventricose-capitate, rarely fusiform. Pleurocystidia none. Caulocystidia 45–60 × 6–8 × 3–4 × 5–7 µm, cylindrical, swollen in lower part, and sometimes also at apex, but not distinctly capitate. Pileipellis a cutis. Pigment incrusting. Clamps present.

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, N slopes, 1375 m a.s.l., 49º15′55″N, 19º56′32″E, *Pmc*, among mosses, 8 Sept. 2001 (KRAM F-54759); the summit area of Sarnia Skała massif, N

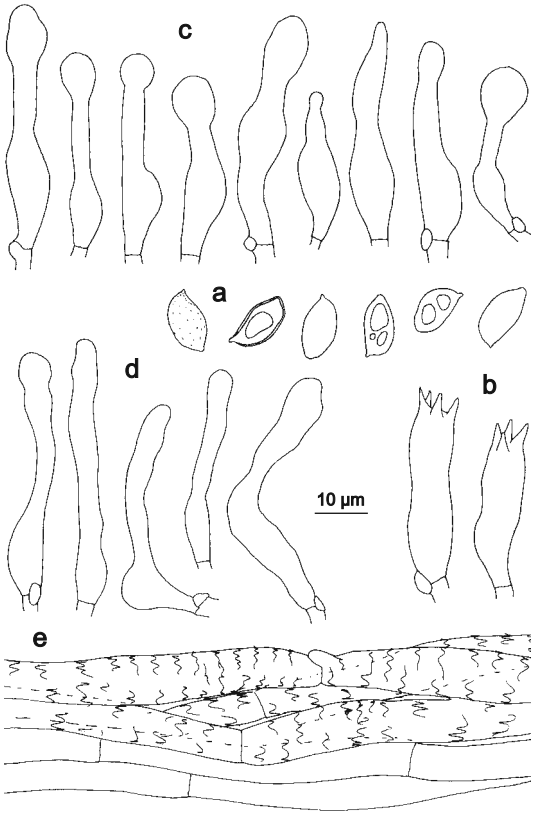

Fig. 64. *Galerina cephalotricha* Kühner: a – spores, b – basidia, c – cheilocystidia, d –caulocystidia, e – pileipellis (KRAM F-54758).

slopes, 1360 m a.s.l., 49º15′57″N, 19º56′27″E, *Pmc*, among mosses, 3 Oct. 2002 (KRAM F-54758).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

88. ***Galerina marginata*** (Batsch) Kühner

SPECIMENS EXAMINED. Middle part of Dolina Białego valley, 970 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°57′27″E, 5 Sept. 2000 (KRAM F-50599); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on wood, 49°15′53″N, 19°56′38″E, 13 Oct. 2001 (KRAM F-54724); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 3 Oct. 2002 (KRAM F-54723); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood, 49°16′06″N, 19°56′24″E, 3 Oct. 2002 (KRAM F-54729).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, 1090 m a.s.l., planted spruce forest, on wood, 49°15′51″N, 19°57′17″E, 5 Sept. 2000.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the Slovak Tatras: High Tatras, West Tatras and Belanské Tatry (Pilát 1926, as *Pholiota marginata* Batsch.; Svrček 1987; Hagara 1992; Lizoň & Kautmanová 2004) and from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

89. ***Galerina pruinatipes*** A. H. Sm. Fig. 65

Pileus 10 mm broad, convex, hygrophanous, orange-brown when moist, faintly translucently striate, surface smooth, slightly fibrillose in

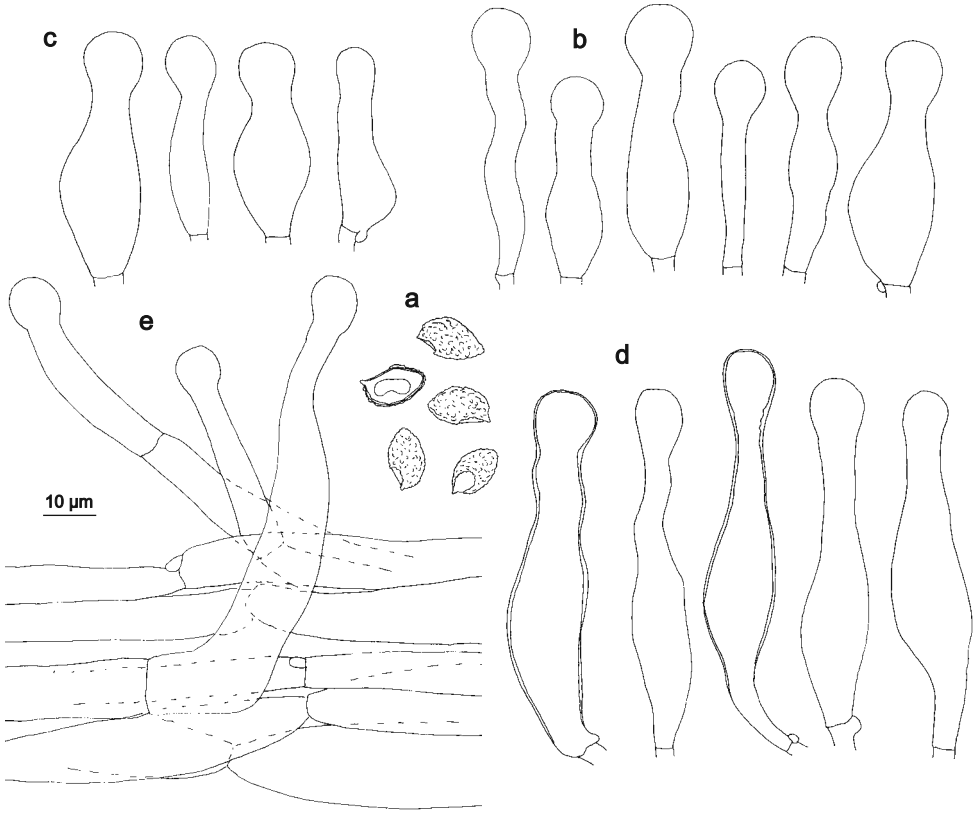

Fig. 65. *Galerina pruinatipes* A. H. Sm.: a – spores, b – cheilocystidia, c – pleurocystidia, d – caulocystidia, e – pileipellis (KRAM F-54730).

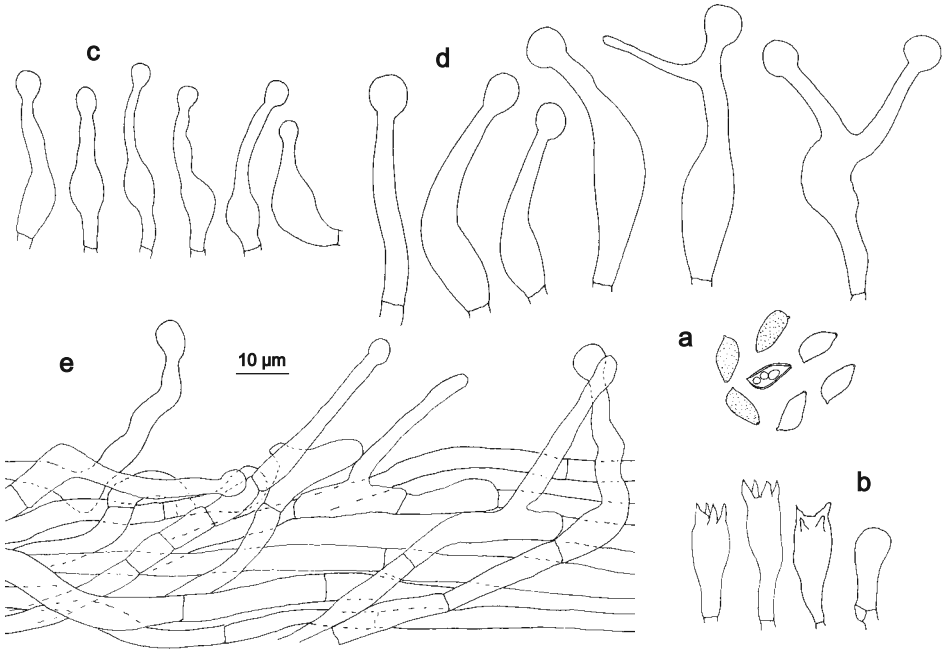

Fig. 66. *Galerina stordalii* A. H. Sm.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-50011).

center. Lamellae distant, 2 mm broad, adnate or shortly decurrent, rusty brown, edge whitish, ciliate. Stem 20 × 1 mm, dark brown, almost black at base, pruinose in upper part, covered with pale fibrils in lower part, veil not observed. Flesh thin, concolorous with pileus, smell none, taste bitter. Spores 11–12(–13) × 6–7(–8) µm, amygdaliform, distinctly ornamented, with well visible plage, dextrinoid, pale yellow in KOH. Basidia 20–25 × 5–6 µm, 2-spored. Cheilocystidia 35–50 × 4.5–17.0 × 4–7 × 9–13 µm, utriform, ventricose or cylindrical, capitate, hyaline or with rusty-yellow content. Pleurocystidia similar to cheilocystidia. Caulocystidia larger, 55–80 × 8–17 × 5–7 × 7–10 µm, ventricose-capitate, slightly thick-walled, walls up to 1 µm thick. Pileipellis a cutis with capitate pileocystidia. Pigment slightly incrusting. Clamps present.

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, N slopes, 49°15′53″N, 19°56′38″E, 1370 m a.s.l., *Pmc*, on wood, 20 Aug. 2001 (KRAM F-54730).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif have been published before (Ronikier 2009).

90. ***Galerina stordalii*** A. H. Sm. Fig. 66

Pileus 3–6 mm broad, first hemispherical, then convex or broadly conical, hygrophanous, pale honey coloured and translucently striate when moist, pale ochraceous when dry, surface smooth. Lamellae distant, narrow, broadly attached, pale yellow, edge white ciliate. Stem 10–30 × 0.5–1.5 mm, pale yellow, whitish at base, entirely pruinose, clavate (slightly swollen at base). Flesh thin, concolorous with pileus, smell and taste not recorded. Spores 7–9 × 4–5 µm, narrowly amygdaliform, fusiform, almost smooth, with small, but well visible germ pore, weakly dextrinoid. Basidia 20–25 × 7–8 µm, 4-spored. Cheilocystidia 25–37 × 6–8 × 2.0–2.5 × 4 µm, tibiiform, thin-walled. Pleurocystidia none. Caulocystidia 36–50 × 4–10 × 3–4 × 6.5–8.0 µm,

tibiiform. Pileipellis a cutis. Pileocystidia numerous, tibiiform. Pigment incrusting. Clamps present only in hymenium.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, N slopes, 960 m a.s.l., moist place in *DgF*, on wood covered with mosses (coniferous log), 49°16′42″N, 19°57′22″E, 4 July 2000 (KRAM F-50011).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

91. ***Galerina vittiformis*** (Fr.) Singer Fig. 67

Pileus 6 mm broad, first convex, then parabolic, hygrophanous, pale rusty-orange, translucently striate, pale ochraceous when dry, surface smooth. Lamellae distant, broad, attached, concolorous with pileus, edge white ciliate. Stem 40 × 1 mm, pale rusty-orange in upper part, darker, brown in lower part, entirely pruinose, cylindrical. Flesh thin, concolorous with pileus, smell and taste none. Spores 9–12 × 6–7 µm, amygdaliform, distinctly ornamented, with well visible plage, dextrinoid. Basidia 24–26 × 6.5–7.0 µm, 2-spored. Cheilocystidia 42–70 × 11–15 × 3.5–4.5 µm, lageniform, fusiform, thin-walled. Pleurocystidia similar to cheilocystidia, numerous. Caulocystidia 80–110 × 10–24 × 4–9 µm, numerous. Pileipellis a cutis. Pileocystidia none. Pigment incrusting. Clamps numerous.

SPECIMENS EXAMINED. S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on plant debris, among mosses, 49°15′54″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-54762).

DISTRIBUTION IN THE TATRA MTS. The species has been noted from the peripheries of the Slovak Tatras (Kuthan & Singer 1987). The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

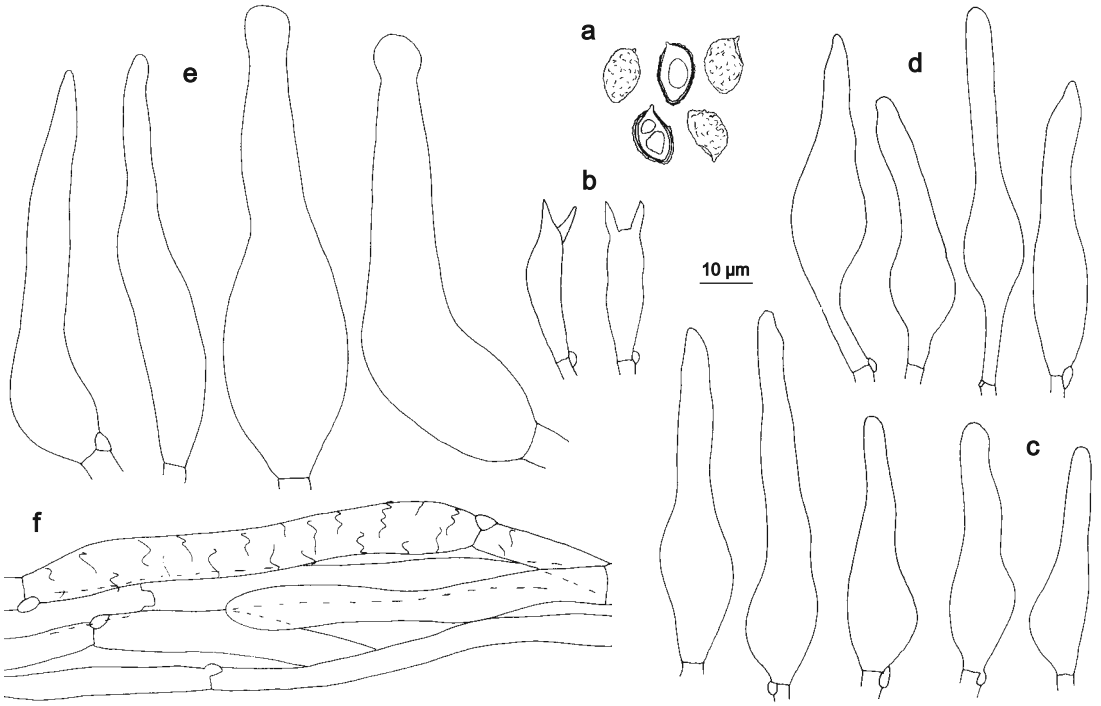

Fig. 67. *Galerina vittiformis* (Fr.) Singer: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia, f – pileipellis (KRAM F-54762).

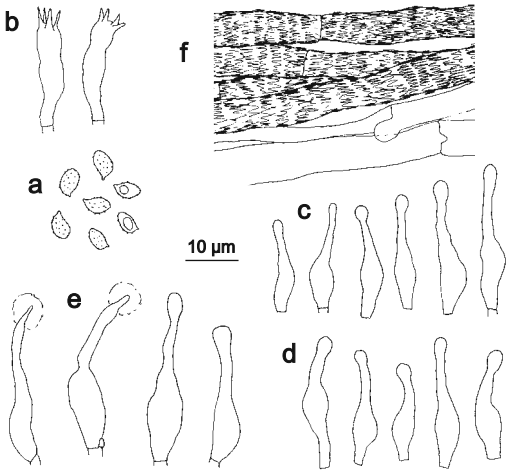

Fig. 68. *Gymnopilus bellulus* (Peck) Murrill: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia, f – pileipellis (KRAM F-54326).

Gymnopilus P. Karst.

92. ***Gymnopilus bellulus*** (Peck) Murrill Fig. 68

Pileus 10–20 mm broad, convex, then expanded, golden-orange, orange-brown, slightly paler at margin, surface smooth and dry. Lamellae golden-yellow, narrowly or broadly attached, edge smooth or slightly yellow ciliate. Stem 10–30 × 1–2 mm, cylindrical, orange-brown, brown, delicately yellow pruinose at apex. Flesh yellow-brownish, orange-brownish, taste bitter, smell none. Spores 5.5–6.0 × 3.0–3.5 µm, ellipsoid, delicately warted, dextrinoid. Basidia 19–22 × 4–5 µm, 4-spored. Cheilocystidia 16–25 × 3.5–5.0 × 1–2 × 1.5–3.0 µm, lageniform, the most often swollen at apex. Pleurocystidia and caulocystidia similar to cheilocystidia. Pileipellis a cutis, built up of broad, strongly incrusted hyphae. Clamps present.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-54326); lower part of Dolina ku Dziurze valley, orographically left side of valley, 930 m a.s.l., *DgF*, on wood (stump of coniferous tree), 49°16′40″N, 19°56′37″E, 9 Sept. 2001 (KRAM F-53300).

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in Belanské Tatry (Svrček 1987, as *G. microsporus*).

93. ***Gymnopilus penetrans*** (Fr.) Murrill

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, orographically left side of valley, 990 m a.s.l., *DgF*, on wood (?*Abies alba*), 49°16′37″N, 19°57′07″E, 1 Dec. 2000 (KRAM F-54325).

DISTRIBUTION IN THE TATRA MTS. The species is is known from the High Tatras and their peripheries (Pilát 1926, as *Flammula hybrida* Fr.; Nespiak 1962b; Frejlak 1973).

Gymnopus (Pers.) Roussel

94. ***Gymnopus androsaceus*** (L.: Fr.) Antonín & Noordel.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, orographicaly left side of valley, 960 m a.s.l., spruce forest on a *DgF* site, on spruce needles and litter, 49°16′37″N, 19°57′27″E, 5 Sept. 2000 (KRAM F-50586); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 22 June 2001 (KRAM F-51499); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on a spruce cone, 49°16′06″N, 19°56′24″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53373); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on a spruce cone, 49°16′04″N, 19°56′18″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53372); summit area of Sarnia Skała massif, 1375 m a.s.l., *Pmc*, on pine needles, 49°15′55″N, 19°56′37″E, 22 June 2001 (ZAMU 4255).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 22 June 2001; 22 Aug. 2001; upper part of Dolina Białego valley, S of Igła mount, 1180 m a.s.l., spruce monoculture, on litter, 49°15′51″N, 19°57′07″E, 4 July 2001; 8 Sept. 2001; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on litter (pine needles), 49°15′55″N, 19°56′32″E, 4 July 2001; 8 Sept. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 6 July 2001; 22 Aug. 2001; 5 Sept. 2001; 11 July 2002; SE edge of Polana Białego meadow, 1150 m a.s.l., *DgF*/*PP*, on litter, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 22 Aug. 2001; 5 Sept. 2001; 10 June 2002; 3 Oct. 2002; mouth of Dolina Białego valley, at hiking trail, 900 m a.s.l., deciduous trees: *Acer pseudoplatanus*, *Fagus sylvatica*, on litter,

49°16′43″N, 19°57′27″E, 8 Sept. 2001; upper part of Dolina Białego valley, at hiking trail, 1050 m a.s.l., *DgF*, on litter, 49°15′58″N, 19°57′17″E, 8 Sept. 2001; E of Polana Białego meadow, 1180 m a.s.l., *PP*, on litter, 49°15′48″N, 19°57′02″E, 8 Sept. 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 8 Sept. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus is very common in the Tatra Mts noted from lowest sites in forests up to the alpine belt [Pilát 1926, as *Androsaceus androsaceus* L.; Dominik & Pachlewski 1956, as *Marasmius androsaceus* L.; Nespiak 1960, as *Marasmius androsaceus* (L. *ex* Fr.) Fr.; Nespiak 1962b, as *Marasmius androsaceus*; Rudnicka-Jezierska 1965, as *Marasmius androsaceus* (L. *ex* Fr.) Fr.; Frejlak 1973, as *Marasmius androsaceus* (L) Fr.; Lutyk 1978, as *Marasmius androsaceus* Fr.; Škubla 1998a, b, as *Setulipes androsaceus* (L.: Fr.) Antonín; Antonín & Noordeloos 1993, as *Setulipes androsaceus* (L.: Fr.) Antonín; Lizoň & Kautmanová 2004, as *Setulipes androsaceus*]. The fungus has also been noted from the peripheries of the Slovak Tatras [Kuthan & Singer 1987, as *Marasmius androsaceus* (L. *ex* Fr.) Fr.; Kuthan 1989b, as *Marasmius androsaceus* (L. *ex* Fr.) Fr.; Antonín & Noordeloos 2010]. Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

95. ***Gymnopus aquosus*** (Bull.: Fr.) Antonín & Noordel. Fig. 69

Pileus 15–50 mm broad, convex, then expanded, hygrophanous, pale ochraceous-orange and translucently striate when moist, pale cream when dry. Lamellae white, narrowly adnate, edge smooth. Stem 50–70 × 3–5 mm, clavate, often swollen at base, ochraceous-orange, hollow, with pinkish rhizomorphs at base. Flesh pale, smell fungoid, taste mild. Spores 5.0–7.5 × 3–4 µm, ellipsoid. Basidia 16–23 × 5–7 µm, 4-spored. Cheilocystidia 20–40 × 7–17 µm, broadly clavate, sometimes slightly thick-walled. Pleurocystidia none. Pileipellis a 'dryophila'-type, built up of broad, branched hyphae. Clamps present.

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′15″E, 10 June 2002 (KRAM F-52308); 7 June 2003 (KRAM F-53382); between Dolina Białego valley and Dolina Spadowiec valley, 960 m a.s.l., *DgF*, on litter, 49°16′41″N, 19°57′17″E, 15 June 2001 (KRAM F-53822); Grześkówki ridge, 960 m a.s.l., *DgF*, among litter, 49°16′40″N, 19°56′32″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53375); Grześkówki ridge, 1090 m a.s.l., *DgF*, among litter, 49°16′20″N, 19°56′17″E, *leg. A. Ronikier & P. Mleczko* (KRAM F-53376); Grześkówki ridge, 1040 m a.s.l., *DgF*, 49°16′23″N, 19°56′17″E, 16 June 2001 (ZAMU 4308).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from a few localities in

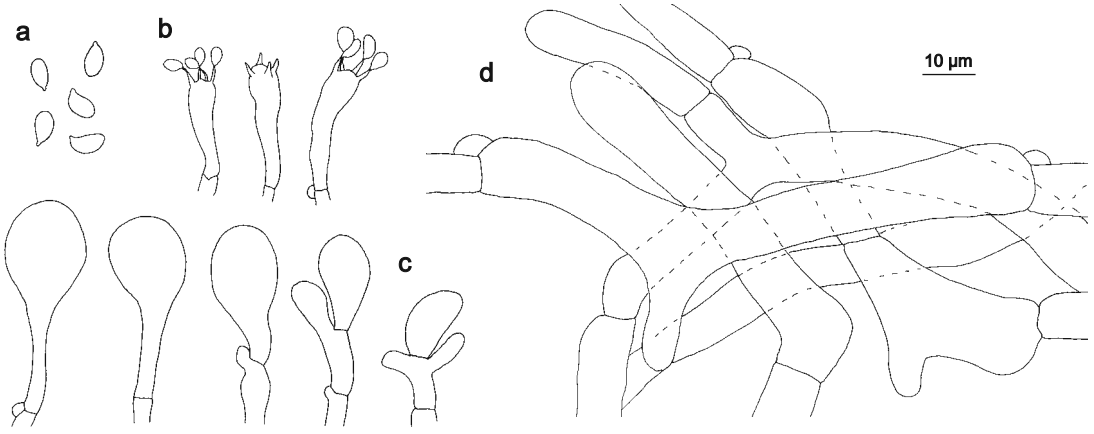

Fig. 69. *Gymnopus aquosus* (Bull.: Fr.) Antonín & Noordel.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53822).

the West Tatra and Belanské Tatry [Nespiak 1960, as *Collybia aquosa* (Bull. *ex* Fr.) Quél.; Nespiak 1975, as *Collybia dryophila* var. *aquosa* (Bull. *ex* Fr.) P. Kumm.].

96. ***Gymnopus confluens*** (Pers.: Fr.) Antonín, Halling & Noordel.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1150 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°57′07″E, 20 July 2000 (KRAM F-50117); mouth of Dolina ku Dziurze valley, at a stream, 910 m a.s.l., shrubs with *Acer pseudoplatanus* and *Fraxinus excelsior*, on litter, 49°16′43″N, 19°56′42″E, 24 Sept. 1999 (KRAM F-50044); lower part of Dolina Strążyska valley, E from Polana Młyniska meadow, 920 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°56′12″E, 9 Sept. 2003 (KRAM F-53827); upper part of Dolina Spadowiec valley, at a stream, 1100 m a.s.l., *DgF*, on litter, 49°16′19″N, 19°57′02″E, 20 Aug. 2002 (KRAM F-53828); 3 Oct. 2002 (KRAM F-53829); mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, on pine needles, 49°16′43″N, 19°57′27″E, 6 July 2001 (ZAMU 4307).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′17″E, 7 Aug. 2000; 20 Aug. 2001; 5 Sept. 2001; 9 Sept. 2003; upper part of Dolina ku Dziurze valley, SW from Dziura Wyżnia cave, 1000 m a.s.l., *DgF*/spruce forest, on litter, 49°16′24″N, 19°56′37″E, 22 Aug. 2000; Dolina Białego valley, 930 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°57′27″E, 5 Sept. 2000; Dolina Białego valley, 930 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°57′27″E, 5 Sept. 2000; at Ścieżka nad Reglami hiking trail, W from Czerwona Przełęcz pass, 1180 m a.s.l., *PP*, on litter, 49°15′45″N, 19°56′17″E, 5 Sept. 2000; Dolina Strążyska valley, from Skała Jelinka cliff, 950 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′02″E, 5 Sept. 2000; Dolina Strążyska valley, 950 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′07″E, 5 Sept. 2000; mouth of Dolina Strążyska valley, 900 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′22″E, 5 Sept. 2000; upper part of Dolina Białego valley, at hiking trail, 1060 m a.s.l., *DgF* with *Acer pseudoplatanus*, on litter, 49°15′56″N, 19°57′17″E, 5 Sept. 2000; mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′37″E, 19 Sept. 2000, 22 Aug. 2001; upper part of Dolina ku Dziurze valley, 1000 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′37″E, 20 Aug. 2001; Dolina Białego valley, 930 m a.s.l., *DgF*, on litter, 49°16′21″N, 19°57′27″E, 21 Aug. 2001; mouth of Dolina Białego valley, 920 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′22″E, 20 Aug. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 20 Aug. 2001; 9 Sept. 2001; 3 Oct. 2002; Spaleniec ridge, E slope, 1100 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′57″E, 20 Aug. 2001; Spaleniec ridge, W slope, 1130 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′47″E, 20 Aug. 2001; upper part of Dolina ku Dziurze valley, at Dziura Wyżnia cave, 1050 m a.s.l., *DgF*, on litter, 49°16′14″N, 19°56′42″E, 20 Aug. 2001; orographically left branch of Dolina Białego valley, NE edge of Polana Białego meadow, 1140 m a.s.l., *DgF*, on litter, 49°15′51″N, 19°56′58″E, 21 Aug. 2001; lower part of Dolina Strążyska valley, at Polana Młyniska meadow, 910 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°56′13″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, N slope of Spaleniec ridge, 910 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′07″E, 21 Aug. 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 980 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°57′17″E, 22 Aug. 2001; NE slope of Spaleniec ridge, 950 m a.s.l., *DgF*, on litter, 49°16′44″N, 19°57′02″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, E slope of Spaleniec ridge, 1150 m a.s.l., *DgF*, on litter, 49°16′20″N, 19°56′57″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 3 Oct. 2002; mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′12″E, 12 Oct. 2001; upper part of Dolina Spadowiec valley, at a stream, 1110 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°57′02″E, 16 Aug. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the Slovak Tatras: from the Zadná Tichá Dolina valley, West Tatras (Lizoň & Kautmanová 2004) and from the peripheries of Belanské Tatry (Škubla 1998a, Antonín & Noordeloos 1997, 2010).

97. ***Gymnopus dryophilus*** (Bull.: Fr.) Murrill

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope, 1030 m a.s.l., *DgF*, among litter, 49°16′30″N, 19°57′12″E, 20 June 2000 (KRAM F-39944); Spaleniec ridge, 1080 m a.s.l., *DgF*, among litter, 49°16′30″N, 19°56′47″E, 20 June 2000 (KRAM F-39945); between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′15″E, 4 July 2000 (KRAM F-50031); Grześkówki ridge, 970 m a.s.l., *DgF*, 49°16′36″N, 19°56′27″E, 6 July 2001 (ZAMU 4306).

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts, known from all three parts of the massif [Pilát 1926, as *Collybia dryophila* Bull.; Dominik & Pachlewski 1956, as *Collybia dryophila* Bull.; Frejlak 1973, as *Collybia dryophila* (Bull. *ex* Fr.) Quél.; Antonín & Noordeloos 1997, 2010; Škubla 1998a, d] and from the peripheries of the Slovak West Tatras (Kuthan 1989b).

98. ***Gymnopus fuscopurpureus*** (Pers.: Fr.) Antonín, Halling & Noordel. Fig. 70

Pileus 10–20 mm broad, convex, then plane, slightly depressed in center, hygrophanous, red-brown or pink when moist, ochraceous-brown, ochraceous-pink when dry, surface smooth and dry, green with KOH. Lamellae medium spaced, narrowly adnate, greyish-brown to ochraceous-brown, edge smooth. Stem 20–50 × 2–5 mm, dark brown with purple tint, tapering downwards, glabrous, very delicately longitudinally grooved, rusty-orange, strigose at base. Flesh ochraceous in pileus, red-brown in stem, smell and taste none. Spores 7.0–8.5 × 3.5–4.5 µm, ellipsoid, smooth. Basidia 26–32 × 5–7 µm, 4-spored. Cheilocystidia 22–39 × 6–10 µm, fusiform, clavate with irregular outgrowths. Pleurocystidia none. Pileipellis a 'dryophila'-type, built up of broad, branched hyphae. Clamps present.

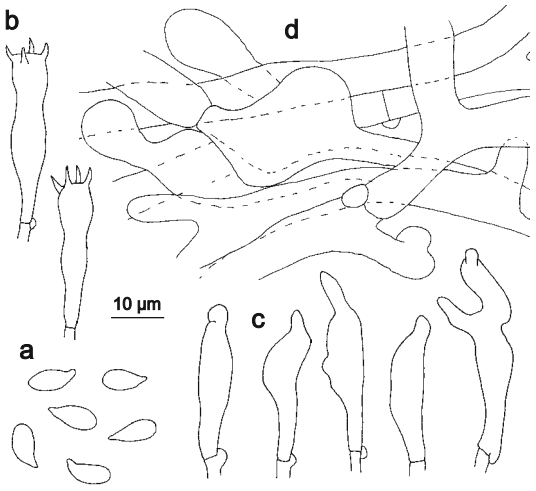

Fig. 70. *Gymnopus fuscopurpureus* (Pers.: Fr.) Antonín, Halling & Noordel.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-53378).

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on beech leaves, 49°16′26″N, 19°57′08″E, 7 June 2003 (KRAM F-53377); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on beech leaves, 49°16′39″N, 19°56′30″E, 12 Oct. 2001 (KRAM F-53302); Dolina Białego valley, at hiking trail in valley, between Siwarowy Żleb gully and the gully from Niżnia Przełęcz Białego pass, 1050 m a.s.l., *DgF*, on beech leaves, 49°16′04″N, 19°57′17″E, 20 Aug. 2001 (KRAM F-53378, ZAMU 4342).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

99. ***Gymnopus hariolorum*** (Bull.: Fr.) Antonín, Halling & Noordel

SPECIMENS EXAMINED. Dolina Białego valley, at hiking trail, 1010 m a.s.l., *DgF*, on litter, 49°16′11″N, 19°57′21″E, 9 June 2000 (KRAM F-53823); Dolina Białego valley, mouth of Siwarowy Żleb gully, at hiking trail, 1000 m a.s.l., *DgF*, on litter, 49°16′11″N, 19°57′25″E, 24 May 2001 (KRAM F-51387); Spaleniec ridge, 1150 m a.s.l., *DgF*, on litter, 49°16′23″N, 19°56′52″E, 7 June 2003 (KRAM F-53384); lower part of Dolina Białego valley, S from Kazalnica rock, 1000 m a.s.l., *DgF*, among litter, 49°16′30″N, 19°57′27″E, 2 June 2001 (ZAMU 4305).

FIELD OBSERVATIONS. Dolina Białego valley, lower part of valley, 940 m a.s.l., *DgF* with *Acer pseudoplatanus*, on litter, 49°16′30″N, 19°57′27″E, 5 Sept. 2000; upper part of Dolina Spadowiec valley, 1150 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′57″E, 9 June 2000; 1160 m a.s.l., *DgF*/*PP*, on litter, 20 Aug. 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1100 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°57′12″E, 9 June 2000; mouth of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′27″E, 2 June 2001; lower part of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°57′27″E, 2 June 2001; lower part of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′36″N, 19°57′27″E, 2 June 2001; lower part of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°57′27″E, 2 June 2001; lower part of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′23″N, 19°57′27″E, 2 June 2001; upper part of Dolina Spadowiec valley, 1080 m a.s.l., *DgF*, on

litter, 49°16′24″N, 19°57′07″E, 15 June 2001; upper part of Dolina spadowiec valley, 1150 m a.s.l., *DgF*, on litter, 49°16′20″N, 19°56′57″E, 15 June 2001; upper part of Dolina Spadowiec valley, 1200 m a.s.l., *DgF*/*PP*, on litter, 49°16′17″N, 19°56′57″E, 20 Aug. 2001; upper part of Dolina Spadowiec valley, 1100 m a.s.l., *DgF*, on litter, 49°16′23″N, 19°56′57″E, 9 Sept. 2001; mouth of Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′17″E, 10 June 2002; mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′30″E, 10 June 2002; Dolina Białego valley, at hiking trail, 980 m a.s.l., *DgF*, on litter, 49°16′14″N, 19°57′27″E, 11 June 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from one locality in the Dolina Siedmich Prameňov valley ('Holubyho dol'), Belanské Tatry (Antonín & Noordeloos 1997, 2010).

100. ***Gymnopus ocior*** (Pers.) Antonín & Noordel.

SPECIMENS EXAMINED. A ridge between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on soil, 49°16′41″N, 19°57′17″E, 11 July 2000 (KRAM F-50083).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported twice: from the Polish High Tatras (Dominik & Nespiak 1953, as *Collybia xanthopus* Fr.) and from Belanské Tatry (Antonín & Noordeloos 1997).

101. ***Gymnopus peronatus*** (Bolton.: Fr.) Antonín, Halling & Noordel.

SPECIMENS EXAMINED. Mouth of Dolina ku Dziurze valley, Grześkówki ridge, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′37″E, 22 Aug. 2001 (KRAM F-51573, ZAMU 4304).

FIELD OBSERVATIONS. Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°56′27″E, 5 Sept. 2001; 21 Aug. 2002; Grześkówki ridge, 1050 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′17″E, 5 Sept. 2001; orographically left branch of Dolina ku Dziurze valley, 960 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°56′27″E, 12 Oct. 2001; Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°56′27″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Hebeloma P. Kumm.

102. ***Hebeloma radicosum*** (Bull.: Fr.) Ricken
Fig. 71

Pileus 40–60 mm broad, convex with involute margin, ochraceous-brown, yellow-brown, surface slimy. Lamellae crowded, broad, emarginate, clay-coloured, clay-brown, edge slightly ciliate. Stem 40–50 × 10–12 mm, whitish, beige, pruinose at apex, rooting, root 40–60 mm long, with a persistent whitish, woolly-fibrillose ring. Flesh whitish, taste bitter, smell of almonds. Spores 9.0–10.5 × 5.0–6.0(–6.5) µm, amygdaliform, warted, pale yellow-brown in transmitted light, strongly dextrinoid. Basidia 26–28 × 7–8 µm, 4-spored. Cheilocystidia 45–60 × 4.5–8.0 µm, cylindrical, often swollen at apex or in lower part. Pleurocystidia none. Pileipellis an ixocutis. Clamps present.

SPECIMENS EXAMINED. Middle part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′09″E, 4 July 2000 (KRAM F-50034).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from two localities in the Slovak Tatras: in the Dolina Siedmich Prameňov valley, Belanské Tatry (Kubička 1964) and in the Zadná Tichá Dolina valley, West Tatras (Lizoň & Kautmanová 2004). It has also been noted

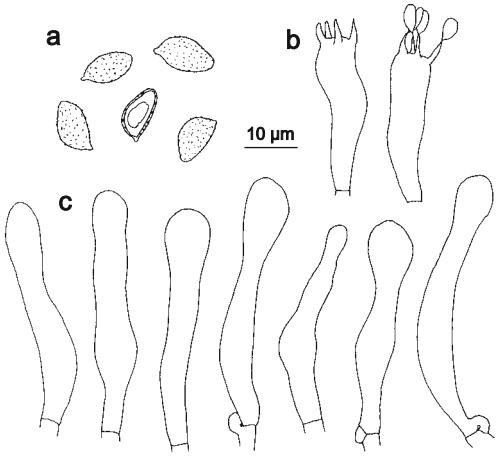

Fig. 71. *Hebeloma radicosum* (Bull.: Fr.) Ricken: a – spores, b – basidia, c – cheilocystidia (KRAM F-50034).

from the peripheries of the Slovak Tatras (Kuthan & Singer 1987).

103. ***Hebeloma sinapizans*** (Paulet) Sacc.

Fig. 72

Pileus 40–100 mm broad, convex with involute margin, cream-ochraceous, ochraceous-brown, surface sticky or slimy. Lamellae crowded, broad, narrowly adnate, clay-coloured, clay-brown, edge delicately ciliate. Stem 60–80 × 10–15 mm, whitish, entirely covered with white fibrils, cylindrical and distinctly swollen at base, hollow. Flesh cream, smell and taste strong, of radish. Spores 11.0–12.5 × 7–8 µm, broadly amygdaliform, warted, pale yellow-brown in transmitted light, strongly dextrinoid. Basidia 26–28 × 9–10 µm, 4-spored. Cheilocystidia 45–60 µm × 7–10 µm × 4–5 µm × 5–7 µm, lageniform with swollen apex. Pleurocystidia none. Pileipellis an ixocutis. Clamps present.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 22 Aug. 2000, *leg. A. Ronikier & M. Ronikier* (KRAM F-50561); 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54350, ZAMU 4405); lower part of Dolina ku Dziurze valley, orographically left side of valley, 960 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′32″E, 24 Sept. 1999 (KRAM F-54349).

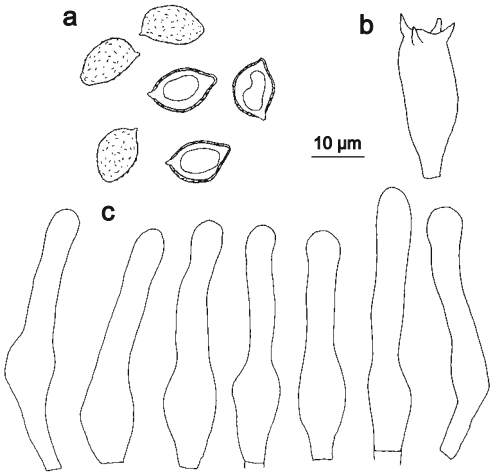

Fig. 72. *Hebeloma sinapizans* (Paulet) Sacc.: a – spores, b – basidium, c – cheilocystidia (KRAM F-54349).

FIELD OBSERVATIONS. Lower part of Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′22″E, 12 Oct. 2001; middle part of Grześkówki ridge, 1040 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°56′17″E, 14 Oct. 2003; upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′47″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality, at the Droga pod Reglami hiking trail, possibly in the area of the Sarnia Skała massif (Domański 1997).

Hemimycena Singer

104. ***Hemimycena gracilis*** (Quél.) Singer

Fig. 73

Pileus 3–6 mm broad, first hemispherical, then slightly expanded, sometimes with a small umbo, watery white, cream to ochraceous in center, translucently striate up to the pileus center when moist, surface smooth. Lamellae distant, broadly adnate or arcuate, edge smooth. Stem 20–40 × 1 mm, white, watery white, cylindrical, with a radially arranged white rhizoids at base. Flesh watery white, smell and taste none. Spores 7–9 × 2–3 µm, cylindrical to slightly fusiform, smooth, nonamyloid. Basidia 20–22 × 5 µm, 4-spored. Cheilocystidia 17–25 × 3.5–4.5 µm, cylindrical. Pleurocystidia none. Lamellar trama nondextrinoid. Caulocystidia 12–28 × 3.4–5.0 µm, cylindrical or irregularly branched. Pileipellis built up of hyphae covered

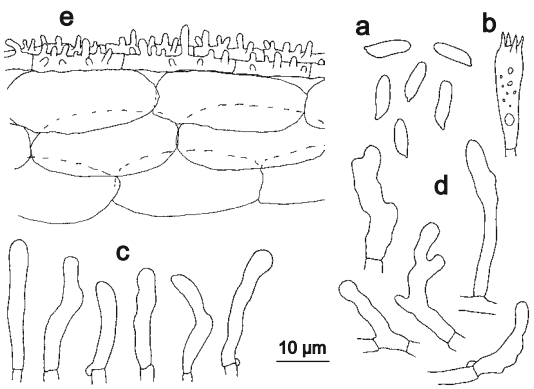

Fig. 73. *Hemimycena gracilis* (Quél.) Singer: a – spores, b – basidium, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-51584).

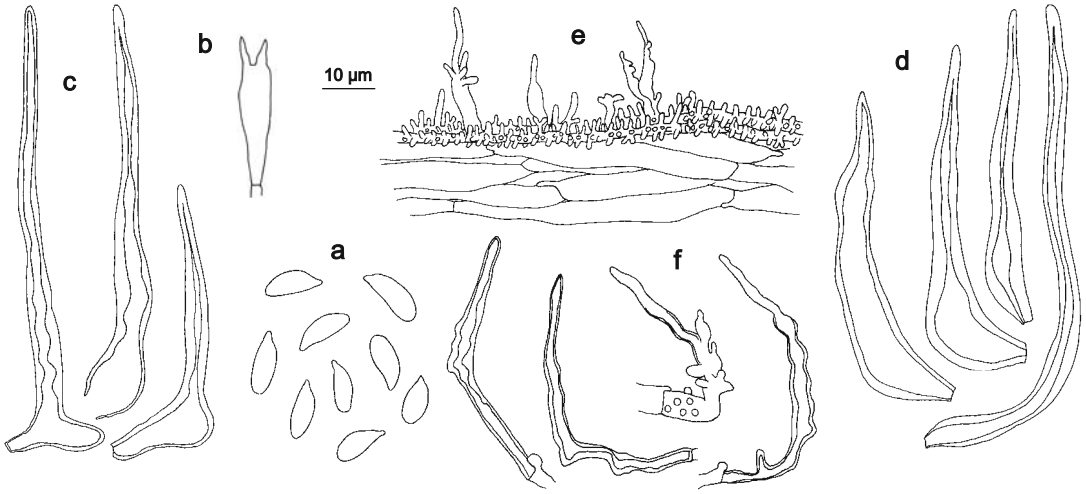

Fig. 74. *Hemimycena pseudocrispula* (Kühner) Singer: a – spores, b – basidium, c – pleurocystidia, d – caulocystidia, e – pileipellis, f – pileocystidia (KRAM F-39938).

with cylindrical excrescences. Pileocystidia not observed. Clamps present.

SPECIMENS EXAMINED. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on spruce needles, 49°16′04″N, 19°56′18″E, 6 July 2001 (KRAM F-51503); 22 Aug. 2001 (KRAM F-51584).

FIELD OBSERVATIONS. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on spruce needles, 49°16′15″N, 19°56′58″E, 7 July 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from the study area, in the Dolina ku Dziurze valley [Wojewoda *et al*. 1986, as *Helotium immaculatum* (Peck) Redhead] and from Belanské Tatry [Kubička 1963a, as *Mycena gracilis* (Quél.) Kühner; Svrček 1987; Škubla 1998a; Antonín & Noordeloos 2004].

105. ***Hemimycena pseudocrispula*** (Kühner) Singer Fig. 74

Pileus 2–5 mm broad, first hemispherical, then slightly expanded, often with a small umbo or slightly depressed in center, margin flexuous, watery white, translucently striate up to the pileus center when moist, surface smooth. Lamellae very distant, reduced, but some of them reaching stem, narrow, adnate or arcuately decurrent, edge smooth. Stem 10–30 × 1 mm, watery white, cylindrical, pruinose. Flesh very thin, watery white, smell and taste none. Spores 8–12 × 3–4.5 µm, narrowly ellipsoid to slightly fusiform, smooth, nonamyloid. Basidia 21–23 × 6 µm, 2-spored. Cheilocystidia and pleurocystidia none. Lamellar trama nondextrinoid. Caulocystidia 30–120 × 7–12 µm, in a form of thick-walled, acute hairs, walls up to 3 µm thick. Pileipellis built up of hyphae covered with short, cylindrical, sometimes forked excrescences. Pileocystidia absent, but thick-walled elements about 30 µm long and protruding from the pileipellis surface present, scattered. Clamps present.

SPECIMENS EXAMINED. Middle part of Dolina Białego valley, at Biały Potok stream, 950 m a.s.l., *Pk*, decaying petioles of *Petasites kablikianus*, 49°16′24″N, 19°57′27″E, 5 Sept. 2000 (KRAM F-48625); Dolina Strążyska valley, about 100 m S from Skała Jelinka cliff, 970 m a.s.l., *Pk*, decaying petioles of *Petasites kablikianus*, 49°16′04″N, 19°55′57″E, 22 June 2001 (ZAMU 4323); mouth of Dolina ku Dziurze valley, 910 m a.s.l., *Pk*, plant remnants (decaying petioles of *Petasites kablikianus*), 49°16′43″N, 19°56′42″E, 20 June 2000 (KRAM F-39938).

FIELD OBSERVATIONS. Upper part of Dolina Strążyska valley, S edge of Polana Strążyska valley, at Strążyski Potok stream, 1020 m a.s.l., *Pk*, decaying petioles of

Petasites kablikianus, 49°15′45″N, 19°55′52″E, 5 Sept. 2000; upper part of Dolina Strążyska valley, at Strążyski potok stream, 1000 m a.s.l., *Pk*, plant remnants (decaying petioles of *Petasites kablikianus*), 49°15′59″N, 19°55′57″E, 5 Sept. 2000; upper part of Dolina Strążyska valley, at Strążyski potok stream, 950 m a.s.l., *Pk*, plant remnants (decaying petioles of *Petasites kablikianus*), 49°16′04″N, 19°55′57″E, 5 Sept. 2000; middle part of Dolina Strążyska valley, at Strążyski potok stream, 950 m a.s.l., *Pk*, plant remnants, 49°16′11″N, 19°56′02″E, 5 Sept. 2000; middle part of Dolina Strążyska valley, at Strążyski potok stream, ale. 950 m a.s.l., *Pk*, plant remnants, 49°16′17″N, 19°56′02″E, 5 Sept. 2000; middle part of Dolina Strążyska valley, at Strążyski potok stream, 950 m a.s.l., *Pk*, plant remnants, 49°16′24″N, 19°56′03″E, 5 Sept. 2000; lower part of Dolina Strążyska valley, at Strążyski potok stream, 940 m a.s.l., *Pk*, plant remnants, 49°16′30″N, 19°56′07″E, 5 Sept. 2000; lower part of Dolina Strążyska valley, at Strążyski potok stream, 940 m a.s.l., *Pk*, plant remnants, 49°16′33″N, 19°56′09″E, 5 Sept. 2000; lower part of Dolina Strążyska valley, at Strążyski potok stream, 930 m a.s.l., *Pk*, plant remnants, 49°16′36″N, 19°56′17″E, 5 Sept. 2000; mouth of Dolina Strążyska valley, at Strążyski potok stream, 910 m a.s.l., *Pk*, plant remnants, 49°16′43″N, 19°56′22″E, 5 Sept. 2000; mouth of Dolina ku Dziurze valley, 910 m a.s.l., *Pk*, plant remnants, 49°16′43″N, 19°56′42″E, 25 Oct. 2000; lower part of Dolina ku Dziurze valley, 950 m a.s.l., *Pk*, plant remnants, 49°16′30″N, 19°56′33″E, 20 June 2000; at Ścieżka nad Reglami hiking trail, the same distance between Czerwona Przełęcz pass and Dolina Strążyska valley, 1180 m a.s.l., *PP*, plant remnants, 49°15′45″N, 19°56′17″E, 20 June 2000; lower part of Dolina Strążyska valley, 940 m a.s.l., *Pk*, plant remnants, 49°16′27″N, 19°56′07″E, 6 July 2001; at Ścieżka nad Reglami hiking trail, S of Polana Białego meadow, 1200 m a.s.l., *PP*, plant remnants (dacaying petioles of *Petasites* sp.), 49°15′43″N, 19°56′57″E, 4 July 2001; upper part of orographically left branch of Dolina Białego valley, 1150 m a.s.l., *PP*, plant remnants, 49°15′51″N, 19°56′57″E, 21 Aug. 2001.

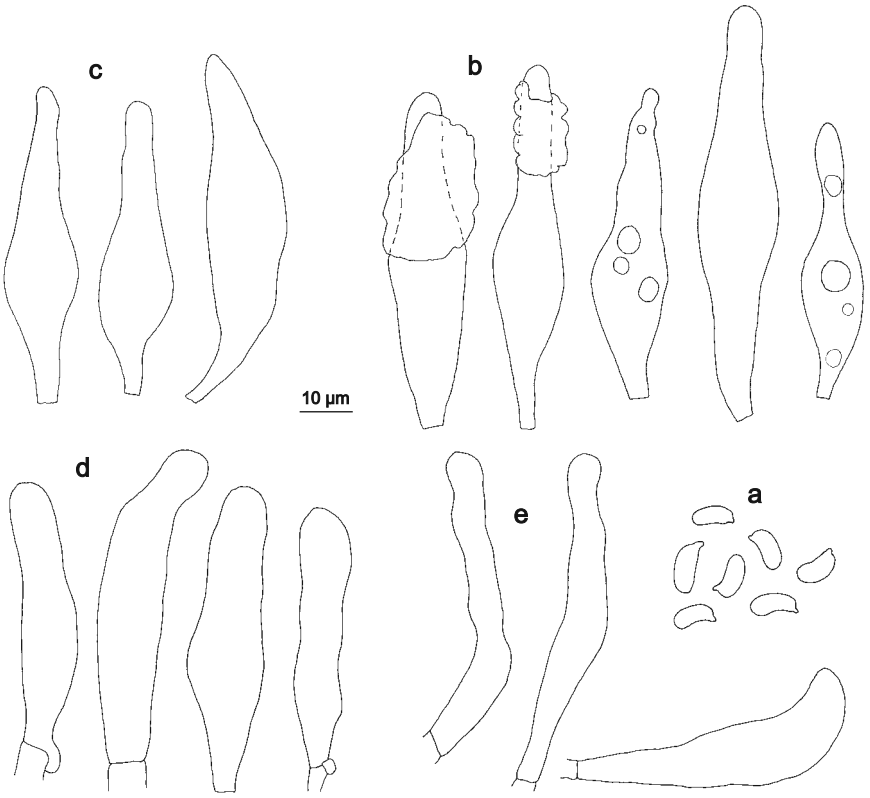

Fig. 75. *Hydropus subalpinus* (Höhn.) Singer: a – spores, b – cheilocystidia, c – pleurocystidia, d – caulocystidia, e – pileocystidia (KRAM F-39959).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the High Tatras and Belanské Tatry (Antonín & Noordeloos 2004).

Hydropus Singer

106. ***Hydropus subalpinus*** (Höhn.) Singer Fig. 75

Pileus 20–35 mm broad, conical, then broadly conical with a small umbo, yellow-brown with a slight olive tint, darker at center, paler towards the margin, not translucently striate. Lamellae medium spaced, broadly andate, white, edge smooth. Stem 50–70 × 3–4 mm, white, pruinose, often rooting. Flesh white, smell and tatse none. Spores 7.5–11.5 × 2.5–4.0 µm, allantoid, smooth, nonamyloid. Basidia 23–30 × 5–7 µm, 4-spored. Cheilocystidia 55–75 × 12–16 µm, fusiform, numerous. Pleurocystidia similar to cheilocystidia. Lamellar trama dextrinoid. Caulocystidia 50–60 × 8–13 µm, cylindrical to utriform. Pileipellis an ixocutis with numerous, cylindrical, lying or erect pileocystidia 54–60 × 6–12 µm. Pigment intercellular. Clamps present.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope, 1080 m a.s.l., *DgF*, on wood (small twig burried in soil), 49°16′23″N, 19°57′05″E, 7 June 2000 (KRAM F-39959); mouth of Dolina ku Dziurze valley, orographicaly left side of valley, 930 m a.s.l., *DgF*, on wood burried in soil, 49°16′43″N, 19°56′37″E, 7 June 2000 (KRAM F-50102), beach twig burried in soil, 16 June 2001 (ZAMU 4269); upper part of Dolina Spadowiec valley, orographicaly right side of valley, 1110 m a.s.l., *DgF*, on wood (small twig of *Fagus sylvatica*), 49°16′17″N, 19°57′07″E, 15 June 2001 (KRAM F-53782).

FIELD OBSERVATIONS. Dolina Spadowiec valley, W slope, on path, 1080 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°57′05″E, 4 June 2001.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Hygroaster Singer

107. ***Hygroaster asterosporus*** (J. E. Lange) Singer Fig. 76

Pileus 5–15 cm broad, convex or slightly depressed in center, grey-olivaceous, hygrophanous,

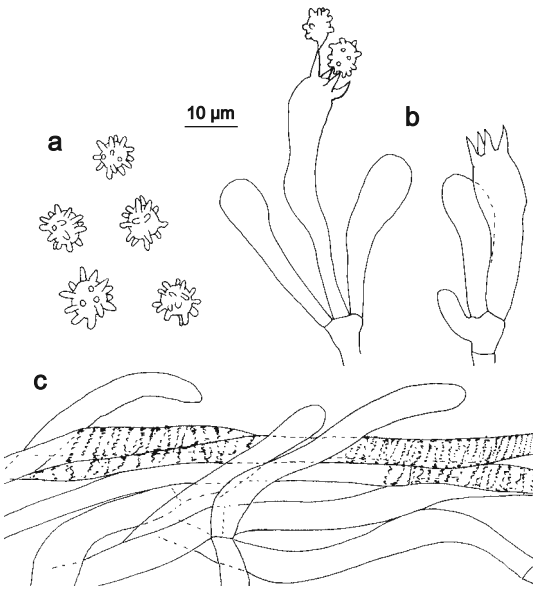

Fig. 76. *Hygroaster asterosporus* (J. E. Lange) Singer: a – spores, b – basidia, c – pileipellis (KRAM F-53305).

translucently striate when moist. Lamellae distant, shortly deccurent, greyish, edge smooth. Stem 15–25 × 2 mm, grey-beige, cylindrical. Flesh grey, smell and taste farinaceous. Spores 6–7 × 5–6 µm (measured without ornamentation), stellate, broadly ellipsoid in outline, covered with up to 2 µm high, cylindrical, blunt spines. Basidia 30–46 × 7–9 µm, 4-spored, some of them with yellow-brown necrotic pigment. Cystidia none. Pileipellis irregular, built up of cylindrical hyphae. Pigment incrusting. Clamps lacking.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-53305); 3 Oct. 2002 (KRAM F-54527).

DISTRIBUTION IN THE TATRA MTS. The species is known only from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

Hygrocybe (Fr.) P. Kumm.

108. ***Hygrocybe acutoconica*** (Clémençon) Singer var. ***acutoconica*** Fig. 77

Pileus 10–20 mm broad, first hemispherical, then broadly conical, yellow, yellow-orange to

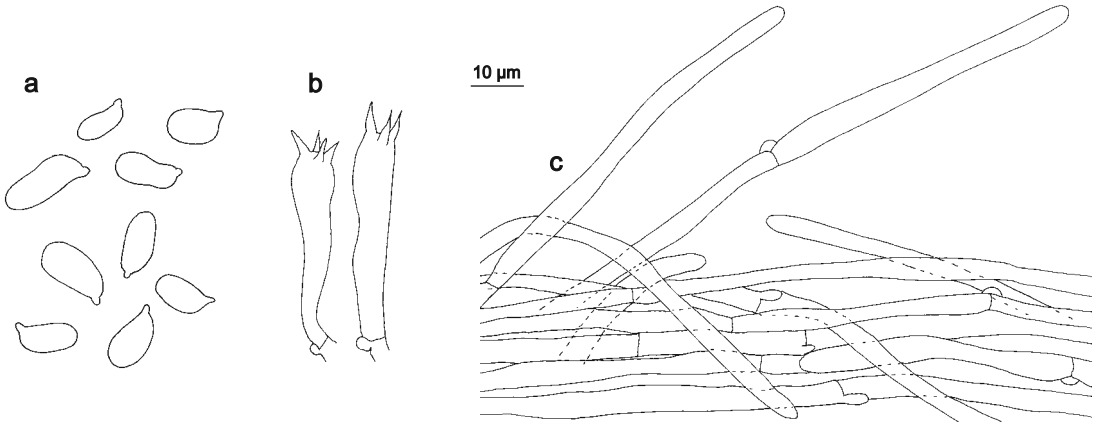

Fig. 77. *Hygrocybe acutoconica* (Clémençon) Singer var. *acutoconica*: a – spores, b – basidia, c – pileipellis (KRAM F-54075).

orange-red, surface sticky. Lamellae distant, broad, almost free, yellow. Stem 20–30 × 2–3 mm, yellow with a slight orange tint, cylindrical, smooth, slightly fibrillose, moist. Flesh yellow, smell and taste none. Spores 10.0–13.5(–15.0) × (4.5–)5.0–7.0(–8.0) µm, ellipsoid, cylindrical, rarely slightly constricted, smooth, nonamyloid. Basidia 40–45 × 8–10 µm, 4-spored. Cystidia none. Lamellar trama regular, built up of very long (> 200 µm) cells. Pileipellis an ixocutis. Clamps numerous.

SPECIMENS EXAMINED. Summit area of Sarnia Skała massif, S slope of Sarnia Skała massif, 1376 m a.s.l., subalpine meadow, on soil, 49°15′55″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-54075).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the Hala Tomanowa mountain pasture, Polish West Tatras [Nespiak 1960, as *Hygrocybe crocea* (Bres.) Singer].

109. ***Hygrocybe calciphila*** Arnolds Fig. 78

Pileus 10–25 mm in diameter, first hemispherical, then expanded with slightly depressed center, not translucently striate, dry, squamulose, orange-yellow, squamules slightly paler, yellowish, very fine. Lamellae distant, slightly ventricose, broadly adnate, yellow-orange. Stem 20–30 × 2–3 mm, yellow-orange, smooth, cylindrical or slightly flattened with whitish tomentum at base. Context orange-yellow, smell and taste none. Spores 7.0–9.5(–10) × 5.0–6.0(–6.5) µm, Q = 1.23–1.8 (Q_{av} = 1.45), broadly ellipsoid. Basidia 40–50 × 8.5–11.0 µm, 4-spored. Cystydia none. Hymenophoral trama regular or almost so, built up of cylindrical to slightly fusiform elements 40–130 × 9–17 µm. Pileipellis a trichoderm, or cutis with erect tufts, terminal elements 35–75 × 10–14 µm. Stipitipellis a cutis, built up of narrow hyphae, 3–5(–6) µm in diameter. Single erect terminal elements of stipitipellis present, 4–7 µm in diameter. Stipititrama regular, build up of cylindrical elements 46–125(–207) × 8–17(–19) µm. Clamps numerous.

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, S slopes, subalpine meadow with *Dryas octopetala*, 1376 m., on soil, 49°15′55″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-54074).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Borgen 2010).

110. ***Hygrocybe conica*** (Schaeff.: Fr.) P. Kumm.

SPECIMENS EXAMINED. The top of the Sarnia Skała massif, 1377 m a.s.l., *Pmc*, on soil, 49°15′56″N, 19°56′29″E, 21 Aug. 2001 (KRAM F-51586); mouth of Dolina Spadowiec valley, at Droga pod Reglami hiking trail, 920 m a.s.l., *DgF*, on soil, 49°16′43″N,

19°57′07″E, 5 Sept. 2001 (KRAM F-51621); slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 13 Oct. 2001 (KRAM F-51756); upper part of Dolina ku Dziurze valley, N slopes, 1150 m a.s.l., windthrow with *Sorbus aucuparia*, on soil, 49°16′11″N, 19°56′32″E, 20 Aug. 2002 (KRAM F-54073); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 20 Aug. 2002 (KRAM F-54072).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from several localities in the Tatra Mts (Pilát 1926, as *Hygrophorus conicus* Scop.; Dominik & Pachlewski 1956, as *Hygrophorus conicus* Scop.; Frejlak 1973; Wojewoda 1996) and from the peripheries of the Slovak West Tatras (Kuthan 1989b) and the Polish High Tatras (Rudnicka-Jezierska 1965). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

111. ***Hygrocybe miniata*** (Fr.: Fr.) P. Kumm.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, SW above Polana Białego valley, 1250 m a.s.l., spruce forest with *Sorbus aucuparia*, on soil, 49°15′43″N, 19°56′52″E, 23 Sept.1999 (KRAM F-50042); upper part of Dolina ku Dziurze valley, N slopes, 1100 m a.s.l., windthrow with *Sorbus aucuparia*, on soil, 49°16′11″N, 19°56′42″E, 20 Aug. 2002 (KRAM F-54076); upper part of Dolina ku Dziurze valley, N slopes, 1120 m a.s.l., windthrow with *Sorbus aucuparia*, on soil, 49°16′07″N, 19°56′37″E, 20 Aug. 2002 (KRAM F-54077).

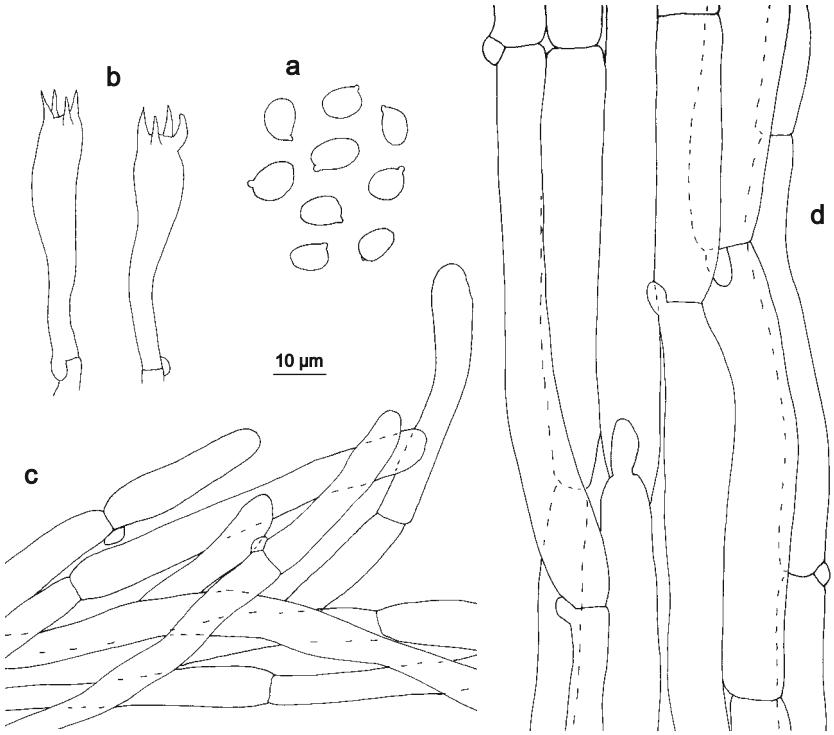

Fig. 78. *Hygrocybe calciphila* Arnolds: a – spores, b – basidia, c – pileipellis, d – stipititrama (KRAM F-54074).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from a few localities in the Polish High Tatras, Slovak West Tatras [Dominik & Nespiak 1953, as *Hygrophorus flammans* (Scop.) Schröt.; Frejlak 1973; Wojewoda 1996; Škubla 1998b] and from the peripheries of the Slovak High Tatras (Pilát 1926, as *Hygrophorus miniatus* Fr.). Localities from the Sarnia Skała

massif have been published before (Ronikier & Borgen 2010).

Hygrophorus Fr.

112. ***Hygrophorus agathosmus*** (Fr.) Fr. Fig. 79

Pileus 50 mm broad, first hemispherical, then convex, grey-brown, surface sticky. Lamellae distant, broad, arcuately decurrent, whitish, edge smooth. Stem 40–60 × 5 mm, white, cylindrical, dry. Flesh whitish, smell fruity and almond-like, taste mild. Spores 9.0–10.5 × 4.5–5.0 µm, ellipsoid, smooth, nonamyloid. Basidia 43–55 × 7–8 µm, 4-spored. Cystidia none. Pileipellis an ixocutis. Clamps numerous.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, between Dolina Strążyska valley and Czerwona Przełęcz pass, 1150 m a.s.l., *PP*, on soil, 49°15′45″N, 19°56′12″E, 1 Dec. 2000 (KRAM F-50463).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1190 m a.s.l., *PP*, on soil, 49°16′03″N, 19°56′17″E, 12 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been noted several times in the Tatra Mts (Pilát 1926, as *Limacium agathosmum* Fr.; Anonymous 1968; Škubla 1998a; Lizoň & Kautmanová 2004).

113. ***Hygrophorus camarophyllus*** (Alb. & Schwein.: Fr.) Dumée, Grandjean & Maire Fig. 80

Pileus 50–100 mm broad, first hemispherical, then convex to expanded, brown, nonhygrophanous, surface dry. Lamellae distant, broad, broadly adnate or arcuately decurrent, whitish, then greyish, edge smooth. Stem 60–110 × 10–20 mm, brownish, paler than the pileus, cylindrical or slightly swollen at base, surface dry. Flesh whitish, smell none, taste sweetish. Spores 7–9 × 4.5–5.5 µm, broadly ellipsoid, smooth, nonamyloid. Basidia 45–60 × 7–8 µm, 4-spored. Cystidia none. Pileipellis a cutis. Clamps numerous.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1050 m a.s.l., *AP*, on soil, 49°16′11″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-54242, ZAMU 4396).

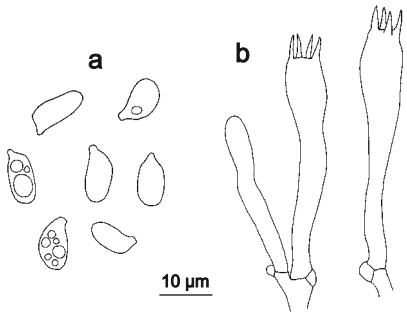

Fig. 79. *Hygrophorus agathosmus* (Fr.) Fr.: a – spores, b – basidia (KRAM F-50463).

DISTRIBUTION IN THE TATRA MTS. The species has been reported only from the peripheries of the Slovak West Tatras (Kuthan 1989b).

114. ***Hygrophorus chrysodon*** (Batsch: Fr.) Fr.

SPECIMENS EXAMINED. Dolina ku Dziurze valley, orographically left branch of valley, 950 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′32″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54226); at Droga pod Reglami hiking trail, between Dolia Białego valley

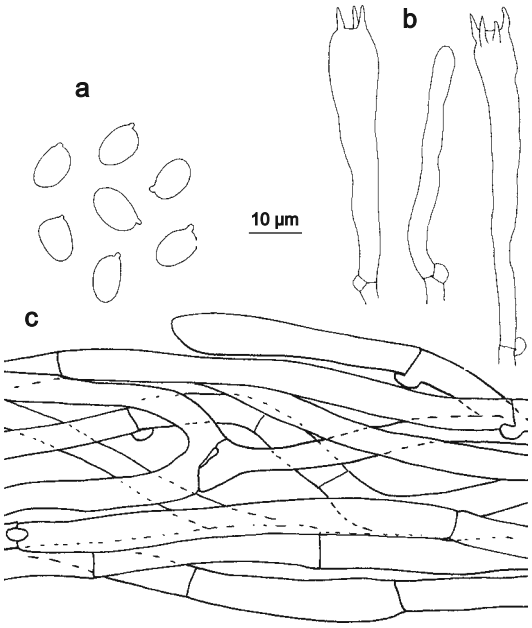

Fig. 80. *Hygrophorus camarophyllus* (Alb. & Schwein.: Fr.) Dumée, Grandjean & Maire: a – spores, b – basidia, c – pileipellis (KRAM F-54242).

and Dolina Spadowiec valley, 970 m a.s.l., *AP*/*DgF*, on soil, 49°16′43″N, 19°57′17″E, 12 Oct. 2001 (KRAM F-51758, ZAMU 4294).

FIELD OBSERVATIONS. Grześkówki rige, 980 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

115. ***Hygrophorus discoxanthus*** (Fr.) Rea
Fig. 81

Pileus 40–80 mm broad, first hemispherical, then convex, first white or cream-yellowish, very quickly changing into ochraceous when touched and into brown on drying, surface sticky. Lamellae distant, broad, arcuately decurrent, whitish, then cream and changing into ochraceous when touched and into flesh-brown on drying, edge smooth. Stem 30–70 × 5–10 mm, white or cream-yellow, changing into ochraceous when touched, cylindrical or fusiform. Flesh white-cream, yellow-ochraceous, taste not recorded, smell strong, sweetish. All parts of basidiome changing into yellow, orange or rusty with KOH. Spores 9.0–11.5 × 5–6 µm, ellipsoid, smooth, nonamyloid. Basidia 42–47 × 7–8 µm, 4-spored. Cystidia none. Pileipellis an ixotrichoderm. Clamps numerous.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′35″N, 19°56′26″E, 22 Aug. 2001 (KRAM F-51566); mouth of Dolina ku Dziurze valley, at Droga pod Reglami hiking trail, 950 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′42″E, 5 Sept. 2001 (ZAMU 4397).

FIELD OBSERVATIONS. Lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′30″E, 8 Sept. 2001; upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′17″E, 5 Sept. 2001; middle part of Dolina Białego valley, 960 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°57′27″E, 8 Sept. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, W slopes of Spaleniec ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, vicinity of caves, 1050 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′42″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, orographically right side of valley, 1050 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′07″E, 9 Sept. 2001.

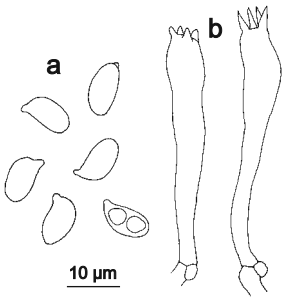

Fig. 81. *Hygrophorus discoxanthus* (Fr.) Rea: a – spores, b – basidia (KRAM F-51566).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

116. ***Hygrophorus eburneus*** (Bull.: Fr.) Fr.

SPECIMENS EXAMINED. Middle part of Spaleniec ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′28″N, 19°56′47″E, 8 Nov. 2000 (KRAM F-50385); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 14 Oct. 2003 (ZAMU 4398).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′17″E, 22 Aug. 2000; middle part of Dolina ku Dziurze valley, mouth of orographically left branch of valley, 950 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′32″E, 22 Aug. 2000; upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 25 Oct. 2000; middle part of Spaleniec ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′28″N, 19°56′47″E, 8 Nov. 2000; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 12 Oct. 2001; middle part of Grześkówki ridge, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′23″E, 12 Oct. 2001; Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 12 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; 14 Oct. 2003; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 12 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 13 Oct. 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 13 Oct. 2001; lower part of Grześkówki ridge, 990 m a.s.l., *DgF*, on soil,

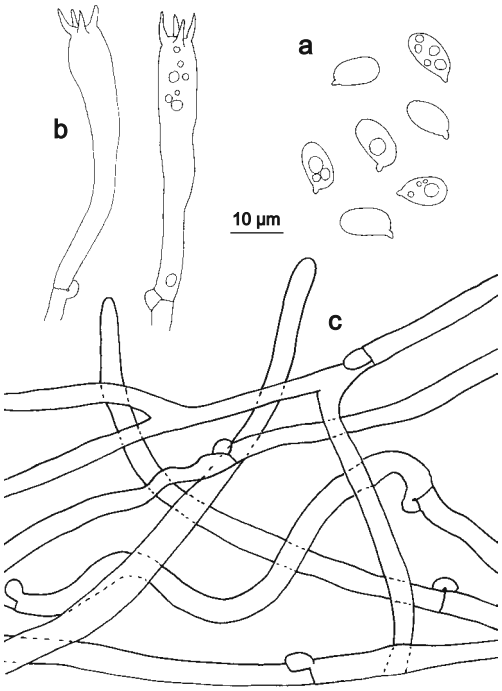

Fig. 82. *Hygrophorus erubescens* (Fr.: Fr.) Fr.: a – spores, b – basidia, c – pileipellis (KRAM F-51748).

49°16′35″N, 19°56′26″E, 21 Aug. 2002; middle part of Dolina ku Dziurze valley, mouth of orographically left branch of valley, 960 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′30″E, 3 Oct. 2002; lower part of ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°57′17″E, 14 Oct. 2003; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported by Pilát (1926), as *Limacium eburneum* Bull., as common in the Tatra Mts (without localities), and by Rudnicka-Jezierska (1965) from the peripheries of the Polish West Tatras. According to Wojewoda (2003) the latter record refers to *Hygrophorus piceae*.

117. ***Hygrophorus erubescens*** (Fr.: Fr.) Fr. Fig. 82

Pileus 30–90 mm broad, first hemispherical, then convex to expanded, flat or slightly depressed, nonuniformly coloured, whitish-vinaceous-purple, with darker, vinaceous-purple stains, changing into sulphur-yellow when touched or with age, surface delicately fibrillose, dry. Lamellae distant, broad, arcuately decurrent, whitish with vinaceous-purple stains. Stem 30–60 × 6–10 mm, vinaceous-purple, fibrillose, dry. Flesh whitish, then with a vinaceous-purple tint, staining yellow, smell none, taste bitter. Spores 8–10 × 5–6 µm, broadly ellipsoid, smooth, nonamyloid. Basidia 35–55 × 7–8 µm, 4-spored. Cystidia none. Pileipellis an ixocutis. Clamps numerous.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, NE slopes of Spaleniec ridge, 930 m a.s.l., *AP/DgF*, on soil, 49°16′43″N, 19°57′07″E, 12 Oct. 2001 (KRAM F-51748).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, NE slopes of Spaleniec ridge, 930 m a.s.l., *AP*/*DgF*, on soil, 49°16′43″N, 19°57′07″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. In the Polish Tatras the fungus has been reported only form the locality at the Droga pod Reglami hiking trail, possibly from the area of the Sarnia Skała massif (Domański 1997). It is known from the second locality in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004).

118. ***Hygrophorus lucorum*** Kalchbr. var. ***speciosus*** (Peck) Krieglst. Fig. 83

Pileus 20–40 mm broad, first hemispherical, then campanulate with a distinct umbo, slimy, golden-yellow, orange-yellow, in center slightly darker, orange. Lamellae distant, broad, decurrent, cream-yellow. Stem 30–60 × 4–8 mm, whitish at apex and at base, with a slimy ring in upper part, below covered with golden-yellow, orange-yellow slimy layer. Flesh whitish, yellow under the pileipellis, smell none, taste mild. Spores 7–10 × 6–7 µm, broadly ellipsoid, smooth, nonamyloid. Basidia 43–53 × 6–8 µm, 4-spored. Cystidia none. Pileipellis an ixocutis. Clamps numerous.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1150 m a.s.l., *AP*, on soil, 49°16′10″N, 19°56′17″E, 12 Oct. 2001 (KRAM F-51757, ZAMU 4309).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from the Slovak West Tatras

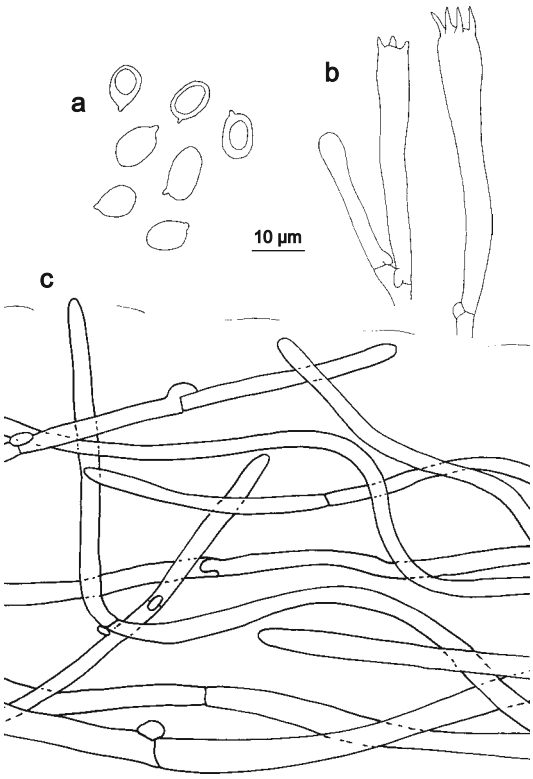

Fig. 83. *Hygrophorus lucorum* Kalchbr. var. *speciosus* (Peck) Krieglst.: a – spores, b – basidia, c – pileipellis (KRAM F-51757).

(Škubla 1998b, as *Hygrophorus speciosus* Peck) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987, as *Hygrophorus speciosus* Peck; Kuthan 1989b, as *Hygrophorus speciosus* Peck).

119. ***Hygrophorus olivaceoalbus*** (Fr.: Fr.) Fr.

SPECIMENS EXAMINED. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 21 Aug. 2002 (KRAM F-54252); upper part of orographically left branch of Dolina białego valley, NE edge of Polana Białego meadow, 1150 m a.s.l., *DgF/PP*, on soil, 49°15′51″N, 19°56′57″E, 21 Aug. 2001 (KRAM F-51587); lower part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′17″E, 20 July 2000 (KRAM F-50114); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′54″E, 20 Aug. 2001 (ZAMU 4321).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 21 Aug. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 22 Aug. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 21 Aug. 2002; upper part of Dolina Białego valley, 1060 m a.s.l., spruce forest (planted), on soil, 49°15′51″N, 19°57′22″E, 8 Sept. 2001; upper part of Dolina Białego valley, SE slopes of Igła mount, 1150 m a.s.l., *PP*, on soil, 49°15′48″N, 19°57′02″E, 8 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts (Dominik & Pachlewski 1956, as *Limacium olivaceoalbum* Fr.; Nespiak 1960, 1962b, 1966; Anonymous 1968; Frejlak 1973; Škubla 1998a, b; Lizoň & Kautmanová 2004). It has also been reported from the peripheries of the Slovak West Tatras (Kuthan 1989a, b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

120. ***Hygrophorus piceae*** Kühner Fig. 84

Pileus 20–50 mm broad, first hemispherical, then expanded, flat, white, slightly sticky, but not slimy. Lamellae distant, broad, decurrent, first whitish, then pale cream. Stem 30–50 × 4–7 mm, white, dry or slightly sticky. Flesh thin, white, smell and taste none. Spores 6–9 × 4.5–5.5 µm, broadly ellipsoid to ovoid, smooth, nonamyloid. Basidia 50–55 × 6–8 µm, 4-spored. Cystidia none. Lamellar trama bilateral. Pileipellis an ixocutis. Clamps numerous.

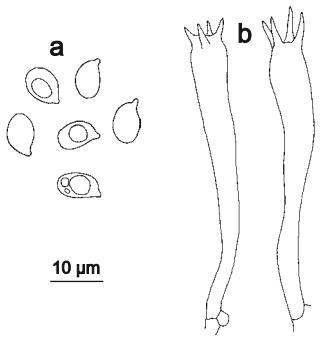

Fig. 84. *Hygrophorus piceae* Kühner: a – spores, b – basidia (KRAM F-54253).

SPECIMENS EXAMINED. Lower part of a ridge between Dolina Białego valley and Dolina Spadowiec valley, 960 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°57′22″E, 20 Aug. 2002 (KRAM F-54253); upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-54254).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from a few localities in the Slovak West Tatras (Škubla 1998b) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b). According to Wojewoda (2003) *Hygrophorus eburneus* noted by Rudnicka-Jezierska (1965) in the peripheries of the Polish West Tatras represents *H. piceae*.

121. ***Hygrophorus pustulatus*** (Pers.: Fr.) Fr.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1200 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′23″E, 13 Oct. 2001 (KRAM F-54244); upper part of Dolina Białego valley, at Ścieżka nad Reglami hiking trail, 1200 m a.s.l., *PP*, on soil, 49°15′42″N, 19°56′57″E, 13 Oct. 2001 (KRAM F-54243).

FIELD OBSERVATIONS. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 12 Oct. 2001; upper part of Dolina Białego valley, 1080 m a.s.l., spruce forest (planted), on soil, 49°15′51″N, 19°57′22″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported twice from the Tichá Dolina valley and once from the Tomanová Dolina valley, Slovak West Tatras (Škubla 1998b; Lizoň & Kautmanová 2004). It has also been noted from the peripheries of the Slovak High Tatras (Kuthan & Singer 1987).

122. ***Hygrophorus unicolor*** Gröger Fig. 85

Pileus 15–30 mm broad, expanded with a small umbo, sticky, pale cream-salmon, slightly darker in center flesh-cream but not bi-coloured. Lamellae distant, broad, broadly adnate, cream with a salmon tint. Stem 20–40 × 3–5 mm, cream, with delicate white scales at apex, cylindrical or slightly tapering downwards, dry or moist. Flesh cream, smell none, taste mild.

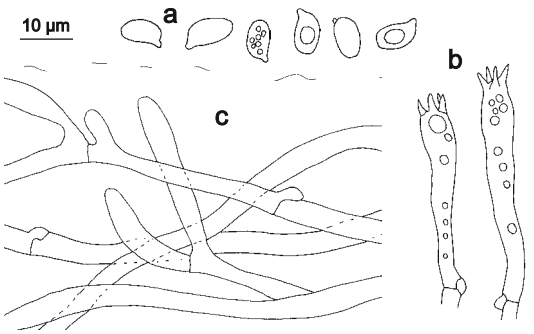

Fig. 85. *Hygrophorus unicolor* Gröger: a – spores, b – basidia, c – pileipellis (KRAM F-51760).

Spores 7–9 × 4.5–5.0 µm, ellipsoid, smooth, nonamyloid. Basidia 30–45 × 6–7 µm, 4-spored. Cystidia none. Hairs at the stem apex 35–46 × 4.0–6.5 µm, cylindrical, thin-walled, in clumps. Pileipellis an ixotrichoderm. Clamps numerous.

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 12 Oct. 2001 (KRAM F-51760); Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′19″N, 19°56′13″E, 3 Oct. 2002 (ZAMU 4399).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Hymenopellis R. H. Petersen

123. ***Hymenopellis radicata*** (Relhan: Fr.) R. H. Petersen

Xerula radicata (Relhan: Fr.) Dörfelt

SPECIMENS EXAMINED. Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, at dead standing trunk of *Fagus sylvatica*, 49°16′36″N, 19°56′35″E, 20 May 2000 (KRAM F-39928); Grześkówki ridge, 980 m a.s.l., *DgF*, on soil (roots), 49°16′36″N, 19°56′27″E, 16 Aug. 2003 (KRAM F-53764); Grześkówki ridge, 1040 m a.s.l., *DgF*, on roots, 49°16′27″N, 19°56′22″E, 16 Aug. 2003 (KRAM F-53806); W slope of Dolina Spadowiec valley, at a path, 1040 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′30″N, 19°57′17″E, 20 Aug. 2001 (ZAMU 4302).

FIELD OBSERVATIONS. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′26″N, 19°57′08″E, 20 Aug. 2001; 3 Oct. 2002; 30 June 2003; Grześkówki ridge, 980 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′36″N,

19°56′27″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, N slope of Spaleniec ridge, 930 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′43″N, 19°56′57″E, 9 Sept. 2001; Grześkówki ridge, 1080 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′23″N, 19°56′17″E, 5 Sept. 2001; Dolina ku Dziurze valley, at Dziura Wyżnia cave, 1080 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′17″N, 19°56′42″E, 9 Sept. 2001; Dolina Spadowiec valley, right side of the stream, 1020 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′30″N, 19°57′07″E, 9 Sept. 2001; Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil (roots of *Fagus*), 49°16′30″N, 19°56′22″E, 16 Aug. 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus has already been reported from the Dolina Strążyska valley in the Sarnia Skała massif (Nespiak 1962c) and from the Dolina Za Bramką valley in the neighboring Łysanki massif [Ronikier 2005c, as *Xerula radicata* (Relhan: Fr.) Dörfelt]. Wojewoda (1996) mentions the fungus from the Polish Tatras, without a locality. The species has also been noted in the peripheries of the Slovak High Tatras (Pilát 1926, as *Collybia macroura* Scop.). Localities from the Sarnia Skała massif have been published before [Ronikier 2003b, 2005c, as *Xerula radicata* (Relhan: Fr.) Dörfelt].

Hypholoma (Fr.) P. Kumm.

124. ***Hypholoma capnoides*** (Fr.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 1010 m a.s.l., *DgF*, on stem of coniferous tree, 49°16′36″N, 19°57′17″E, 14 Oct. 2003 (KRAM F-53988); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°56′30″E, 14 Oct. 2003 (KRAM F-53989); 12 Oct. 2001 (ZAMU 4378).

DISTRIBUTION IN THE TATRA MTS. The species is known from several localities in the Polish and Slovak Tatras (Pilát 1926; Dominik & Pachlewski 1956; Anonymous 1968; Škubla 1998a, b; Lizoň & Kautmanová 2004) and in the peripheries of the Slovak West Tatras (Kuthan 1989b).

125. ***Hypholoma fasciculare*** (Huds.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Dolina Ku Dziurze valley, at the end of the hiking trail, 990 m a.s.l., *DgF*, on wooden bench, 49°16′26″N, 19°56′37″E, 16 June 2001 (ZAMU 4270); Grześkówki ridge, 990 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′27″E, 20 Aug. 2002 (KRAM F-53994).

FIELD OBSERVATIONS. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°56′30″E, 12 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus is common in the Tatra Mts [Pilát 1926; Dominik & Pachlewski 1956; Rudnicka-Jezierska 1965, as *Naematoloma fasciculare* (Huds. *ex* Fr.) P. Karst.; Frejlak 1973, as *Naematoloma fasciculare* (Huds. *ex* Fr.) P. Karst.]. It has also been noted from the peripheries of the Slovak High Tatras (Kuthan & Singer 1987).

126. ***Hypholoma lateritium*** (Schaeff.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on log of coniferous tree, 49°16′30″N, 19°57′07″E, 14 Oct. 2001, *leg. A. Ronikier & M. Ronikier* (KRAM F-53995).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from several localities in the Polish and Slovak Tatras (Pilát 1926; Dominik & Pachlewski 1956, as *Hypholoma sublateritium* Fr.).

127. ***Hypholoma radicosum*** J. E. Lange Fig. 86

Pileus 20–30 mm broad, convex, then expanded with a low, broad umbo, yellow-orange, darker in center, paler at margin, smooth, covered with silvery-white velum, not hygrophanous. Lamellae medium spaced, broadly adnate, first pale, ochraceous, then rusty-brown, edge smooth. Stem 50–70 × 5–7 mm, whitish and pruinose at apex, with a distinct, fibrillose ring zone, below yellow-orange, fibrillose, rooting, root orange-brown. Flesh whitish, taste bitter. Spores 5.5–7.0 × 3.5–4.5 µm, ellipsoid, smooth, thick-walled with an indistinct germ pore. Basidia 23–36 × 7–8 µm, 4-spored. Cheilocystidia 25–31 × 5–7 µm, cylindrical, slightly swollen in central part, numerous. Pleurocystidia a chrysocystidia, 35–50 × 8–12 µm, clavate with a short appendage. Pileipellis a cutis, built up of cells containing yellow-brown intracellular pigment. Clamps present.

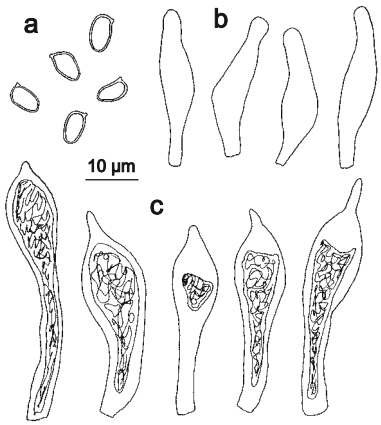

Fig. 86. *Hypholoma radicosum* J. E. Lange: a – spores, b – cheilocystidia, c – pleurocystidia (KRAM F-50173).

SPECIMENS EXAMINED. Upper part of orographically left branch of Dolina ku Dziurze valley, N slopes of Sarnia Skała massif, 1250 m a.s.l., *PP*, 49°16′00″N, 19°56′27″E, 21 July 2000, *leg*. *A*. *Ronikier & Z*. *Mirek* (KRAM F-50173).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from the peripheries of the Slovak High and West Tatras (Pilát 1926, as *Hypholoma epixanthum* Fr.; Kuthan 1989b).

Infundibulicybe Harmaja

128. ***Infundibulicybe gibba*** (Pers.: Fr.) Harmaja

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, mouth of Siwarowy Żleb gully, 990 m a.s.l., *DgF*, on litter, 49°16′11″N, 19°57′27″E, 20 Aug. 2001 (KRAM F-51610); Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′15″E, 5 Sept. 2001 (KRAM F-51625); 20 Aug. 2002 (KRAM F-54382); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 5 Sept. 2001 (KRAM F-51624); 9 Sept. 2003 (KRAM F-54379); 3 Oct. 2002 (KRAM F-54376); 20 Aug. 2002 (KRAM F-54381); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001 (KRAM F-54378); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 3 Oct. 2002 (KRAM F-54380); 20 Aug. 2002 (KRAM F-54377); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 20 July 2000 (KRAM F-50151); upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′17″E, 21 July 2000 (KRAM F-54383).

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts [Pilát 1926, as *Clitocybe infundibuliformis* Schaeff.; Dominik & Pachlewski 1956, as *Clitocybe infundibuliformis* Schaeff.; Nespiak 1960, as *Clitocybe infundibuliformis* (Schaeff. *ex* Fr.) Quél.; Frejlak 1973, as *Clitocybe infundibuliformis* (Schaeff.) Quél.; Škubla 1998a, as *Clitocybe gibba* (Pers.: Fr.) P. Kumm.; Škubla 1998b, as *Clitocybe gibba* (Pers.: Fr.) P. Kumm.; Lizoň & Kautmanová 2004, as *Clitocybe gibba*]. It has also been reported from the peripheries of the Slovak West Tatras (Kuthan 1989b).

NOTES. Speciemens collected on the Sarnia Skała massif were characterized by pale colors, usually with incarnate or pinkish tint and more less concolorous stem. Reaction with 5% KOH of pileipellis on a pileus surface of dried basidiomata were almost always negative. In only one collection the color of pileipellis changed into brown with 5% KOH (but in other parts of the same basidiome the reaction was negative). Two specimens (KRAM F-54383 and 54378) had slightly darker colors and the latter had a slightly costate pileus margin. These collectios may represent *Infundibulicybe costata* (Kühner & Romagn.) Harmaja.

Inocybe (Fr.) Fr.

129. ***Inocybe adequata*** (Britzelm.) Sacc. Fig. 87

Pileus 50 mm broad, conico-campanulate with an umbo, vinaceous-red-brown, longitudinally fibrillose-rimose. Lamellae distant, broad, narrowly andate, greyish-clay, edge darker, vinaceous-brownish. Stem 80 × 8 mm, cylindrical, vinaceous-red-brown, fibrillose. Flesh beige, staining vinaceous-red, especially at base, smell none, taste mild. Spores 10–12 × 5.5–7.0 µm, ellipsoid or slightly phaseoliform, smooth, thick-walled. Basidia 26–36 × 10–11 µm, 4-spored, often with brown pigment. Cheilocystidia 35–60 × 11–21 µm, cylindrical, clavate, thin-walled, vinaceous-brown in KOH. Pleurocystidia none. Pileipellis a cutis

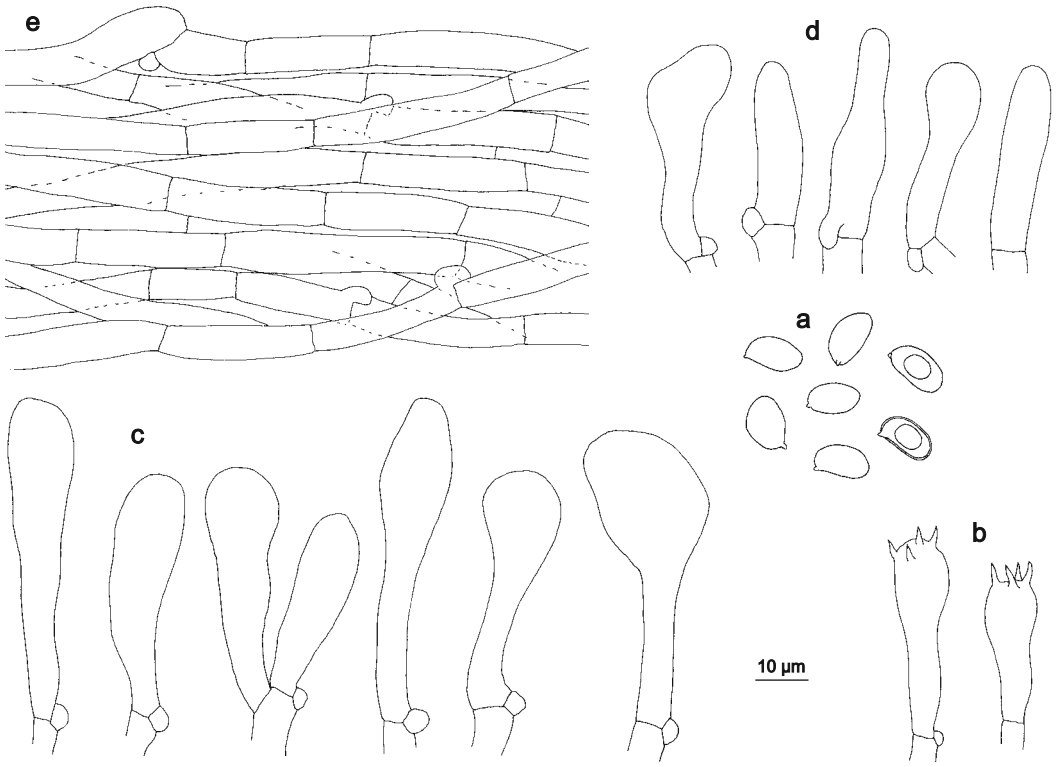

Fig. 87. *Inocybe adequata* (Britzelm.) Sacc.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-51699).

built up of cylindrical cells 5–7 µm in diameter, vinaceous-brown in KOH. Pigment incrusting. Clamps present.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001 (KRAM F-51699).

DISTRIBUTION IN THE TATRA MTS. The fungus has only one locality in the Tatra Mts, in the vicinity of the Chata Plesnivec mountain refuge in Belanské Tatry [Škubla 1998a, as *Inocybe jurana* (Pat.) Sacc.].

130. ***Inocybe bongardii*** (Weinm.) Quél. Fig. 88

Pileus 20–60 mm broad, first hemispherical, then conico-campanulate, with a broad, blunt umbo or without, ochraceous, covered with red-brown fibrils forming appressed scales changing color into vinaceous-red, margin of pileus first connected to stem by distinct, thick cortina, then woolly-fimbriate with veil remnants. Lamellae medium spaced, broad, narrowly adnate, pale clay-coloured, edge white ciliate. Stem 40–120 × 8–10 mm, cylindrical, slightly bulbous at base, fibrillose, first whitish, then staining vinaceous-red. Flesh whitish, quickly changing into vinaceous-red when cut, smell strong or weak, pleasant, fruity, taste mild. Spores 11–14 × 6.5–8.0 µm, ellipsoid, smooth, thick-walled. Basidia 40–50 × 9–10 µm, 4-spored, often with yellow-brown necropigment. Cheilocystidia 30–88 × 8–9 µm, cylindrical, thin-walled. Pleurocystidia none. Pileipellis a cutis to trichoderm. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, close to a bridge, 1000 m a.s.l., *DgF*, on soil, 49°16′11″N, 19°57′27″E, 12 July 2002 (KRAM F-52417); middle part of Dolina ku Dziurze valley, at hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′37″E, 7 Sept. 1999 (KRAM F-54176); at Droga

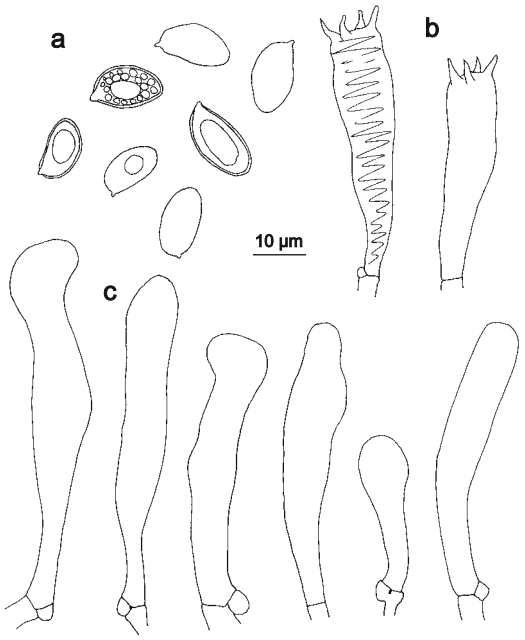

Fig. 88. *Inocybe bongardii* (Weinm.) Quél.: a – spores, b – basidia, c – cheilocystidia (KRAM F-52417).

pod Reglami hiking trail, about 100 m E from the mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′47″E, 7 July 2001 (ZAMU 4316); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 6 July 2001 (KRAM F-51502); 21 Aug. 2002 (KRAM F-54175).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 22 Aug. 2001; 5 Sept. 2001; lower part of Dolina Białego valley, at hiking trail in valley, 950 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′27″E, 21 Aug. 2001; lower part of Dolina Strążyska valley, at Polana Młyniska meadow, at hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′12″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Strążyska valley, orographically righ side of valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, N slopes of Grześkówki ridge, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 22 Aug. 2001; mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′42″E, 5 Sept. 2001; lower part of Dolina ku Dziurze valley, E slopes of Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′32″E, 9 Sept. 2001; lower part of Dolina Białego valley, at hiking trail in valley, 940 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′27″E, 12 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the Dolina Miętusia valley, Polish West Tatras (Anonymous 1968).

131. ***Inocybe calamistrata*** (Fr.: Fr.) Gillet
Fig. 89

Pileus 10–20 mm broad, first hemispherical, then convex, brown, covered with distinct scales, scales in center of pileus erect and slightly darker than pileus surface. Lamellae distant, narrowly adnate, first pale, then brown, edge white ciliate. Stem 10–20 × 2–3 mm, cylindrical, slightly swollen at base, dark-grey-brown, at base grey-green-bluish, entirely covered with scales. Flesh brown, staining red, green-blue at base, smell spermatic, taste mild. Spores 11–14 × 5.5–7.0 µm, ellipsoid (sometimes slightly fusiform) or slightly phaseoliform, smooth, thick-walled, pale brown in transmitted light. Basidia 32–37 × 7.0–8.5 µm, 4-spored. Cheilocystidia 32–46 × 8–13 µm, cylindrical, clavate or broadly fusiform, thin-walled. Pleurocystidia none. Pileipellis a cutis, built up

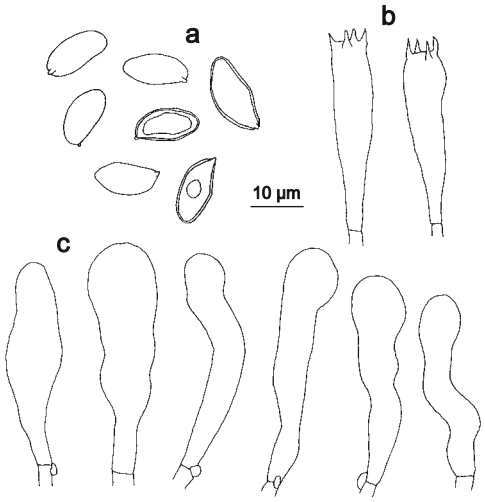

Fig. 89. *Inocybe calamistrata* (Fr.: Fr.) Gillet: a – spores, b – basidia, c – cheilocystidia (KRAM F-51619).

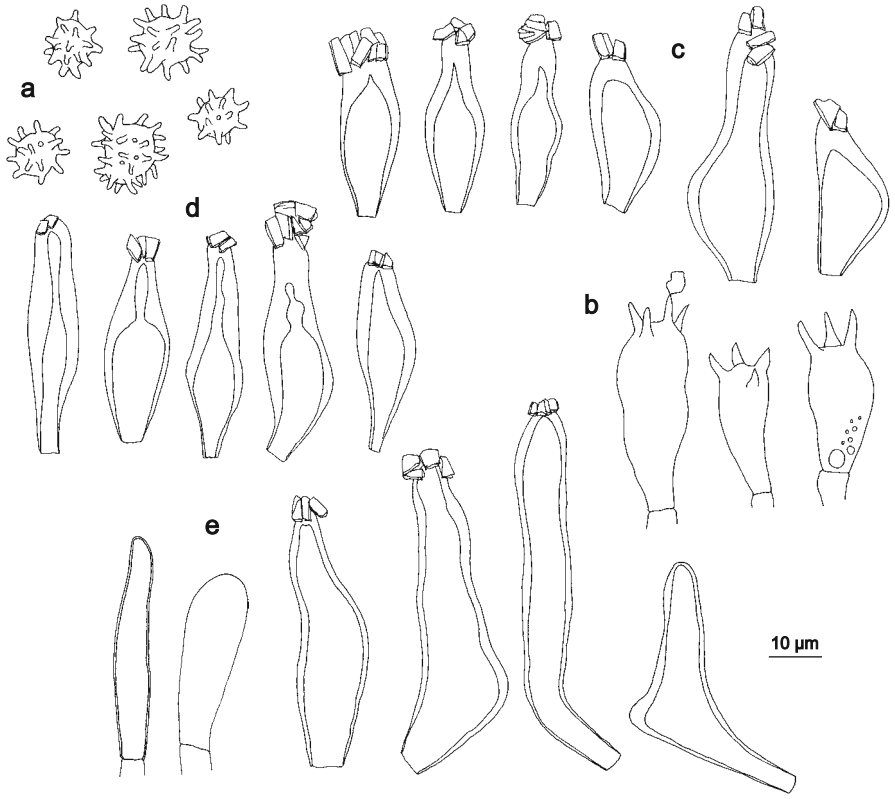

Fig. 90. *Inocybe calospora* Quél.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-50607).

of cylindrical, strongly incrusted cells. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 17 July 2001 (KRAM F-51511); at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′11″E, 5 Sept. 2001 (KRAM F-51619).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the peripheries of the Polish West Tatras (Rudnicka-Jezierska 1965).

132. ***Inocybe calospora*** Quél. Fig. 90

Pileus 10–20 mm broad, convex, campanulate, with low umbo, reddish-brown to dark brown, fibrillose, slightly scally in center, scales slightly darker than the pileus surface, small, appressed or slightly erect. Lamellae distant, very narrowly adnate (almost free), first pale, then pale brown, edge white ciliate. Stem 20–30 × 2–3 mm, cylindrical, reddish-brown, slightly pruinose at apex, bulbous at base. Flesh whitish, smell spermatic, taste mild. Spores 8–10 × 7–8 µm (measured without spines), broadly ellipsoid to ovoid, covered with cylindrical spines up to 1.5–3 µm high. Basidia 40–45 × 9–11 µm, 4-spored. Cheilocystidia numerous, 49–63 × 10–15 µm, cylindrical, fusiform, broadly lageniform, thick-walled, with crystals at apex, walls 1.0–2.5 µm thick. Pleurocystidia 40–55 × 10–15 µm, similar to cheilocystidia, scattered. Caulocystidia up to 75 µm long, with or without crystals at apex, in clumps together with thin-walled paracystidia, scattered. Pileipellis a cutis, built up of cylindrical cells with incrusting pigment. Clamps present.

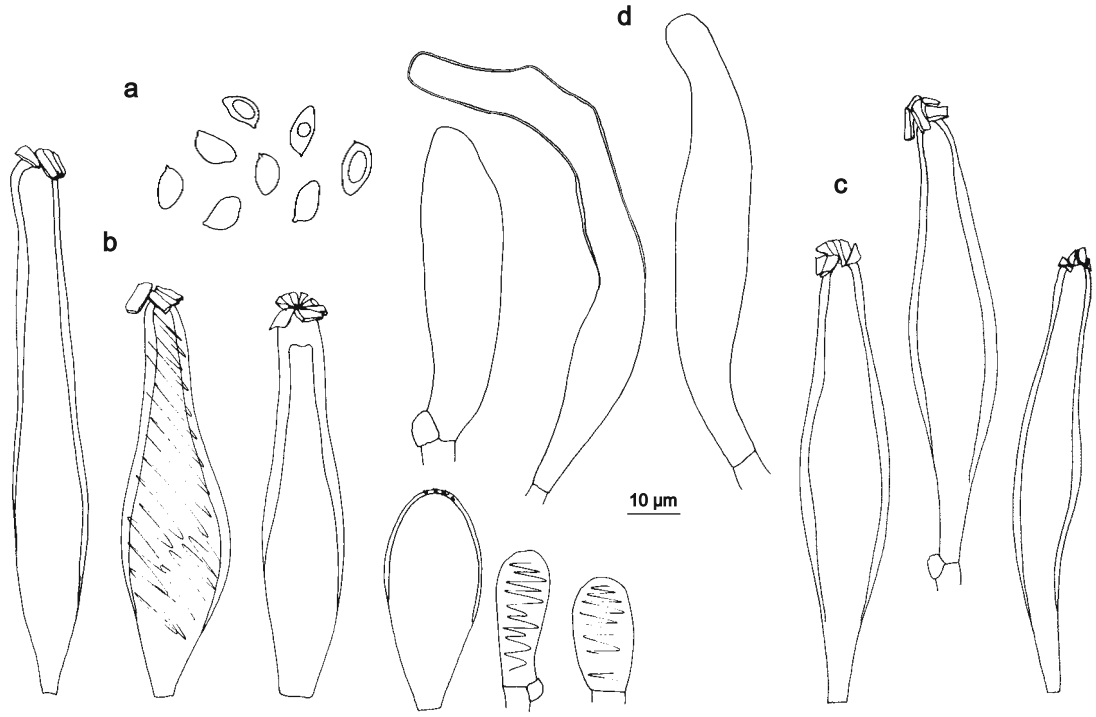

Fig. 91. *Inocybe cincinata* (Fr.: Fr.) Quél.: a – spores, b – cheilocystidia, c – pleurocystidia, d – caulocystidia (KRAM F-50156).

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, at hiking trail, near Igła mount, 1160 m a.s.l., spruce forest on calcareous bedrock, on soil, 49°15′48″N, 19°57′11″E, 5 Sept. 2000 (KRAM F-50607).

DISTRIBUTION IN THE TATRA MTS. The species has been found only once in the peripheries of Belanské Tatry in Slovakia (Gminder 1998, as *Inocybe calospora* var. *odorata* Gminder). The locality from the Sarnia Skała massif has been published before (Ronikier 2002, 2005a).

133. ***Inocybe cincinata*** (Fr.: Fr.) Quél. Fig. 91

Pileus 10–15 mm broad, convex, beige-brown, fibrillose-squamulose, scales appressed, sometimes very small, slightly darker than pileus surface. Lamellae medium spaced, moderately broad, adnate, cinnamon-brown, edge often darker, brown. Stem 20–30 × 1–2 mm, cylindrical, brown, covered with fine fibrils, sometimes forming small scales, cortina present in young basidiomata. Flesh beige-brown, lilac at apex of the stem, smell spermatic, taste none. Spores 8.0–10.5 × 4.5–6.0 µm, amygdaliform, fusiform, smooth, thick-walled. Basidia 28–33 × 8.5–10.0 µm, 4-spored, with a basal clamp. Cheilocystidia 50–110 × 14–21 µm, narrowly fusiform, thick-walled, with crystals at apex, mostly brownish-coloured, interspersed with thin-walled, clavate paracystidia often also brownish. Pleurocystidia similar to cheilocystidia, 50–85 × 14–18 µm, walls sulphur-yellow in KOH. Caulocystidia present only in narrow part of stem apex, scattered among cylindrical caulocystidioid elements, sometimes brownish. Pileipellis a cutis to trichoderm. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1150 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°57′07″E, 20 July 2000 (KRAM F-50156); lower part of Grześkówki ridge, E slopes, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 5 Sept. 2001 (KRAM F-51622).

DISTRIBUTION IN THE TATRA MTS. The fungus has been found once in the Dolina Toma-

nowa valley, Polish West Tatras (Nespiak 1960, 1990).

134. ***Inocybe corydalina*** Quél. Fig. 92

Pileus 30–80 mm broad, conico-campanulate, with broad, low umbo, first whitish, then greyish, brownish-grey, olive-greenish in center, surface fibrillose, sometimes fibrils form appressed scales (green in center of the pileus). Lamellae medium spaced, broad, broadly adnate, clay-coloured, edge whitish, ciliate. Stem 30–120 × 7–10 mm, cylindrical, slightly bulbous at base, whitish, cream to pale brownish, fibrillose. Flesh white, not changing, smell strong, similar to those of *Lepiota cristata*, taste mild. Spores 8–9 × 5.0–5.5 µm, ellipsoid, smooth, thick-walled. Basidia 28–32 × 7–9 µm, 4-spored. Cheilocystidia 39–65 × 8–12 µm, cylindrical, broadly fusiform, thick-walled with numerous crystals at apex. Pleurocystidia 32–53 × 10–13 µm, cylindrical, broadly fusiform, utriform, thick-walled. Caulocystidia none. Pileipellis a cutis to trichoderm. Clamps present.

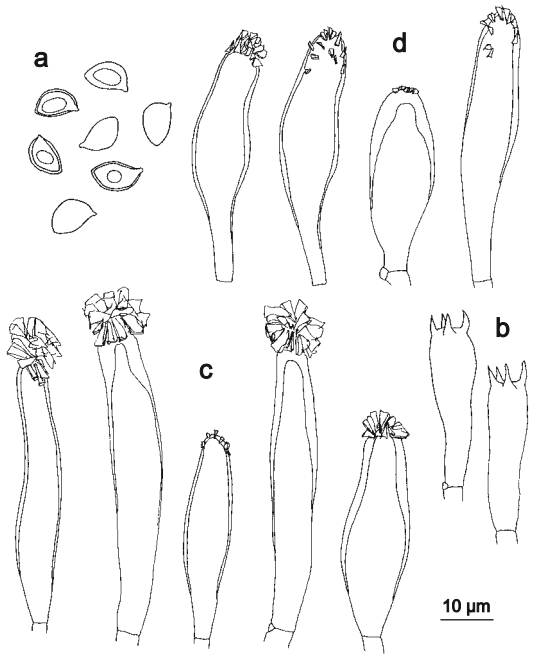

Fig. 92. *Inocybe corydalina* Quél.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia (KRAM F-51708).

SPECIMENS EXAMINED. A ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°57′22″E, 9 Sept. 2001 (KRAM F-51708); upper part of Dolina Białego valley, at a stream, 1050 m a.s.l., beech forest with *Acer pseudoplatanus*, on soil, 49°15′57″N, 19°57′17″E, 5 Sept. 2000 (KRAM F-50601).

FIELD OBSERVATIONS. Upper part of Dolina Spadowiec valley, 1080 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°57′02″E, 20 Aug. 2001; lower part of Dolina Białego valley, by hiking trail in valley, 950 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′32″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, N slopes of Grześkówki ridge, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 22 Aug. 2001; mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′42″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, N slopes of Spaleniec ridge, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′57″E, 5 Sept. 2001; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 5 Sept. 2001; mouth of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001; at Droga pod Reglami hiking trail, orographically right side of Dolina ku Dziurze valley, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′46″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 5 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

135. ***Inocybe fraudans*** (Britzelm.) Sacc. Fig. 93

Pileus 20–40 mm broad, convex, then conico-campanulate with umbo, ochraceous-brown, paler in center, fibrillose, fibrils becoming vinaceous-red. Lamellae crowded, broad, rusty-brown, edge darker, brown, ciliate. Stem 100 × 8 mm, cylindrical, slightly bulbous at base, whitish, becoming vinaceous-red when damaged, fibrillose. Flesh whitish, becoming vinaceous-red, especially in lower part, smell strong, similar to those of *Lepiota cristata* with a fruity component, taste mild. Spores 9.0–11.5 × 6–8 µm, amygdaliform,

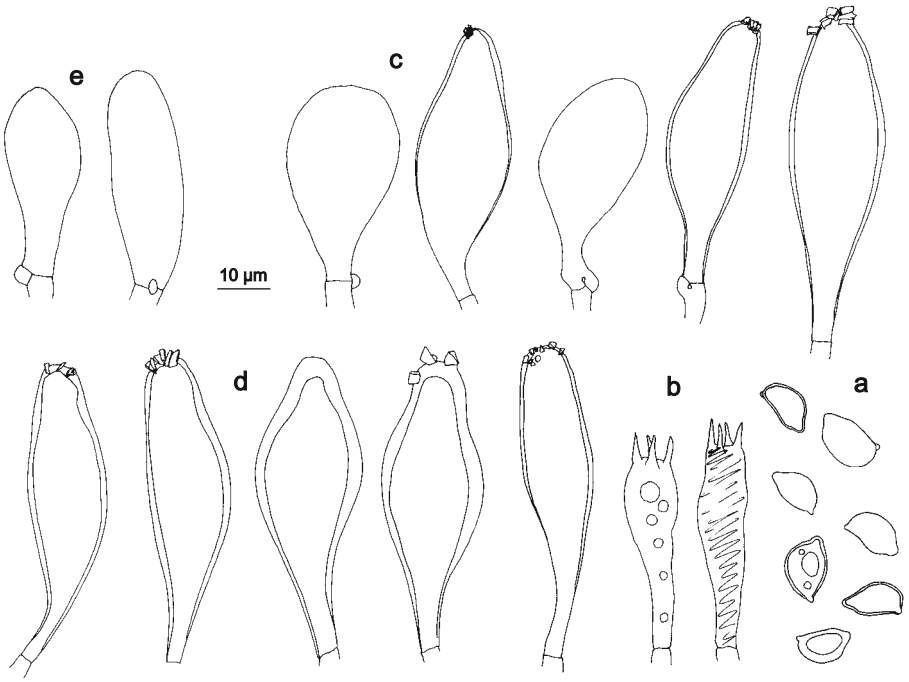

Fig. 93. *Inocybe fraudans* (Britzelm.) Sacc.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-54174).

citriform, smooth, thick-walled. Basidia 30–48 × 9–10 µm, 4-spored, often with yellow-brown pigment. Cheilocystidia 30–67 × 14–25 µm, cylindrical, broadly fusiform, broadly clavate, with few crystals at apex, thin- or slightly thick-walled, often brown-coloured. Pleurocystidia 50–60 × 15–20 µm, cylindrical, fusiform, thick-walled (walls up to 3 µm thick), with crystals at apex, scattered. Caulocystidia 35–42 × 14–18 µm, clavate, thin-walled, scattered. Pileipellis a cutis to trichoderm. Clamps present.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 14 Oct. 2003 (KRAM F-54174).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

136. ***Inocybe geophylla*** (Fr.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Dolina Białeo valley, 960 m a.s.l., among *Petasites*, on soil, 49°16′30″N, 19°57′27″E, 13 Aug. 2003 (KRAM F-54219); between Dolina Białego valley and Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°57′17″E, 3 Oct. 2002 (KRAM F-54218); upper part of Dolina Białego valley, at hiking trail, 1080 m a.s.l., *DgF*, on soil, 49°16′04″N, 19°57′17″E, 3 Oct. 2002 (KRAM F-54220); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 3 Oct. 2002 (KRAM F-54217); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 3 Oct. 2002 (KRAM F-54221); at Droga pod Reglami hiking trail, mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″E 19°57′27″E, 5 Sept. 2001 (ZAMU 4293).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, between Dolina Strążyska valley and Dolina ku Dziurze valley, 920 m a.s.l., *AP*/*DgF*, on soil, 49°16′43″N, 19°56′32″E, 7 Aug. 2000; lower part of Dolina Strążyska valley, at Polana Młyniska meadow, at a stream, 930 m a.s.l., deciduous forest with alder and *Petasites*, on soil, 49°16′33″N, 19°56′12″E, 21 Aug. 2001; between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus is known from several localities at the Slovak side of the massif and its peripherical area (Pilát 1926; Škubla 1998b; Kuthan 1989b; Lizoň & Kautmanová 2004) and from one locality in the peripheries of the Polish West Tatras (Gminder 1998).

137. ***Inocybe griseolilacina*** J. E. Lange Fig. 94

Pileus 10–15 mm broad, convex, grey-brown, fibrillose-squamulose. Lamellae medium spaced, broad, narrowly adnate, lilac, edge white ciliate. Stem 20 × 3 mm, cylindrical, entirely grey-lilac. Flesh lilac, smell undefined, taste none. Spores 9.0–11.5 × 5–6 µm, ellipsoid-fusiform, citriform, smooth, thick-walled. Basidia 25–30 × 8–9 µm, 4-spored. Cheilocystidia 35–60 × 13–22 µm, broadly lageniform, with head-like swollen apex, head 9–12 µm broad, with crystals at apex, thick-walled. Pleurocystidia 35–70 × 8–25 µm, cylindrical, broadly clavate, broadly lageniform with head-like swollen apex. Caulocystidia none. Pileipellis a cutis to trichoderm. Clamps present.

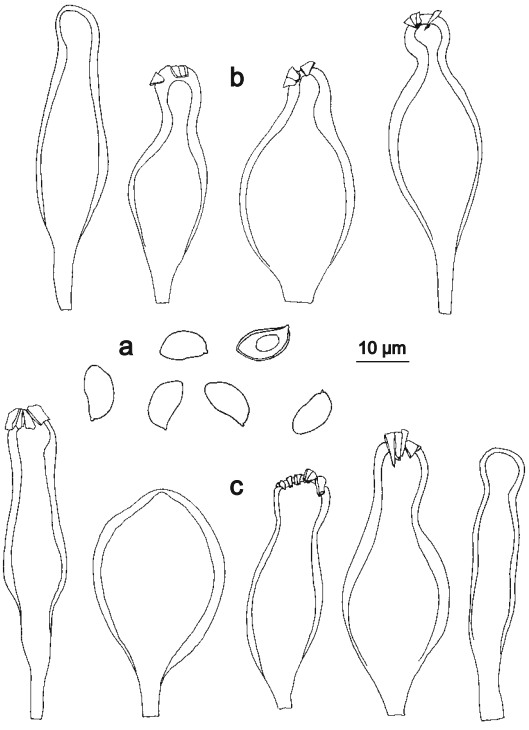

Fig. 94. *Inocybe griseolilacina* J. E. Lange: a – spores, b – cheilocystidia, c – pleurocystidia (KRAM F-50600).

SPECIMENS EXAMINED. Mouth of Dolina Strążyska valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 5 Sept. 2000 (KRAM F-50600).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

138. ***Inocybe hystrix*** (Fr.) P. Karst. Fig. 95

Pileus 20–40 cm broad, convex, conical with an umbo, brown, grey-brown, entirely covered with erect, brown scales, slightly darker than the pileus surface. Lamellae crowded, broad, adnate, grey-brown, edge white ciliate. Stem 40–70 × 3–4 mm, cylindrical, brown, grey-brown, entirely covered with erect scales. Flesh beige-brown, smell undefined, taste weak, of radish. Spores 9.0–10.5 × 5–6 µm, amygdaliform, fusiform, smooth, thick-walled. Basidia 32–34 × 8.5–10.0 µm, 4-spored. Cheilocystidia 50–70 × 16–19 µm, lagenifrom, fusiform, thick-walled, with crystals at apex. Pleurocystidia 50–80 × 14–18 µm, similar to cheilocystidia. Caulocystidia none, stem covered with scales built up of slightly thick-walled (walls up to 1 µm thick), strongly incrusted, cylindrical hyphae. Pileipellis a trichoderm built up of slightly thick-walled, strongly incrusted, cylindrical hyphae. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001 (KRAM F-51705); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001 (KRAM F-51698); middle part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°57′12″E, 20 Aug. 2002 (ZAMU 4395).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

139. ***Inocybe leptophylla*** G. F. Atk. Fig. 96

Pileus 10–20 mm broad, convex, brown, squamulose, scales erect, slightly darker than the pileus surface. Lamellae medium spaced, broad, narrowly adnate, grey-beige, edge white ciliate.

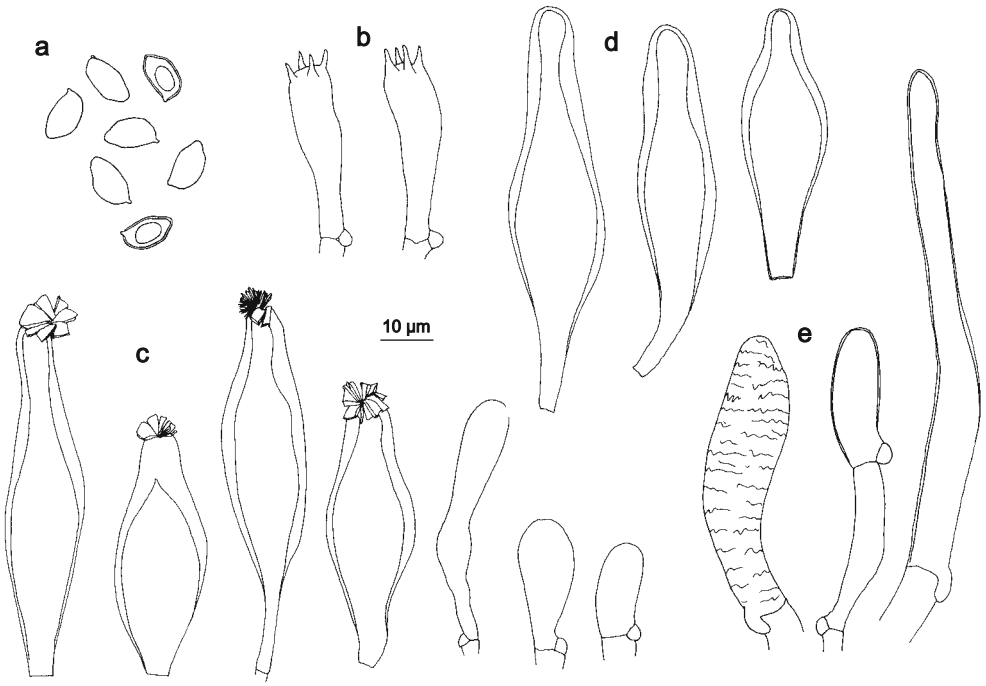

Fig. 95. *Inocybe hystrix* (Fr.) P. Karst.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-51705).

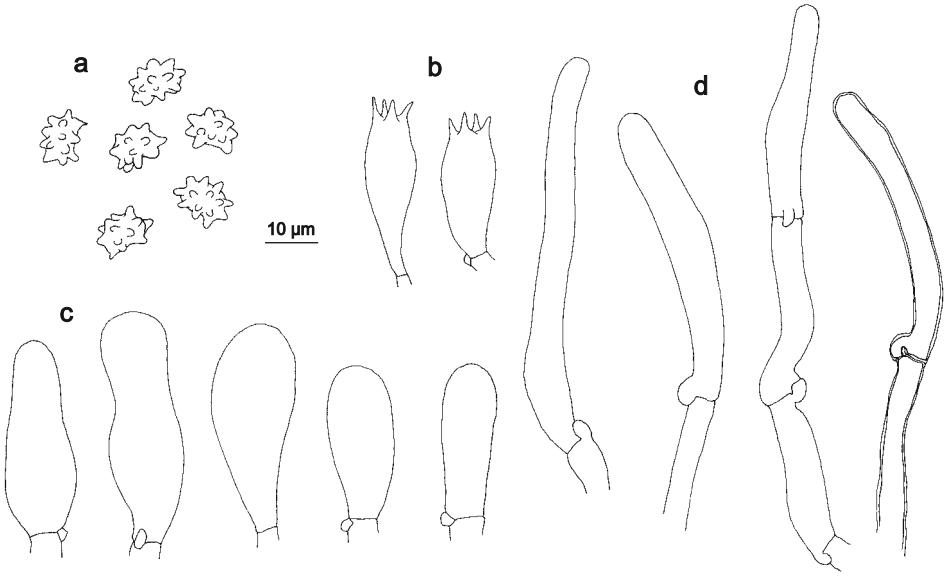

Fig. 96. *Inocybe leptophylla* G. F. Atk.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia (KRAM F-54224).

Stem 20–40 × 2–3 mm, cylindrical, brown, entirely covered with brown fibrils (hairs). Flesh beige-brown, smell and taste none. Spores 9–11 × 6–8 µm, ellipsoid in outline, covered with several conical nodules. Basidia 25–30 × 10–11 µm, 4-spored. Cheilocystidia 35–45 × 10–25 µm, utriform, broadly clavate or cylindrical, thin-walled, without crystals at apex. Pleurocystidia and caulocystidia none. Hairs from the stem dark brown in transmitted light, septate, thin- or slightly thick-walled. Pileipellis a trichoderm built up of slightly thick-walled, strongly incrusted, cylindrical hyphae. Clamps present.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 1040 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′17″E, 20 Aug. 2002 (KRAM F-54224).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

140. ***Inocybe lilacina*** (Peck) Kauffman

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, between Dolina Strążyska valley and Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 20 Aug. 2002 (ZAMU 4333).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′7″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

141. ***Inocybe lutescens*** Velen. Fig. 97

Pileus 10 mm broad, conical, campanulate with a small umbo, yellow-brown, fibrillose. Lamellae medium spaced, broad, narrowly adnate, citrine-yellow, then yellow-brownish, edge citrine-yellow ciliate. Stem 30–35 × 2 mm, cylindrical, citrine-yellow, pruinose only at upper part. Flesh thin, smell spermatic, taste mild. Spores 10.0–12.0(–13.5) × 5–6 µm, ellipsoid, amygdaliform, smooth, thick-walled. Basidia 25–32 × 10–11 µm, 4-spored. Cheilocystidia (60–)80–110 × 7–11 µm, cylindrical to very narrowly fusiform, numerous, with crystals at apex, thick-walled, walls 1.0–2.5 µm, bright yellow in 5% KOH. Pleurocystidia 70–125 × 10–12 µm, cylindrical to very narrowly fusiform, numerous, with crystals at apex, thick-walled, walls 1–3 µm, bright yellow in 5% KOH. Caulocystidia 45–90 × 7–12 µm, cylindrical to fusiform, with or without crystals at apex, thin- to thick-walled, walls 1–3 µm, bright yellow in 5% KOH. Pileipellis a cutis made up of cylindrical hyphae 8–20 µm in diameter, brownish in 5% KOH. Clamps present.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, E slope, 1050 m a.s.l., beech-spruce-fir forest, on soil, 49°16′20″N, 19°56′22″E, 21 July 2000, *leg. A. Ronikier & M. Ronikier* (KRAM F-50099, duplicate in AH 36066).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

142. ***Inocybe*** cf. ***maculata*** Boud. Fig. 98

Pileus 20–30 mm broad, conical with distinct umbo, ochraceous-brown, fibrillose-rimose. Lamellae rather distant, broad, narrowly adnate, rusty-brown, edge white ciliate. Stem 20–30 × 2–3 mm, cylindrical, bulbous at base, pale. Flesh thin, smell and taste not recorded. Spores 9.0–10.5 × 5–6 µm, cylindrical-phaseoliform, smooth, slightly thick-walled, pale rusty-yellow in KOH. Basidia 27–38 × 9.0–9.5 µm, 4-spored. Cheilocystidia 35–55 × 11–26(–33) µm, broadly clavate, broadly fusiform-lageniform, without crystals at apex, thin-walled, numerous and forming a sterile layer on the lamella edge. Pleurocystidia absent. Caulocystidia 28–51 × 9–20 µm, similar to cheilocystidia, but some of them more slender. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, E from Czerwona Przełęcz pass, 1280 m a.s.l., *PP*, at a path, on soil, 49°15′45″N, 19°56′42″E, 9 Sept. 2003 (KRAM F-55455).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

143. ***Inocybe microspora*** J. E. Lange Fig. 99

Pileus 10–15 mm broad, convex, with small, flat umbo, brown, surface fibrillose. Lamellae rather distant, broad, narrowly adnate, rusty-brown, edge

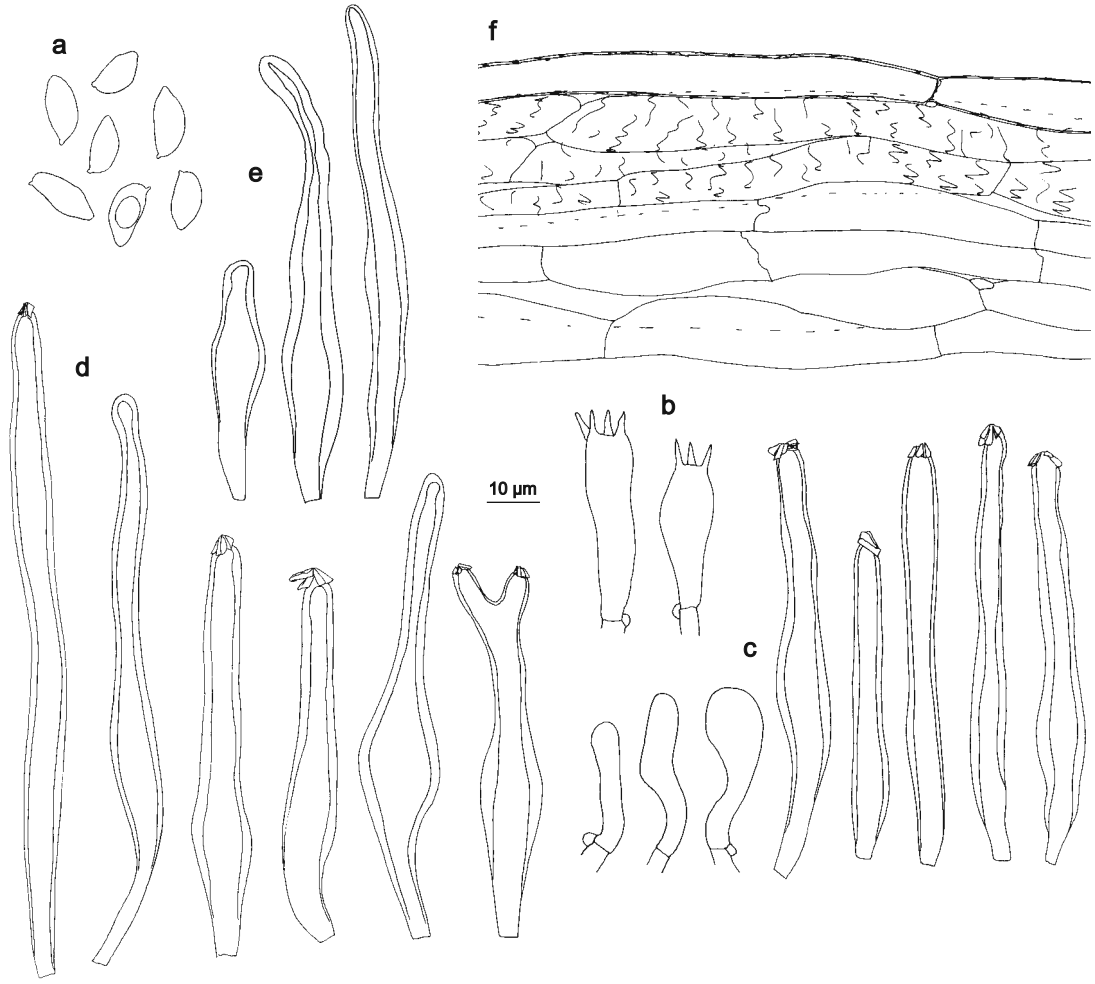

Fig. 97. *Inocybe lutescens* Velen.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-50099), f – pileipellis.

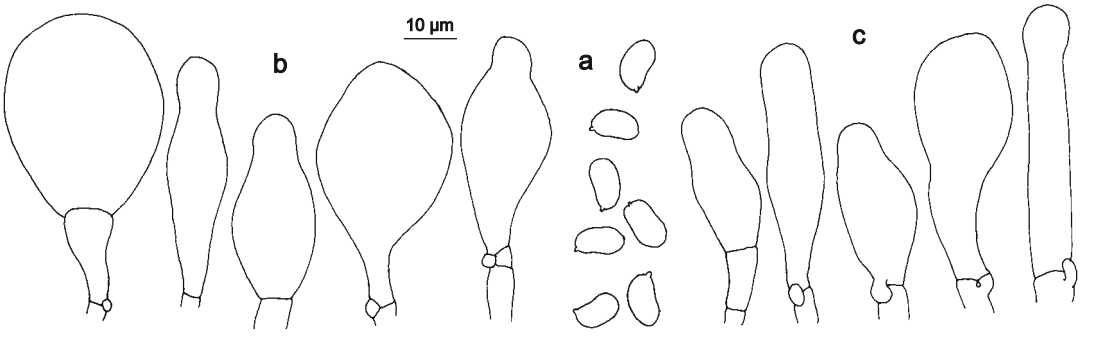

Fig. 98. *Inocybe* cf. *maculata* Boud.: a – spores, b – cheilocystidia, c – caulocystidia (KRAM F-55455).

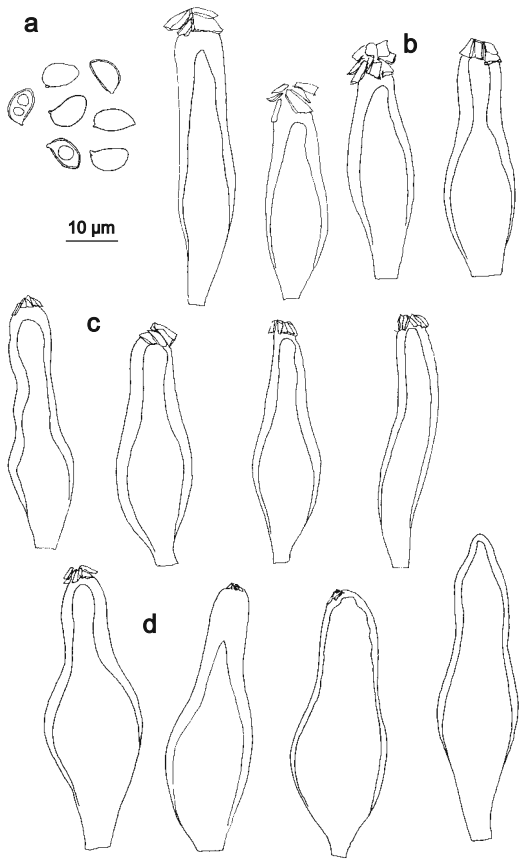

Fig. 99. *Inocybe microspora* J. E. Lange: a – spores, b – cheilocystidia, c – pleurocystidia, d – caulocystidia (KRAM F-54732).

white ciliate. Stem 20–30 × 1–2 mm, cylindrical, slightly broadened at base, brown, slightly pruinose at apex, lower smooth or delicately fibrillose. Flesh thin, smell unpleasant, somehow chemical, taste not recorded.

Spores 7–8 × 4–5 µm, amygdaliform, smooth, slightly thick-walled, pale yellow in KOH. Basidia 21–25 × 7–9 µm, 4-spored. Cheilocystidia 35–60 × 12–15 µm, cylindrical, fusiform, lageniform, with crystals at apex, thick-walled (walls 2–3 µm thick), numerous but not forming a sterile layer on the lamella edge. Pleurocystidia 32–55 × 9–16 µm, similar to cheilocystidia, numerous. Caulocystidia 43–53 × 15–20 µm, fusiform, lageniform, very few, present only on a very apex of the stem. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-54732).

DISTRIBUTION IN THE TATRA MTS. The species has been noted at one locality in the vicinity of the Morskie Oko lake, Polish High Tatras (Frejlak 1973).

144. ***Inocybe mixtilis*** (Britzelm.) Sacc. Fig. 100

Pileus 20–30 mm broad, expanded, with a distinct umbo, ochraceous-yellow, fibrillose. Lamellae rather distant, narrow, narrowly adnate, pale, whitish, edge white ciliate. Stem 40 × 3 mm, white, entirely pruinose, cylindrical with a big emarginate bulb at base. Flesh whitish, smell and taste none. Spores 7–9 × 5.0–5.5 µm, ellipsoid in outline, with distinct, 6–8, conical nodules. Basidia 32–40 × 10–12 µm, 4-spored. Cheilocystidia 57–80 × 12–18 µm, lageniform, thick-walled, with crystals at apex. Pleurocystidia and caulocystidia similar to cheilocystidia; caulocystidia abundant. Pileipellis a cutis. Pigment incrusting. Clamps present.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2002 (KRAM F-54334, 54335).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from one locality at the Droga pod Reglami hiking trail, possibly in the area of the Sarnia Skała massif (Domański 1997) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987).

145. ***Inocybe nitidiuscula*** (Britzelm.) Sacc. Fig. 101

Pileus 10–20 mm broad, conico-campanulate, with prominent umbo, brown, fibrillose, whitish cortina visible in very young specimens, quickly disappearing without living any remnants on pileus and stem surface. Lamellae rather distant, broad, narrowly adnate, grey-beige, edge white ciliate. Stem 20–60 × 2–3 mm, cylindrical, pale beige, apex pruinose with more or less distinct pinkish tint, lower part delicately fibrillose. Flesh whitish

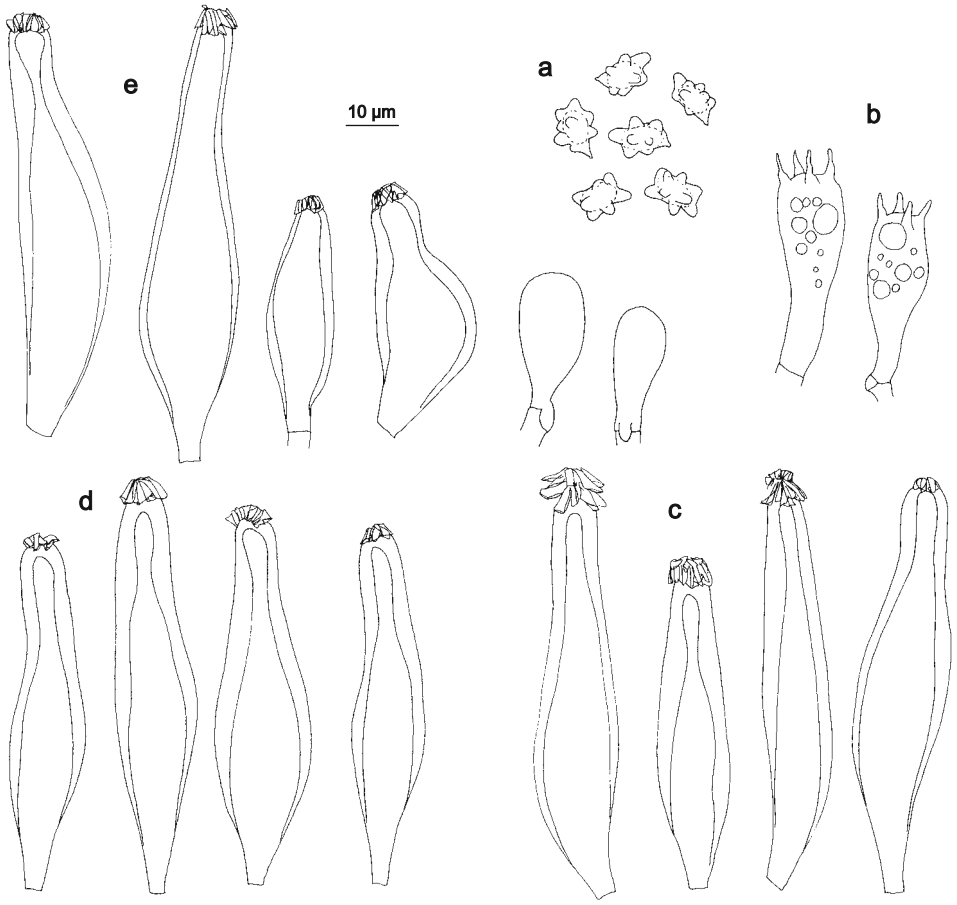

Fig. 100. *Inocybe mixtilis* (Britzelm.) Sacc.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-54334).

in pileus, brownish below the pileipellis, beige in stem, smell spermatic, taste mild or slightly bitterish.

Spores 10.0–11.5(–13) × 5.5–6.5(–7.0) µm, narrowly amygdaliform, smooth, thick-walled. Basidia 25–32 × 10–11 µm, 4-spored. Cheilocystidia 45–60 × 15–21 µm, lageniform, thick-walled, with crystals at apex. Pleurocystidia similar to cheilocystidia. Caulocystidia present only at apex (about ⅓ of upper part of stem), lageniform, cylindrical, thick-walled, with a few crystals or without at apex. Pileipellis a cutis. Pigment incrusting. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 20 Aug. 2002 (KRAM F-54327); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 20 Aug. 2002 (KRAM F-54328); 3 Oct. 2002 (KRAM F-54329); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 20 Aug. 2002 (KRAM F-54331); 8 Sept. 2001 (KRAM F-54330); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 3 Oct. 2002 (KRAM F-54332); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 4 July 2001 (KRAM F-54333).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from two localities (the Nosal massif and the Kopieniec massif) in the Polish West Tatras (Nespiak 1975, as *Inocybe friesii* f.

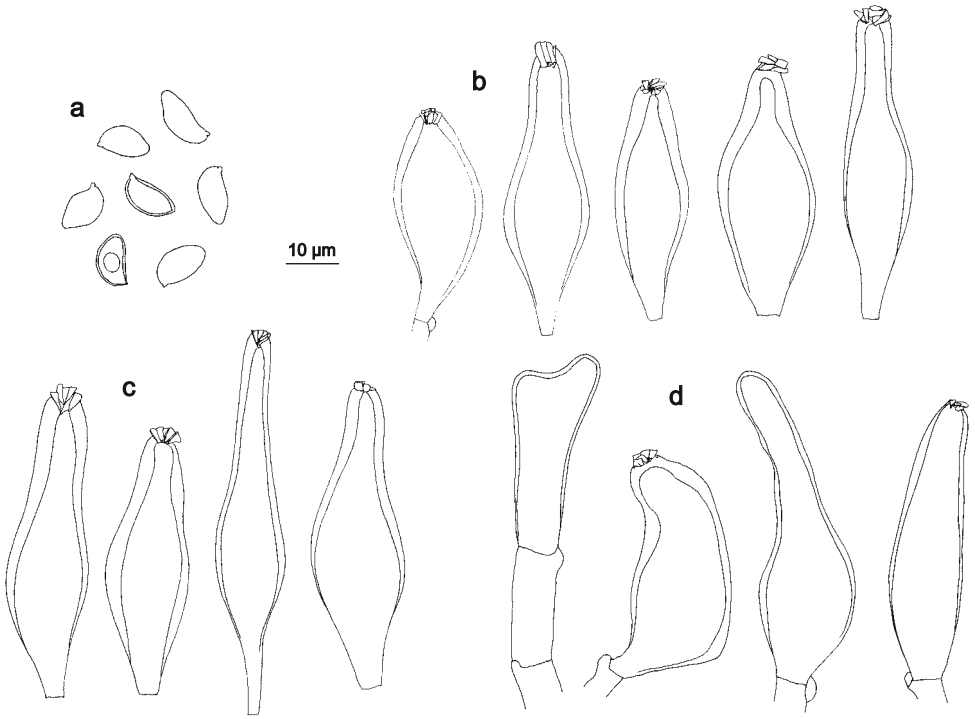

Fig. 101. *Inocybe nitidiuscula* (Britzelm.) Sacc.: a – spores, b – cheilocystidia, c – pleurocystidia, d – caulocystidia (KRAM F-54327).

nemorosa R. Heim). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

146. ***Inocybe pelargonium*** Kühner Fig. 102

Pileus 20–40 mm broad, conico-campanulate, then expanded, rusty-yellow-brown, surface smooth, very finely fibrillose. Lamellae rather distant, broad, narrowly adnate, grey-beige, edge white ciliate. Stem 40–50 × 3–4 mm, whitish, entirely pruinose, cylindrical and bulbous at base. Flesh yellowish, smell weak, of *Pelargonium* leaves, taste mild. Spores 8–9 × 4–5 µm, ellipsoid, narrowly amygdaliform, smooth, thick-walled. Basidia 21–25 × 7–8 µm, 4-spored. Cheilocystidia 42–53 × 10–16 µm, cylindrical, narrowly lageniform, thick-walled, with crystals at apex, walls 1–2 µm thick. Pleurocystidia and caulocystidia similar to cheilocystidia, caulocystidia present on the entire stem length, numerous. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2002 (KRAM F-54336).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

147. ***Inocybe petiginosa*** (Fr.: Fr.) Gillet

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 20 Aug. 2001 (KRAM F-51582); upper part of Dolina Białego valley, NE from Igła mount, 1050 m a.s.l., *DgF*, on soil, 49°15′57″N, 19°57′17″E, 8 Sept. 2001 (ZAMU 4292).

FIELD OBSERVATIONS. Dolina Spadowiec valley, western slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 13 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 9 Sept. 2001; 13 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; Grześkówki ridge 1060 m a.s.l., *DgF*, on

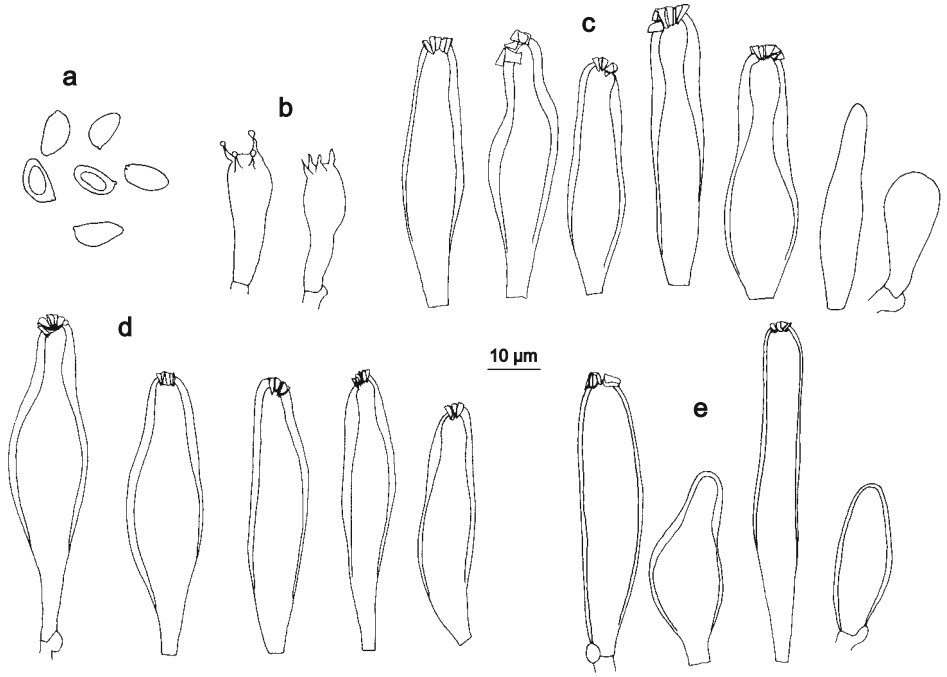

Fig. 102. *Inocybe pelargonium* Kühner: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-54336).

litter, 49°16′17″N, 19°56′15″E, 5 Sept. 2001; 12 Oct. 2001; 21 Aug. 2002; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 12 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°56′27″E, 5 Sept. 2001; upper part of Grześkówki ridge, 1080 m a.s.l., *DgF*, on litter, 49°16′19″N, 19°56′17″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, between Dolina Spadowiec valley and Dolina ku Dziurze valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′57″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, above caves, 1100 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′47″E, 9 Sept. 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°57′22″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

148. ***Inocybe praetervisa*** Quél.

SPECIMENS EXAMINED. Middle part of Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′09″E, 20 July 2000 (KRAM F-50098); mouth of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 7 July 2001 (ZAMU 4315).

DISTRIBUTION IN THE TATRA MTS. The species has been reported by Nespiak (1962a) from slopes of the Wołowiec massif, West Tatras.

149. ***Inocybe rimosa*** (Bull.: Fr.) P. Kumm.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, mouth of Dolina Strążyska valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 22 Aug. 2001 (KRAM F-51606); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 21 Aug. 2001 (KRAM F-51605); 3 Oct. 2002 (KRAM F-54182); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2001 (ZAMU 4291).

FIELD OBSERVATIONS. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 22 Aug. 2001; 5 Sept.

2001; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 22 Aug. 2001; 5 Sept. 2001; 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. In the Tatra Mts the species is fairly common, reported under the name *Inocybe fastigiata* (Schaeff.: Fr.) Quél. from all three parts of the Tatra Mts (Pilát 1926; Nespiak 1962a; Anonymous 1968; Škubla 1998a, b) and from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

150. ***Inocybe terrigena*** (Fr.) Kühner Fig. 103

Pileus 20–40 mm broad, convex, rusty-ochraceous-yellow, surface woolly-fibrillose, squamulose, scales appressed, pileus margin attached to the stem by thick, woolly-fibrillose cortina. Lamellae rather crowded, moderately broad, broadly adnate, grey-brownish, edge smooth. Stem 30–70 × 6–8 mm, cylindrical, rusty-ochraceous-yellow, with a distinct woolly-fibrillose ring, below the ring covered with rusty-yellow-brown, erect scales. Flesh beige, smell none, taste acidic. Spores 8–11 × 6–7 µm, broadly ellipsoid, slightly phaseoliform, smooth, thick-walled. Basidia 36–55 × 8–11 µm, 4-spored, often with yellow-brown necropigment. Cheilocystidia 16–42 × 8–12 µm, cylindrical, clavate, sometimes septate, thin-walled. Pleurocystidia none. Caulocystidia none. Pileipellis a cutis to trichoderm. Clamps present.

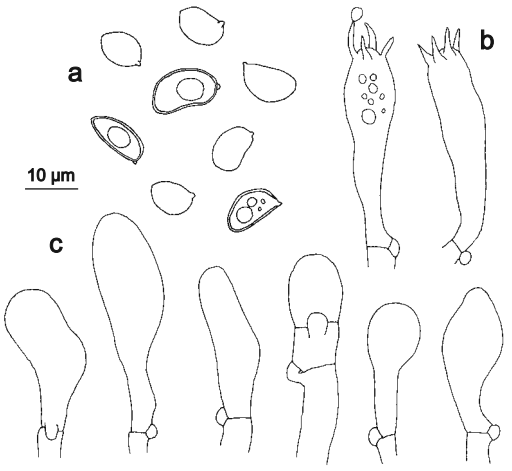

Fig. 103. *Inocybe terrigena* (Fr.) Kühner: a – spores, b – basidia, c – cheilocystidia (KRAM F-51680).

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 8 Sept. 2001 (KRAM F-51680); S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on soil, 49°15′54″N, 19°56′30″E, 8 Sept. 2001 (KRAM F-51681); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 21 Aug. 2002 (KRAM F-54213); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 3 Oct. 2002 (ZAMU 4393).

DISTRIBUTION IN THE TATRA MTS. The species has already been reported from the study area from the locality in the Dolina Strążyska valley (Domański 1997). Nespiak (1990) also reported the species from the Tatra Mts, but without a locality. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

151. ***Inocybe tricolor*** Kühner Fig. 104

Pileus 15–30 mm broad, conico-campanulate, with a broad, convex umbo, vinaceous-red-brown, fibrillose-squamulose. Lamellae rather crowded, broad, narrowly adnate, first clay-coloured, then olive-brown, discoloring into vinaceous-red when damaged, edge smooth. Stem 20–40 × 5–6 mm, cylindrical, fibrillose, first white, discoloring vinaceous-red when damaged, then entirely vinaceous-red-brown, only at apex paler, cream. Flesh ochraceous, becoming vinaceous-red, smell strong, similar to those of *Inocybe corydalina*, but stronger, taste mild.

Spores 7.5–9.5 × 5.5–6.0 µm, amygdaliform, smooth, thick-walled. Basidia 30–35 × 7–8 µm, 4-spored. Cheilocystidia 38–50 × 8–14 µm, cylindrical, clavate, fusiform, with or without crystals at apex, thin or slightly thick-walled, scattered among numerous thin-walled, clavate elements. Pleurocystidia 32–60 × 10–15 µm, cylindrical, fusiform, thick-walled (walls up to 2 µm thick), usually with crystals at apex, scattered. Caulocystidia 28–60 × 8–12 µm, clavate, fusiform, some septate. Pileipellis a cutis, hyphae vinaceous-red brown in KOH. Clamps present.

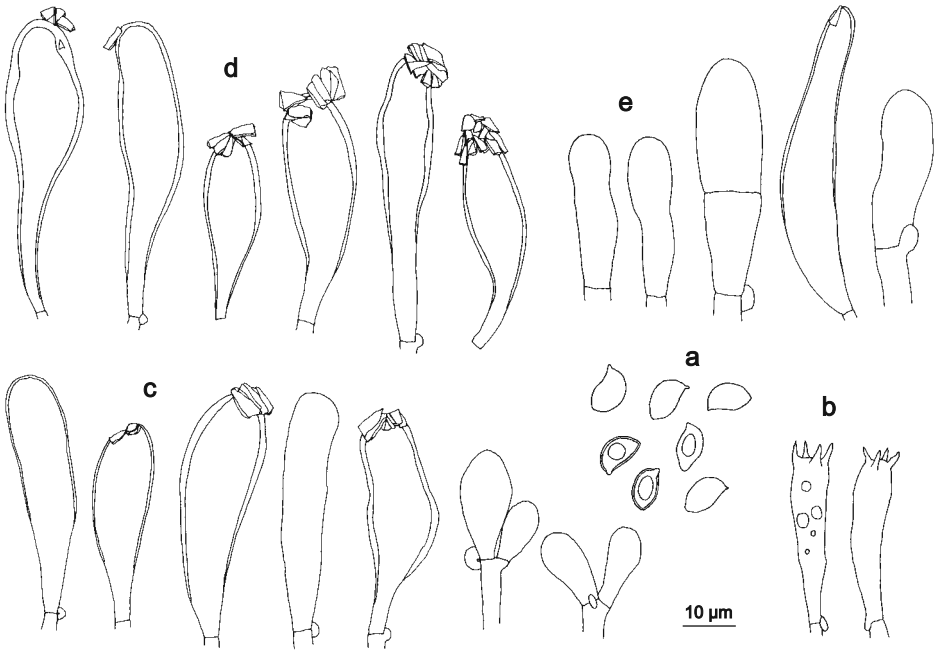

Fig. 104. *Inocybe tricolor* Kühner: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-51669).

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, E slope of Igła mount, 1110 m a.s.l., *DgF*, on soil, 49°15′53″N, 19°57′13″E, 8 Sept. 2001 (KRAM F-51669); upper part of Grześkówki ridge, 1080 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-54178).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

152. ***Inocybe umbratica*** Quél. Fig. 105

Pileus 30–35 cm broad, convex, conico-campanulate, with a distinct umbo, pale, whitish-yellowish, straw-coloured, pale beige, surface delicately fibrillose-squamulose, cracked at apex. Lamellae rather crowded, narrow, very narrowly adnate, clay-coloured, edge whitish, ciliate. Stem 50–60 × 4–5 mm, cylindrical, white, pale beige, not bulbous, but with a thick layer of a white mycelium at base, entirely pruinose and delicately longitudinally grooved. Flesh whitish, smell weak, undefined, taste mild. Spores 8–9 × 5–6 µm, with distinct nodules. Basidia 25–30 × 8–9 µm, 4-spored. Cheilocystidia 35–53 × 13–16 µm, cylindrical, fusiform, with crystals at apex, very thick-walled, walls 3–5(6) µm thick. Pleurocystidia and caulocystidia similar to cheilocystidia. Pileipellis a cutis. Clamps present.

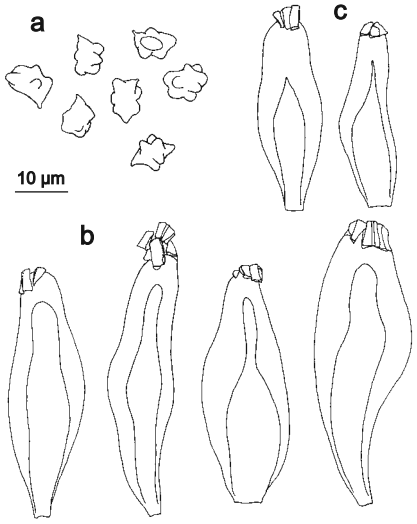

Fig. 105. *Inocybe umbratica* Quél.: a – spores, b – pleurocystidia, c – caulocystidia (KRAM F-54223).

SPECIMENS EXAMINED. W from mouth of Dolina Spadowiec valley, at Droga pod Reglami hiking trail, 920 m a.s.l., *AP*/*DgF*, on soil, 49°16′43″N, 19°57′07″E, 7 Aug. 2000 (KRAM F-54223).

DISTRIBUTION IN THE TATRA MTS. The fungus is known from one locality in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004).

Laccaria Berk. & Broome

153. ***Laccaria amethystina*** Cooke

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, orographically right side of valley, NW slope, 960 m a.s.l., *DgF* with *Pinus sylvestris* and *Larix*, on soil, 49°16′37″N, 19°56′17″E, 21 July 2000, *leg. A. Ronikier & Z. Mirek* (KRAM F-50120); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 22 Aug. 2000 (KRAM F-50550); W side of Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′12″E, 20 Aug. 2001 (ZAMU 4290).

FIELD OBSERVATIONS. Middle part of Dolina ku Dziurze valley, left side of valley, E slope of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 22 Aug. 2000; Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 5 Sept. 2001; Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 5 Sept. 2001; mouth of Dolina Spadowiec valley, at Droga pod Reglami hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001; at Droga pod Reglami hiking trail, between Dolina Spadowiec valley and Dolina ku Dziurze valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′57″E, 9 Sept. 2001; mouth of Dolina ku Dziurze valley, at Droga pod Reglami hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, orographically left side of valley, E slope of Spaleniec ridge, 1120 m a.s.l., *DgF*, on soil, 49°16′22″N, 19°56′57″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 13 Oct. 2001; 21 Aug. 2002; middle part of Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′07″E, 9 Sept. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001; 13 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 21 Aug. 2002; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 13 Oct. 2001; 21 Aug. 2002; ridge between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 12 Oct. 2001; mouth of Dolina Spadowiec valley, orographically right side of valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°57′12″E, 12 Oct. 2001; Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′27″E, 12 Oct. 2001; Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′26″E, 12 Oct. 2001; Grześkówki ridge, 1010 m a.s.l., *DgF*, on soil, 49°16′31″N, 19°56′22″E, 12 Oct. 2001, Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′22″E, 21 Aug. 2002; Grześkówki ridge, 1020 m a.s.l., *DgF*, on soil, 49°16′25″N, 19°56′19″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is known from several localities in the Polish and Slovak Tatras [Dominik & Nespiak 1953, as *Clitocybe laccata* (Scop.) Fr. var. *amethystina* (Boud.) Maire; Dominik & Pachlewski 1956, as *Clitocybe laccata* var. *amethystina* (Scop.) Fr.; Nespiak 1962a; Frejlak 1973] and from the peripheries of the Slovak West Tatras (Kuthan 1989b). There is one more record from ‘Zakopane’ (Skirgiełło 1977) that may refer to the area of the Tatra Mts.

154. ***Laccaria laccata*** (Scop.: Fr.) Berk. & Broome

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 21 Aug. 2002 (KRAM F-53999); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 21 Aug. 2002 (KRAM F-53400); 8 Sept. 2001 (KRAM F-51675); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 8 Sept. 2001 (KRAM F-54324); orographically left branch of Dolina Białego valley, 1080 m a.s.l., *DgF*, on litter, 49°15′57″N, 19°57′02″E, 3 Oct. 2002 (KRAM F-54323).

FIELD OBSERVATIONS. Mouth of Dolina Białego valley, 910 m a.s.l., spruce forest with *Acer pseudoplatanus* and *Fagus* s, on soil, 49°16′40″N, 19°57′30″E, 8 Sept. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001; 21 Aug. 2002; Dolina Spadowiec valley, W slope (right side

of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 21 Aug. 2002; ridge between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°57′17″E, 12 Oct. 2001; Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 12 Oct. 2001; Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′38″N, 19°56′27″E, 21 Aug. 2002; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 21 Aug. 2002; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 21 Aug. 2002; upper part of Dolina Spadowiec valley, 'Łomik', 1230 m a.s.l., *DgF*/*PP*, on soil, 49°16′12″N, 19°56′57″E, 21 Aug. 2002; Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°57′12″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus is common in the Tatra Mts [Pilát 1926; Dominik & Nespiak 1953, as *Clitocybe laccata* (Scop.) Fr. var. *rosella*; Nespiak 1953, as *Clitocybe laccata*; Nespiak 1960, 1962a; Rudnicka-Jezierska 1965; Frejlak 1973; Singer 1977, as *Laccaria laccata* var. *tatrensis* Singer; Škubla 1998a, as *Laccaria affinis* agg.; Lizoň & Kautmanová 2004]. It has also been noted in the peripheries of the Slovak High Tatras (Kuthan & Singer 1987, *Laccaria laccata* s.l.). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Lactarius Pers.

155. ***Lactarius acris*** (Bolton: Fr.) Gray Fig. 106

Pileus 30–50 mm broad, convex, then plane or slightly depressed in center, clay-buff, nonuniformly coloured, whitish at margin, surface slightly slimy. Lamellae crowded, broadly adnate or slightly decurrent, cream, clay-coloured, edge smooth. Stem central or slightly excentric, 20–40 × 10 mm, whitish or pale buff, paler than the pileus, tapering downwards, staining pinkish-buff on touching. Flesh whitish, staining pink-orange in pileus and outer part of stem, and orange at stem base, smell chemical, taste first mild, then acrid. Milk abundant, white, very quickly changing into pink, also when isolated from the flesh, then palescing to cream, first mild, then acrid. Spores 7–9 × 6–8 µm, globose to subglobose, covered with distinct ridges and warts forming an incomplete reticulum. Basidia 40–55 × 11–14 µm, 4-spored. Cheilo- and pleuromacrocystidia none. Paracystidia 30–50 × 7–10 µm, cylindrical to narrowly fusiform. Pileipellis an ixotrichoderm (ixotrichopalisade), terminal cells 15–30 × 3–4 µm, cylindrical or slightly capitate, thin-walled. Clamps lacking.

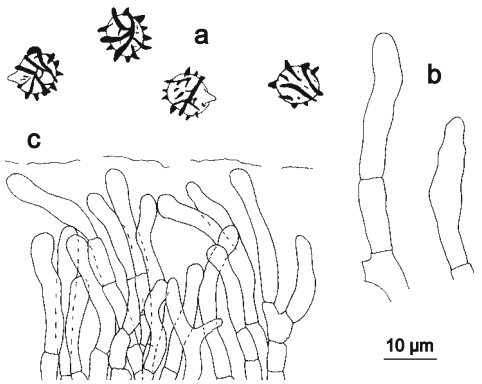

Fig. 106. *Lactarius acris* (Bolton: Fr.) Gray: a – spores, b – paracystidia, c – pileipellis (a, b – KRAM F-51603; c – KRAM F-51602).

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 22 Aug. 2001 (KRAM F-51602); W slopes of Spaleniec ridge, 1110 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′47″E, 20 Aug. 2001 (KRAM F-51603); Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′27″E, 5 Sept. 2001 (ZAMU 4289).

FIELD OBSERVATIONS. Lower part of Dolina Strążyska valley, at hiking trail in valley, at Polana Młyniska meadow, 920 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′13″E, 21 Aug. 2001; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 22 Aug. 2001; 5 Sept. 2001; ridge between Dolina Białego valley and Dolina Spadoweic valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 22 Aug. 2001; Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′22″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. There is one locality of the fungus in the Dolina Strążyska valley (Domański 1997), probably the same specimen collected by Z. Domański is reported by Skirgiełło (1998) from 'Zakopane'.

156. ***Lactarius aurantiacus*** (Pers.: Fr.) Gray

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1150 m a.s.l., young forest with spruces and larches, on soil, 49°16′11″N, 19°56′17″E, 12 Oct. 2001 (KRAM F-54138); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 13 Oct. 2001 (KRAM F-54140); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 3 Oct. 2002 (KRAM F-54141); S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on soil, 49°15′54″N, 19°56′30″E, 3 Oct. 2002 (KRAM F-54142); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 21 Aug. 2002 (ZAMU 4392).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1180 m a.s.l., *DgF*, on soil, 49°16′07″N, 19°56′17″E, 12 Oct. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 12 Oct. 2001; 3 Oct. 2002; N slopes of Sarnia Skała massif, 1200 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′22″E, 12 Oct. 2001; at Ścieżka nad Reglami hiking trail, above Polana Białego meadow, 1280 m a.s.l., *PP*, on soil, 49°15′46″N, 19°56′43″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley, NW slopes, 1080 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′42″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley, NW slopes, 1150 m a.s.l., *DgF*/*PP*, on soil, 49°16′11″N, 19°56′47″E, 13 Oct. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has quite often been reported from the Tatra Mts (Pilát 1926; Anonymous 1968, as *Lactarius mitissimus;* Frejlak 1973, as *Lactarius mitissimus* Fr.; Škubla 1998b, as *Lactarius mitissimus* Fr.; Lizoň & Kautmanová 2004) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, as *Lactarius mitissimus* Fr.; Kuthan 1989b, as *Lactarius mitissimus* Fr.). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

157. ***Lactarius badiosanguineus*** Kühner & Romagn. Fig. 107

Pileus 10–45 mm broad, first convex, then expanded and often depressed in center, sometimes with a small umbo, chestnut-brown, reddish-brown, brick-red-brown, margin slightly paler, surface smooth. Lamellae medium spaced, shortly decurrent or adnate, ochraceous-cream, edge smooth. Stem 20–35 × 2–5 mm, paler than the pileus. cream-brownish, pale reddish-brown, cylindrical. Flesh pinkish-cream, smell none, taste mild. Milk white, unchanging. Spores 7.5–9.0 × 6–7 µm, ovoid, broadly ellipsoid, covered with free and connected warts forming an incomplete reticulum. Basidia 40–50 × 10–12 µm, 4-spored. Cheilomacrocystidia 30–50 × 5–10 µm, fusiform, numerous. Pleuromacrocystidia 60–85 ×

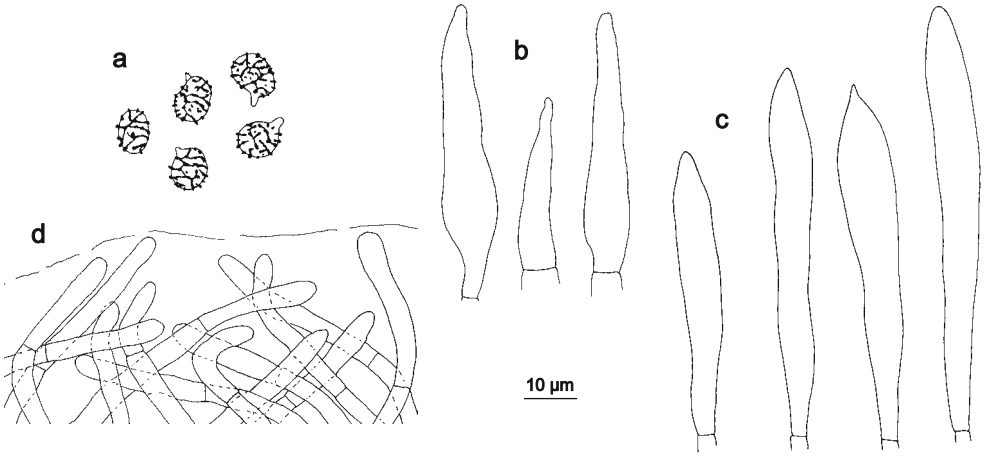

Fig. 107. *Lactarius badiosanguineus* Kühner & Romagn.: a – spores, b – cheilomacrocystidia, c – pleuromacrocystidia, d – pileipellis (KRAM F-54144).

6.5–10 μm, cylindrical, fusiform, mostly with obtuse apex. Pileipellis an ixotrichoderm (ixotrichopalisade), terminal elements cylindrical, (14–)16–45(–57) μm, av. 26–33 μm long.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001 (KRAM 54147); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 3 Oct. 2002 (KRAM F-54146); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 20 Aug. 2002 (KRAM F-54144); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 3 Oct. 2002 (KRAM F-54145).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004) and their peripheries (Kuthan 1989b). Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

158. ***Lactarius blennius*** (Fr.: Fr.) Fr.

SPECIMENS EXAMINED. Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′23,5″N, 19°56′17″E, 5 Sept. 2001 (ZAMU 4262).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, mouth of left branch of valley, 1050 m a.s.l., *DgF*, on soil, 49°16′02″N, 19°57′17″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, orographically left side of Dolina ku Dziurze valley, 910 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 22 Aug. 2001; at Droga pod Reglami hiking trail, orographically left side of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002; middle part of Dolina Spadowiec valley, orographically right side of valley, 1030 m a.s.l., *DgF*, on soil, 49°16′29″N, 19°57′10″E, 9 Sept. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001; 21 Aug. 2002; 14 Oct. 2001; W slope of Grześkówki ridge, 1020 m a.s.l., *DgF*, on soil, 49°16′28″N, 19°56′20″E, 12 Oct. 2001; middle part of Dolina Białego valley, 940 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°57′27″E, 13 Oct. 2001; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 21 Aug. 2002; 14 Oct. 2003; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 21 Aug. 2002; Grześkówki ridge, 1030 m a.s.l., *DgF*, on soil, 49°16′31″N, 19°56′22″E, 21 Aug. 2002; Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′27″E, 16 Sept. 2004.

DISTRIBUTION IN THE TATRA MTS. The species has already been reported from the study area, at one locality in the Dolina Strążyska valley (Nespiak 1962c). Wojweoda (1996) mentions the species from the Polish Tatra, without a locality. It has also been reported from the peripheries of the Polish High Tatras (Skirgiełło 1998).

159. ***Lactarius deterrimus*** Gröger

SPECIMENS EXAMINED. Middle part of Dolina białego valley, orographically left side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°57′27″E, 5 Sept. 2001 (KRAM F-51688); upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 20 Aug. 2001 (KRAM F-51607); upper part of Dolina ku Dziurze valley, vicinity of caves, 1050 m a.s.l., *DgF*/*PP*, on soil, 49°16′20″N, 19°56′42″E, 9 Sept. 2001 (KRAM F-51689); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 22 Aug. 2001 (ZAMU 4391).

FIELD OBSERVATIONS. Ridge between Dolina Białego valley and Dolina Spadowiec valley, about 50 m S from Droga pod Reglami hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 20 Aug. 2001; upper part of Dolina Spadowiec valley, 1150 m a.s.l., *PP*, on soil, 49°16′17″N, 19°57′02″E, 20 Aug. 2001; upper part of Dolina Spadowiec valley, 1060 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°57′02″E, 20 Aug. 2001; upper part of Dolina ku Dziurze valley, 1030 m a.s.l., *DgF*/*PP*, on soil, 49°16′17″N, 19°56′40″E, 20 Aug. 2001; upper part of Dolina Spadowiec valley, 1150 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′57″E, 21 Aug. 2001; upper part of Dolina Białego valley, 1040 m a.s.l., *DgF*, on soil, 49°16′04″N, 19°57′17″E, 21 Aug. 2001; SE slopes of orographically left side of left branch of Dolina Białego valley, 1150 m a.s.l., *DgF*/*PP*, on soil, 49°15′58″N, 19°56′57″E, 21 Aug. 2001; NE edge of Polana Białego meadow, 1150 m a.s.l., edge of spruce forest, on soil, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; Polana Białego meadow, 1200 m a.s.l., meadow with single spruces, on soil, 49°15′45″N, 19°56′57″E, 21 Aug. 2001; W slopes of Sarnia Skała massif, 1200 m

a.s.l., *PP*, on soil, 49°15′57″N, 19°56′17″E, 22 Aug. 2001; N slopes of Sarnia Skała massif, 1200 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′27″E, 22 Aug. 2001; Grześkówki ridge, 1100 m a.s.l., *DgF*/young forest with spruce, on soil, 49°16′17″N, 19°56′17″E, 22 Aug. 2001; middle part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°57′12″E, 22 Aug. 2001; lower part of Dolina ku Dziurze valley, E slope of Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′32″E, 5 Sept. 2001; Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 5 Sept. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 5 Sept. 2001; lower part of Dolina Białego valley, orographically left side of valley, 980 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′27″E, 8 Sept. 2001; W slopes of Spaleniec ridge, 1110 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′47″E, 5 Sept. 2001; middle part of Dolina ku Dziurze valley, E slopes of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 12 Oct. 2001; upper part of Dolina ku Dziurze valley, N slopes, 1130 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′47″E, 13 Oct. 2001; upper part of Spaleniec ridge, 1100 m a.s.l., *PP*, on soil, 49°16′07″N, 19°56′47″E, 13 Oct. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 21 Aug. 2002; 3 Oct. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 21 Aug. 2002; upper part of Dolina Spadowiec valley, 1170 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 21 Aug. 2002; NE ridge of the massif, 'Zawieszka', 1300 m a.s.l., *PP*, on soil, 49°15′57″N, 19°56′47″E, 21 Aug. 2002; upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′17″E, 21 Aug. 2002; NW slopes of the massif, 1200 m a.s.l., *PP*, on soil, 49°16′ E 19°56′17″E, 21 Aug. 2002; upper part of orographically left branch of Dolina ku Dziurze valley, 1130 m a.s.l., windthrow with young spruces, on soil, 49°16′11″N, 19°56′22″E, 21 Aug. 2002; upper part of Grześkówki ridge, 1150 m a.s.l., windthrow with young spruces, on soil, 49°16′12″N, 19°56′17″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is likely common in the Tatra Mts. In older papers it was probably noted under the name *Lactarius deliciosus* (L.: Fr.) S. F. Gray. Under the name *L. deterrimus*, the species has been noted from a few localities in all three parts of the Tatra Mts (Skirgiełło 1998; Škubla 1998a, b). The species has also been found in the peripheries of the Slovak West Tatras (Kuthan 1989a, b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

160. ***Lactarius lignyotus*** Fr.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, between Dolina Strążyska valley and Dolina ku Dziurze valley, 920 m a.s.l., *AP*, on soil, 49°16′43″N, 19°56′27″E, 21 July 2000, *leg. A. Ronikier & Z. Mirek* (KRAM F-50144); upper part of Dolina Białego valley, 1160 m a.s.l., spruce forest (planted), on soil, 49°15′48″N, 19°57′11″E, 8 Sept. 2001 (KRAM F-51671); mouth of Dolina Białego valley, orographically left side of valley, 960 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′27″E, 9 Sept. 2001 (KRAM F-51683).

FIELD OBSERVATIONS. At Droga pod Regalmi hiking trail, between Dolina Białego valley, and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 7 Aug. 2000; edge of Polana Białego meadow, 1150 m a.s.l., *PP*, on soil, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; upper part of Dolina Białego valley, at hiking trail, 1060 m a.s.l., spruce forest, on soil, 49°16′00″ E 19°57′17″E, 9 Sept. 2001; at Droga pod Reglami hiking trail, orographically right side of Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′12″E, 9 Sept. 2001; at Droga pod Reglami hiking trail, N slope of Grześkówki ridge, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 21 Aug. 2002; Grześkówki ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′17″E, 21 Aug. 2002; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 21 Aug. 2002; Dolina Spadowiec valley, orographically right side of valley, at a path, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′09″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts (Pilát 1926; Dominik & Pachlewski 1956; Nespiak 1960, 1962c, 1966; Rudnicka-Jezierska 1965; Anonymous 1968; Frejlak 1973; Wojewoda 1996; Škubla 1998a, b; Lizoň & Kautmanová 2004). It has also been found in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

161. ***Lactarius pallidus*** Pers.: Fr.

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 22 Aug. 2001 (KRAM F-51571); upper part of Spaleniec ridge,

1150 m a.s.l., *DgF/PP*, on soil, 49°16′21″N, 19°56′52″E, 9 Sept. 2003 (KRAM F-51432); a ridge between Dolina Białego valley and Dolina Spadowiec valley, at a path, 1000 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′17″E, 20 Aug. 2001 (ZAMU 4288).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, orographically right side of valley, 1050 m a.s.l., *DgF*, on soil, 49°15′57″N, 19°57′17″E, 5 Sept. 2000; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 5 Sept. 2001; 3 Oct. 2002; 21 Aug. 2002; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 22 Aug. 2001; 9 Sept. 2001; 21 Aug. 2002; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 3 Oct. 2002; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 3 Oct. 2002; at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 900 m a.s.l., *AP/DgF*, on soil, 49°16′43″N, 19°57′07″E, 5 Sept. 2001; W slope of Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′17″E, 22 Aug. 2001; lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 22 Aug. 2001; at Droga pod Reglami hiking trail, between Dolina ku Dziurze valley and Dolina Strążyska valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 22 Aug. 2001; upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF/PP*, on soil, 49°16′17″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, orographically left side of valley, 1110 m a.s.l., *PP*, on soil, 49°16′24″N, 19°56′55″E, 9 Sept. 2001; mouth of Dolina Białego valley, orographically left side of valley, 940 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°57′29″E, 9 Sept. 2001; Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′27″E, 21 Aug. 2002; 16 Sept. 2004.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

162. ***Lactarius picinus*** Fr.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 20 Aug. 2001 (KRAM F-51608); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 20 Aug. 2001 (KRAM F-51600); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 20 Aug. 2002 (KRAM F-54130).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 5 Sept. 2001; 12 Oct. 2001; 21 Aug. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; 3 Oct. 2002; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 9 Sept. 2001; 21 Aug. 2002; at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001; Grześkówki ridge, 1130 m a.s.l., young forest with spruces and larches, on soil, 49°16′14″N, 19°56′17″E, 5 Sept. 2001; Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 21 Aug. 2002; Grześkówki ridge, 1020 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′22″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species hass been reported from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b; Škubla 1998c).

163. ***Lactarius piperatus*** (L.: Fr.) Pers.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 22 Aug. 2001 (KRAM F-51579); E slopes of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′32″E, 16 Sept. 2004, *leg*. *A*. *Ronikier & M*. *Ronikier* (KRAM F-51423, ZAMU 4388).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 5 Sept. 2001; 11 July 2002; 21 Aug. 2002; 9 Sept. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported a few times from the Polish and Slovak Tatras (Pilát 1926; Dominik & Pachlewski 1956) and from the peripheries of the West Tatras (Rudnicka-Jezierska 1965; Kuthan 1989b).

164. ***Lactarius porninsis*** Rolland Fig. 108

Pileus 30–50 cm broad, convex, then expanded with involute margin and slightly depressed center, bright orange, zonate, surface slightly slimy. Lamellae rather crowded, broadly adnate, cream-pinkish, edge smooth. Stem 20–40 × 10 mm, cream-orange, paler than the pileus,

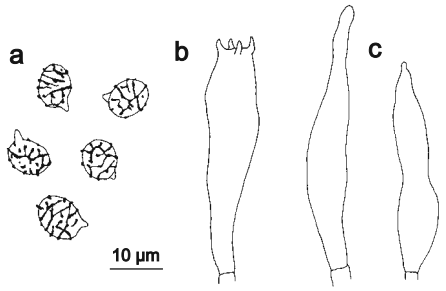

Fig. 108. *Lactarius porninsis* Rolland: a – spores, b – basidium, c – cheilomacrocystidia (KRAM F-51648).

surface smooth. Flesh whitish in pileus, cream in stem, smell of orange fruit, taste mild. Milk abundant, white, unchanging, mild. Spores 7–9 × 5.5–7.0 µm, broadly ellipsoid, covered with low warts connected with ridges forming an incomplete reticulum. Basidia 40–55 × 10–12 µm, 4-spored. Cheilomacrocystidia 30–55 × 7–8 µm, fusiform, numerous. Pleuromacrocystidia scattered. Pileipellis an ixocutis. Clamps lacking.

SPECIMENS EXAMINED. Grześkówki ridge, 1120 m a.s.l., young forest with sruces and larches, on soil, under *Larix*, 49°16′11″N, 19°56′17″E, 5 Sept. 2001 (KRAM F-51648).

DISTRIBUTION IN THE TATRA MTS. The species is known so far only from the Slovak side: from the Dolina Siedmich Prameňov valley, Belanské Tatry (Kubička 1957; Škubla 1998a), and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

165. ***Lactarius pterosporus*** Romagn. Fig. 109

Pileus 30–70 cm broad, convex, then expanded or with depressed center, buff, ochraceous-brown, surface sometimes radially wrinkled. Lamellae crowded, shortly decurrent, cream to buff, edge smooth. Stem 20–70 × 10–15 mm, paler than pileus, whitish to pale buff, cylindrical or tapering downwards. Flesh whitish, slowly changing into pinkish-orange in pileus and outer part of stem, smell undefined, taste mild. Milk abundant, white, slowly changing into pink, taste unpleasant. Spores 7.5–8.0 × 6.5–7.0 µm, subglobose, covered with up to 3 µm high, arcuate ridges, rarely forked and not forming any reticulum. Basidia 45–55 × 10–12 µm, 4-spored. Cheilomacrocystidia none. Paracystidia cylindrical, narrower at upper part, 33–45 × 5–6 µm, numerous. Pleuromacrocystidia none. Pileipellis a trichoderm. Clamps lacking.

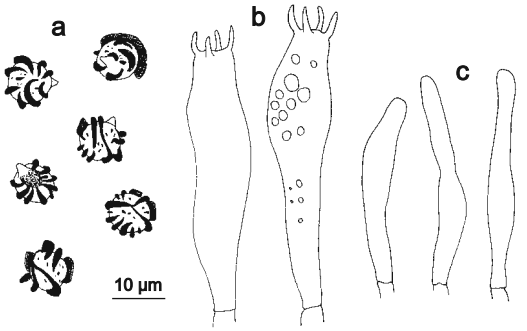

Fig. 109. *Lactarius pterosporus* Romagn.: a – spores, b – basidia, c – paracystidia (KRAM F-51574).

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, SE from caves, 1100 m a.s.l., *DgF/PP*, on soil, 49°16′17″N, 19°56′47″E, 22 Aug. 2001 (KRAM F-51574); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 20 Aug. 2002 (KRAM F-54143); 9 Sept. 2001 (KRAM F-54139); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′8″E, 20 Aug. 2001 (ZAMU 4389).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

166. ***Lactarius romagnesii*** Bon Fig. 110

Pileus 30–80 mm broad, convex, then expanded or slightly depressed in center, uniformly coloured, brown, surface sometimes radially wrinkled. Lamellae distant, decurrent, cream, edge smooth. Stem 30–70 × 10–15 mm, slightly paler than the pileus, brownish, cylindrical or tapering downwards. Flesh whitish, rather quickly discoloring pink-red in the pileus and outer part of the stem, smell and taste not recorded. Milk white, quickly changing into pink-red. Spores 7.5–8.5 × 6.5–7.5 µm, broadly ellipsoid, ovoid, covered with up to 2 µm high ridges and warts connected

with thinner lines, forming complete or incomplete reticulum. Basidia 53–65 × 10–11 µm, 4-spored. Cheilomacrocystidia none. Paracystidia 32–60 × 6–8 µm, cylindrical, abundant, sometimes slightly thick-walled at apex. Pileipellis a trichoderm. Clamps lacking.

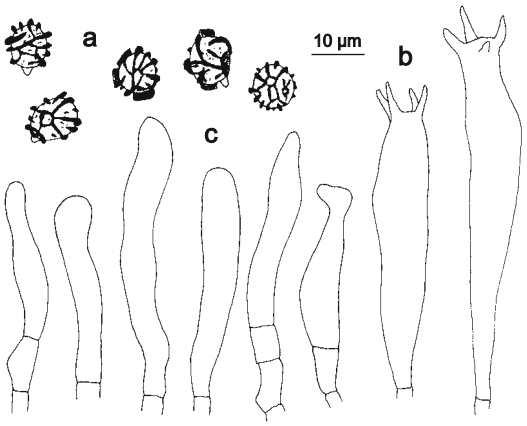

Fig. 110. *Lactarius romagnesii* Bon: a – spores, b – basidia, c – paracystidia (KRAM F-54126).

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2001 (KRAM F-54127); 20 Aug. 2002 (KRAM F-54126, 54128, 54129).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

167. ***Lactarius salmonicolor*** R. Heim & Leclair

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, at hiking trail, 1060 m a.s.l., *DgF*, on soil, 49°15′58″N, 19°57′17″E, 8 Sept. 2001 (KRAM F-51668); Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 21 Aug. 2002 (KRAM F-54131); lower part of Dolina ku Dziurze valley, orographically right side of valley, 950 m a.s.l., *DgF*, on soil (under *Abies alba*), 49°16′43″N, 19°56′47″E, 9 Sept. 2001 (KRAM F-51687); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 21 Aug. 2002 (ZAMU 4390).

FIELD OBSERVATIONS. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 3 Oct. 2002; middle part of Dolina Spadowiec valley, orographically right side of valley, 1030 m a.s.l., *DgF*, on soil, 49°16′29″N, 19°57′09″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from Belanské Tatry (Hagara 1992).

168. ***Lactarius scrobiculatus*** (Scop.: Fr.) Fr.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 21 Aug. 2001 (KRAM F-51588); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 16 Aug. 2003 (KRAM F-54125); upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF/PP*, on soil, 49°16′17″N, 19°56′47″E, 20 Aug. 2001 (ZAMU 4286).

FIELD OBSERVATIONS. N-NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 12 Oct. 2001; 22 Aug. 2002; 3 Oct. 2002; 5 Sept. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 13 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; 9 Sept. 2001; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 21 Aug. 2002; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1200 m a.s.l., *PP*, on soil, 49°16′05″N, 19°56′47″E, 13 Oct. 2001; Spaleniec ridge, 1150 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′52″E, 21 Aug. 2001; middle part of Dolina Białego valley, 950 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′27″E, 21 Aug. 2001; upper part of Dolina Białego valley, mouth of left branch of valley, 1060 m a.s.l., *DgF*, on soil, 49°16′00″N, 19°57′12″E, 21 Aug. 2001; upper part of Dolina Białego valley, Polana Białego meadow, 1200 m a.s.l., raspberry bushes with single spruces, on soil, 49°15′44″N, 19°56′57″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Strążyska valley, 900 m a.s.l., *AP*, on soil, 49°16′43″N, 19°56′27″E, 21 Aug. 2001; upper part of Dolina Białego valley, E slopes of Igła mount, 1150 m a.s.l., *PP*, on soil, 49°15′51″N, 19°57′12″E, 22 Aug. 2001; at Ścieżka nad Reglami hiking trail, at the end of hiking trail in Dolina Białego valley, 1200 m a.s.l., *PP*, on soil, 49°15′41″N, 19°57′00″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′38″E, 21 Aug. 2001; N slopes of Grześkówki ridge, 940 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°56′37″E, 5 Sept. 2001; E slopes of Grześkówki ridge, orographically left

side of Dolina ku Dziurze valley, 980 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′29″E, 5 Sept. 2001; mouth of Dolina Białego valley, 940 m a.s.l., spruce forest with beech and *Acer pseudoplatanus*, on soil, 49°16′43″N, 19°57′27″E, 8 Sept. 2001; middle part of Dolina Białego valley, mouth of Siwarowy Żleb gully, 990 m a.s.l., *DgF*, on soil, 49°16′11″N, 19°57′27″E, 8 Sept. 2001; NE edge of Polana Białego meadow, 1180 m a.s.l., *PP*, on soil, 49°15′48″N, 19°57′02″E, 8 Sept. 2001; at Ścieżka nad Reglami hiking trail, E from Czerwona przełęcz pass, 1250 m a.s.l., *PP*, on soil, 49°15′45″N, 19°56′47″E, 8 Sept. 2001; W slopes of Sarnia Skała massif, 1300 m a.s.l., *Pmc* (with *Picea abies*), on soil, 49°15′53″N, 19°56′27″E, 8 Sept. 2001; lower part of Dolina ku Dziurze valley, 940 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′37″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, N slopes, 1030 m a.s.l., *DgF*/*PP*, on soil, 49°16′17″N, 19°56′37″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, above caves, 1100 m a.s.l., *DgF*/*PP*, on soil, 49°16′17″N, 19°56′47″E, 9 Sept. 2001; W slopes of Spaleniec ridge, 1110 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′47″E, 9 Sept. 2001; E slopes of Spaleniec ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′23″N, 19°56′57″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is fairly common in the Tatra Mts (Pilát 1926; Dominik & Pachlewski 1956; Nespiak 1960; Kubička 1957; Anonymous 1968; Frejlak 1973; Škubla 1998a, b). It has also been reported from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

169. ***Lactarius vellereus*** (Fr.: Fr.) Fr.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 12 Oct. 2001 (KRAM F-53389, ZAMU 4348); middle part of Dolina ku Dziurze valley, orographically left side of valley, 970 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′32″E, 10 Sept. 2003 (KRAM F-54124).

FIELD OBSERVATIONS. Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been noted a few times in the Tatra Mts (Pilát 1926; Dominik & Pachlewski 1956; Dermek 1977) and in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

Lentinellus P. Karst.

170. ***Lentinellus flabelliformis*** (Bolton: Fr.) S. Ito Fig. 111

Pileus 15 mm broad, convex with a depressed center, ochraceous-brown, surface smooth, margin involute. Lamellae distant, broad, broadly adnate, cream, edge uneven, serrulate. Stem lateral, reduced, 7 × 3 mm, brown, tapering downwards, smooth, with brown mycelium at base. Flesh tough, smell and taste not recorded. Spores 5–6 × 4 µm, broadly ellipsoid, ovoid, very finely punctate, amyloid. Basidia 21–25 × 5–6 µm, 4-spored. Cheilocystidia 28–35 × 6.5–7.0 µm, fusiform. Pileipellis a cutis. Numerous oleiferous hyphae present in lamellar trama and context. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, 1180 m a.s.l., planted spruce forest, on wood (fallen small spruce twig), 49°15′48″N, 19°57′11″E, 5 Sept. 2000 (KRAM F-54709).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the study area, in the Dolina Białego valley (Wojewoda *et al*. 1986) and from one locality in the peripheries of Belanské Tatry (Gminder 1998, as *Lentinellus omphalodes*).

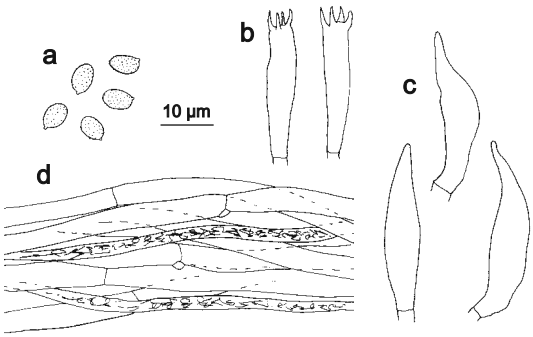

Fig. 111. *Lentinellus flabelliformis* (Bolton: Fr.) S. Ito: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-54709).

Lichenomphalia Redhead, Lutzoni, Moncalvo & Vilgalys

171. ***Lichenomphalia umbellifera*** (L.: Fr.) Redhead, Lutzoni, Moncalvo & Vilgalys

SPECIMENS EXAMINED. Mouth of Dolina Białego valley, orographically left side of valley, 940 m a.s.l., *DgF*, on wood, 49°16′41″N, 19°57′30″E, 1 July 2003 (KRAM F-54526); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 7 June 2000 (KRAM F-39961).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 4 July 2000; 15 May 2001; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1250 m a.s.l., *DgF*/*PP*, on wood, 49°16′11″N, 19°56′57″E, 4 July 2000; upper part of Dolina Spadowiec valley, 1200 m a.s.l., *PP*, on wood, 49°16′17″N, 19°56′57″E, 15 May 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 7 July 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood, 49°16′06″N, 19°56′24″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is very common in the Tatra Mts, collected also by lichenologists [Nespiak 1953, as *Omphalina umbellifera*; Nespiak 1960, as *Omphalina umbellifera* (L. *ex* Fr.) Quél.; Nespiak 1962a, as *Omphalina umbellifera* (L. *ex* Fr.) Quél.; Nespiak 1962b, c, 1966, as *Omphalina umbellifera*; Frejlak 1973, as *Omphalina umbellifera* (L. *ex* Fr.) Quél.; Svrček 1987, as *Omphalina ericetorum*; Alstrup & Olech 1992, as *Omphalina ericetorum*; Škubla 1998a, as *Phytoconis ericetorum* (Pers.) Redhead & Kuyper; Adamčík 1998, as *Phytoconis ericetorum* (Pers.) Redhead & Kuyper; Bielczyk 1999, as *Omphalina umbellifera* (L.: Fr.) Quél.; Lizoň & Kautmanová 2004, as *Phytoconis ericetorum*; Lisická 2005]. The species has also been reported from the peripheries of the Slovak Tatras [Kuthan & Singer 1987, as *Omphalina ericetorum* (Pers. *ex* Fr.) M. Lange; Kuthan 1989a].

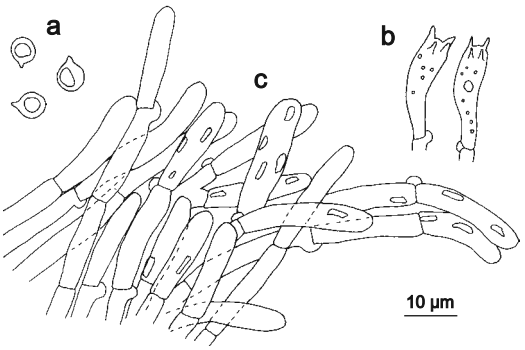

Fig. 112. *Limacella glioderma* (Fr.) Maire: a – spores, b – basidia, c – pileipellis (KRAM F-51567).

Limacella Earle

172. ***Limacella glioderma*** (Fr.) Maire Fig. 112

Pileus 15–40 mm broad, convex, then expanded, bright orange-brown, with a flesh-color tint, darker in center, slightly paler at margin, surface slimy, pileipellis easilly peeling out of the flesh. Lamellae medium spaced, free or almost free, broad, white to cream, edge smooth or delicately ciliate. Stem 20–60 × 3–6 mm, cylindrical or narrowly clavate, cream-pinkish, cream-orange, covered with woolly-fibrillose, orange-pink girdles of velum remnants and with a fibrillose ring, almost smooth above the ring. Flesh whitish, smell and taste distinct, farinaceous. Spores 3.5–4.5 µm, globose, smooth, hyaline in transmitted light. Basidia 20–30 × 6–7 µm, 4-spored and clamped. Cystidia none. Pileipellis an ixotrichoderm, built up of cylindrical hyphae 6–22 µm broad. Clamps present.

SPECIMENS EXAMINED. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 22 Aug. 2001 (KRAM F-51568); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′32″E, 21 Aug. 2001 (KRAM F-51567); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 5 Sept. 2001 (KRAM F-51650); 22 Aug. 2001 (ZAMU 4285); upper part o orographicaly left branch of Dolina ku Dziurze valley, 1100 m a.s.l., windthrow with young forest with *Sorbus aucuparia*, on soil, 49°16′11″N, 19°56′26″E, 20 Aug. 2002 (KRAM F-53783).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 8 Sept. 2001; 13 Oct. 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on soil, 49°15′57″N, 19°56′27″E, 8 Sept. 2001; upper part of Dolina ku Dziurze valley, near Dziura Wyżnia cave,

1090 m a.s.l., *PP*, on soil, 49°16′17″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, 1170 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality at the Droga pod Reglami hiking trail, possibly in the area of the Sarnia Skała massif (Domański 1997). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Lyophyllum P. Karst.

173. ***Lyophyllum boudieri*** Kühner & Romagn. Fig. 113

Pileus 20–40 mm broad, conico-caampanulate, with usually distinct umbo, grey-beige, grey-brown with olive tint, not translucently striate, surface smooth. Lamellae rather crowded, narrowly adnate or almost free, 3–5 mm broad, grey-brown, edge smooth. Stem 20–60 × 2–4 mm, sordid-white, grey-beige, cylindrical, in upper part covered with whitish flocci, with white coarse mycelium at base. Flesh thin, smell and taste farinaceous. Spores 7–8(–10) × 4–5(–6) µm, ellipsoid, smooth, hyaline, nonamyloid. Basidia 26–33 × 7–8 µm, 4-spored, clamped, with siderophilous granulation. Cystidia none. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 3 Oct. 2002 (KRAM F-54646).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

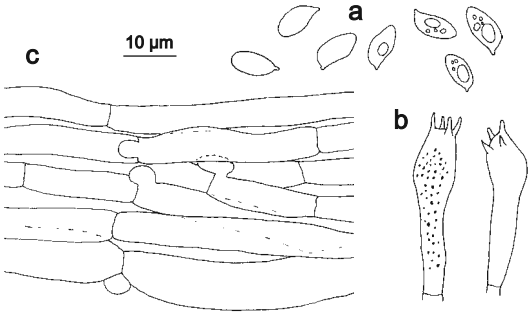

Fig. 113. *Lyophyllum boudieri* Kühner & Romagn.: a – spores, b – basidia, c – pileipellis (KRAM F-54646).

174. ***Lyophyllum*** cf. ***murinum*** (Batsch: Fr.) M. M. Moser Fig. 114

Pileus 10–15 mm broad, conico-campanulate, with distinct umbo, darker at center grey-brown, paler at margin, grey-beige, translucently striate when moist, surface smooth. Lamellae medium spaced, narrowly adnate or almost free, 2–3 mm broad, grey-beige, edge smooth. Stem 20–60 × 2 mm, grey-beige, grey-brown, cylindrical, hollow, silvery fibrillose, in upper part whitish floccose, with whitish mycelium at base. Flesh thin, brownish in pileus, beige in stem, smell and taste none. Spores 7–8 × 4–5 µm, ellipsoid, smooth, hyaline, nonamyloid. Basidia 26–32 × 6.5–8.0 µm, 4-spored, clamped, with siderophilous granulation. Cystidia none. Pileipellis a cutis. Clamps present.

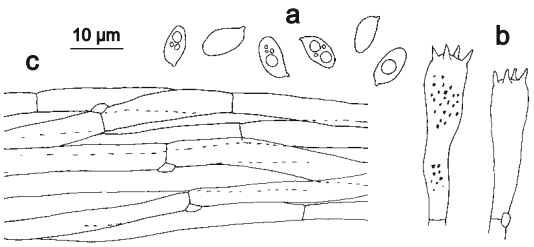

Fig. 114. *Lyophyllum* cf. *murinum* (Batsch: Fr.) M. M. Moser: a – spores, b – basidia, c – pileipellis (KRAM F-54585).

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 12 Oct. 2001 (KRAM F-54585).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

175. ***Lyophyllum rancidum*** (Fr.: Fr.) Singer Fig. 115

Pileus 10–20 mm broad, campanulate, with a distinct, broad umbo, steel-grey, blackish-brown (5F2, 5F3, 5E1, 5E2), brown at center (5D4), surface covered with silky-silvery cover. Lamellae distant, narrowly adnate, 2–3 mm broad, grey-brown (4C2, 4D2), edge smooth. Stem 40–80 × 2–4 mm, steel-grey, concolorous with pileus,

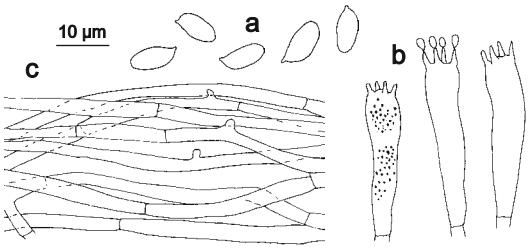

Fig. 115. *Lyophyllum rancidum* (Fr.: Fr.) Singer: a – spores, b – basidia, c – pileipellis (KRAM F-54532).

with 3–4 cm long, tapering pseudorrhiza covered with white mycelium. Flesh thin, whitish in pileus, greyish in stem, smell and taste strong, farinaceous-cucumber-like. Spores 7–8 × 4–5 µm, ellipsoid, smooth, hyaline, nonamyloid. Basidia 28–32 × 6.5–7.0 µm, 4-spored, with siderophilous granulation. Cystidia none. Pileipellis a cutis. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, N slopes of the ridge, 940 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′30″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54532); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 3 Oct. 2001 (KRAM F-54533).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Marasmiellus Murril

176. ***Marasmiellus perforans*** (Hoffm.: Fr.) Antonín, Halling & Noordel.

SPECIMENS EXAMINED. No herbarium specimen preserved.

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, S slopes of Igła mount, 1180 m a.s.l., *PP*, on litter, 49°15′49″N, 19°57′07″E, 22 Aug. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 22 Aug. 2001; upper part of Dolina Białego valley, by Ścieżka nad Reglami hiking trail, 1220 m a.s.l., *PP*, on litter, 49°15′42″N, 19°56′57″E, 8 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is very common in the Tatra Mts [Dominik *et al*. 1954, as *Marasmius perforans* (Hoffm.) Fr.; Dominik & Pachlewski 1956, as *Marasmius perforans* Hoffm.; Nespiak 1960, as *Marasmius perforans* (Hoffm. *ex* Fr.) Singer; Nespiak 1962b, c, 1966, as *Marasmius perforans*; Nespiak 1975, as *Micromphale perforans* (Hoffm. *ex* Fr.) Singer; Rudnicka-Jezierska 1965, as *Marasmius perforans* (Hoffm. *ex* Fr.) Singer; Frejlak 1973, as *Marasmius perforans* (Hoffm.) Fr.; Škubla 1998a, b; Antonín & Noordeloos 1997, 2010, as *Gymnopus perforans* (Hoffm.: Fr.) Antonín & Noordel.; Lizoň & Kautmanová 2004]. It has also been noted in the peripheries of the Slovak Tatras [Kuthan & Singer 1987, as *Micromphale perforans* (Hoffm. *ex* Fr.) Singer; Kuthan 1989b, as *Micromphale perforans* (Hoffm. *ex* Fr.) Singer].

Marasmius Fr.

177. ***Marasmius bulliardii*** Quél. Fig. 116

Pileus 1–6 mm broad, first hemispherical, then convex, with a distinct small umbilicus in center or with a truncate center, ochraceous-brown with paler center, radially furrowed. Lamellae distant, broad, broadly attached to a collarium, white, cream, edge smooth. Stem filiform 10–35 mm long, black-brown with a reddish tint, paler at apex, without rhizomorphs. Flesh very thin, smell and taste none. Spores 8–10 × 3.6–5.0 µm, narrowly ellipsoid, narrowly dacryoid, smooth, hyaline, nonamyloid. Basidia 25–28 × 6.5–7.5 µm, 4-spored. Cheilocystidia 12–25 × 10–19 µm, broom-cell-like, broadly clavate with numerous, short, usually

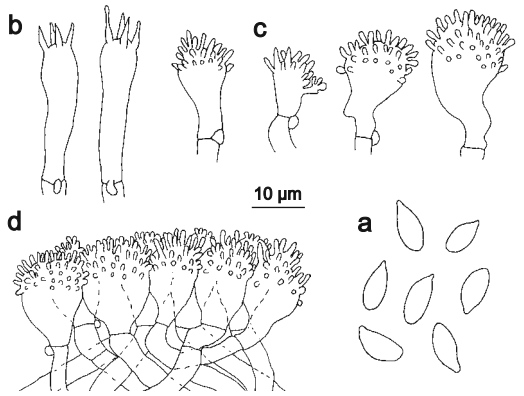

Fig. 116. *Marasmius bulliardii* Quél.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-39936).

unbranched excrescences, slightly thick-walled. Pileipellis a hymeniderm, built up of slightly thick-walled, broadly clavate elements covered with short excrescences, broom-cell-like, similar to cheilocystidia. Pileocystidia and caulocystidia none. Clamps numerous. Context dextrinoid.

SPECIMENS EXAMINED. Dolina ku Dziurze valley, at a stream, 910 m a.s.l., *DgF* (among *Petasites*), on litter (fallen beech leaves), 49°16′37″N, 19°56′37″E, 20 June 2000 (KRAM F-39936); Grześkówki ridge, 1060 m a.s.l., *DgF*, fallen beech leaves, 49°16′17″N, 19°56′15″E, 22 Aug. 2001 (ZAMU 4257).

FIELD OBSERVATIONS. Upper part of Dolina Białego valley, at hiking trail, 1050 m a.s.l., *DgF*, on litter, 49°15′58″N, 19°57′17″E, 5 Sept. 2000; lower part of Dolina Białego valley, orographically right side of valley, 950 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°57′32″E, 8 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported once from Belanské Tatry (Svrček 1987).

178. ***Marasmius cohaerens*** (Pers.: Fr.) Cooke & Quél. Fig. 117

Pileus 10–30 mm broad, first convex or campanulate, then expanded with small, flat umbo, grey-ochraceous-brown, slightly darker in center, surface smooth. Lamellae distant, very narrowly adnate or almost free, first pale cream-yellow, then darker. Stem 25–50 × 1–3 mm, cylindrical or slightly broadened at apex, pale, yellow-brown at apex, darker, dark-brown in lower part, glabrous. Flesh pale, smell and taste none. Spores 7.8–9.5 × 4.5–5.5 µm, broadly ellipsoid, slightly fusiform, hyaline, nonamyloid. Basidia 28–36 × 6.5–8.0 µm, 4-spored. Cheilocystidia thick-walled, narrowly clavate with long, cylindrical, sinuous outgrowths. Thick-walled setae, 35–83 × 7–11 µm, narrowly fusiform to lageniform present in hymenium on lamellar edge and surface, walls up tp 2 µm thick, yellow-brown. Pileipellis a hymeniderm, built up of cylindrical to narrowly clavate, thick-walled brush-like elements, 18–40 × 8–10 µm, walls up to 2 µm thick, yellow-brown. Pileocystidia in a form of fusiform, setae-like, thick-walled elements similar to those present in hymenium. Caulocystidia 15–40 × 3–6 µm, narrowly fusiform, sometimes branched, scattered, thick-walled, walls up to 1 µm thick, yellow-brown. Clamps numerous. Context and lamellar trama distinctly dextrinoid, vinaceous-brown in Melzer's reagent.

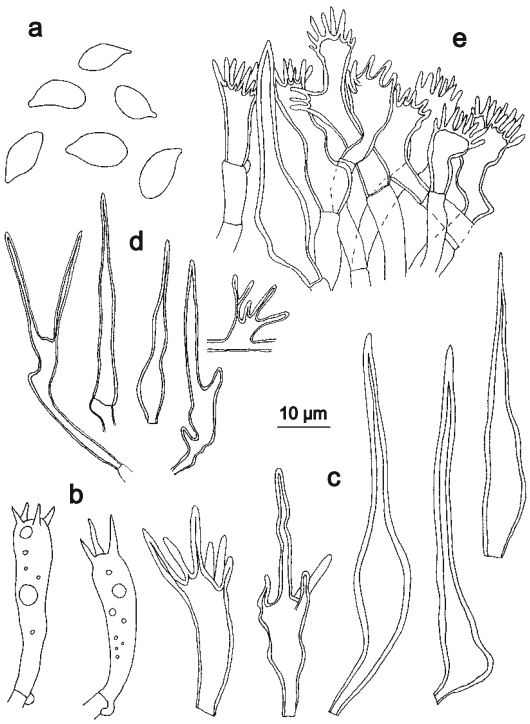

Fig. 117. *Marasmius cohaerens* (Pers.: Fr.) Cooke & Quél.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-50388).

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, at forest path, 1080 m a.s.l., *DgF*, on litter, 49°16′25″N, 19°57′15″E, 8 Nov. 2000 (KRAM F-50388).

DISTRIBUTION IN THE TATRA MTS. The species has been reported so far only from Belanské Tatry in Slovakia (Antonín & Noordeloos 1993, 2010).

179. ***Marasmius epiphyllus*** (Pers.: Fr.) Fr. Fig. 118

Pileus 3–10 mm broad, first hemispherical, then expanded, flat or slightly depressed in center,

white, cream-white, delicately pubescent (lupe), slightly radially wrinkled. Lamellae reduced, very narrow, up to 1 mm broad, very distant, 8–12 attaching stem, sometimes not reaching pileus margin, sometimes only in a form of veins, often dichotomously forked or anastomosed, broadly attached or slightly decurrent, edge delicately ciliate. Stem filiform, central or slightly excentric, 15–35 × 1 mm, first white, then paler, cream at apex, darker, brown in lower part, cylindrical or slightly swollen at abse. Flesh very thin, smell and taste none. Spores 9–12 × 3–5 µm, narrowly ellipsoid, narrowly dacryoid, smooth, hyaline, nonamyloid. Basidia 32–38 × 7–9 µm, 4-spored. Cheilocystidia 45–70 × 5–8 µm, narrowly fusiform, cylindrical, thin-walled. Pileipellis a hymeniderm, built up of clavate, broadly fusiform or lageniform elements, 15–25 × 10–15 µm, with slightly thickened walls. Pileocystidia similar to cheilocystidia. Caulocystidia 35–55 × 8–15 µm, cylindrical, narrowly lageniform or narrowly fusiform, thick-walled (walls up to 3 µm thick), numerous. Clamps numerous. Context nondextrinoid.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on leaves and petioles of *Sorbus aucuparia*, 49°15′53″N, 19°56′38″E, 13 Oct. 2001 (KRAM F-53998); Dolina Strążyska, near Skała Jelinka cliff, at a stream, 950 m a.s.l., *Pk*, on petioles of *Petasites kablikianus*, 49°16′11″N, 19°56′02″E, 5 Sept. 2000 (KRAM F-50594, ZAMU 4362); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on leaves and petioles of *Sorbus aucuparia*, 49°15′55″N, 19°56′32″E, 13 Oct. 2001 (KRAM F-53997); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on leaves and petioles of *Sorbus aucuparia*, 49°16′06″N, 19°56′24″E, 13 Oct. 2001 (KRAM F-51750); NE ridge of Sarnia Skała massif, Zawieszka ridge, 1300 m a.s.l., *PP*/*Pmc*, on leaves and petioles of *Sorbus aucuparia*, 49°15′58″N, 19°56′47″E, 19 Sept. 2000 (KRAM F-50687).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, 940 m a.s.l., *Pk*, on plant debris, 49°16′37″N, 19°57′30″E, 5 Sept. 2000; upper part of Dolina Strążyska valley, at Polana Strążyska meadow, at Strążyski Potok stream, 1050 m a.s.l., *Pk*, on plant debris, 49°15′45″N, 19°55′57″E, 5 Sept. 2000; upper part of Dolina Strążyska valley, at Polana Strążyska meadow, at Strążyski Potok stream, 1050 m a.s.l., *Pk*, on plant debris, 49°15′51″N, 19°55′57″E, 5 Sept. 2000; middle part of Dolina Strążyska valley, near Skała Jelinka cliff, at Strążyski Potok stream, 960 m a.s.l., *Pk*, on plant debris, 49°16′09″N, 19°56′02″E, 5 Sept. 2000; NE ridge of Sarnia Skała ridge, 1250 m a.s.l., *PP*, on plant debris, 49°16′11″N, 19°56′57″E, 19 Sept. 2000; slope of Sarnia Skała massif. at the top, 1360 m a.s.l., *Pmc*, on plant remnants, 49°15′57″N, 19°56′27″E, 13 Oct. 2001; 3 Oct. 2002; N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on plant remnants, 49°15′53″N, 19°56′38″E, 3 Oct. 2002; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on plant remnants, 49°15′55″N, 19°56′32″E, 3 Oct. 2002; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on plant remnants, 49°16′04″N, 19°56′18″E, 3 Oct. 2002; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on plant remnants, 49°16′15″N, 19°56′58″E, 3 Oct. 2002; upper part of Dolina ku Dziurze valley, 1100 m a.s.l., *PP*/windtrough, on plant remnants, 49°16′11″N, 19°56′42″E, 13 Oct. 2001.

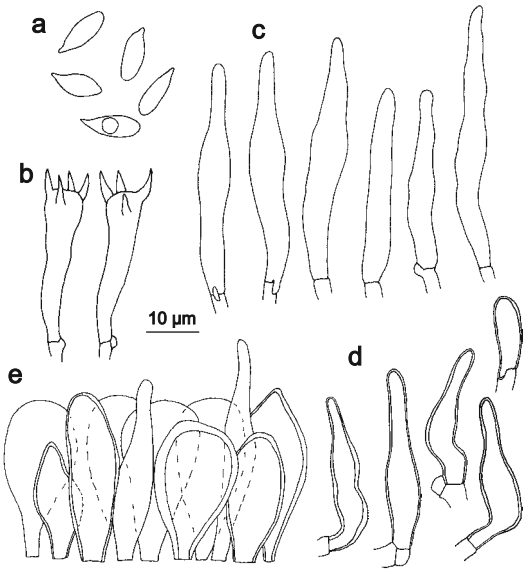

Fig. 118. *Marasmius epiphyllus* (Pers.: Fr.) Fr.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-50594).

DISTRIBUTION IN THE TATRA MTS. The species has been reported only from the peripheries of the Slovak West Tatras (Kuthan 1989b; Antonín & Noordeloos 2010). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

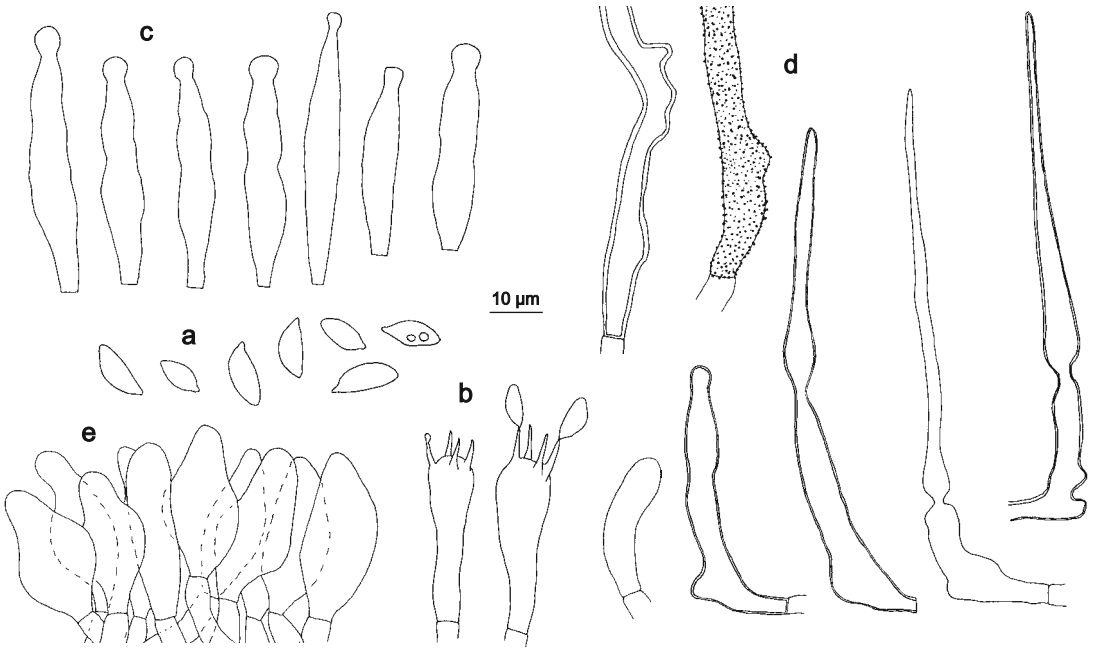

Fig. 119. *Marasmius setosus* (Sowerby) Noordel.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-54001).

180. ***Marasmius setosus*** (Sowerby) Noordel.
Fig. 119

Pileus 1–2 mm broad, first hemispherical, then expanded, white, weakly radially furrowed. Lamellae distant, 6–8 attaching stem, broadly attached, white, edge smooth. Stem filiform 5–35 mm long, white at apex, brown in lower part, slightly pruinose over entire length, densely covered with long mycelial hairs at base. Flesh very thin, smell and taste none. Spores 9–11 × 4–5 µm, ellipsoid, fusiform, smooth, hyaline, nonamyloid. Basidia 30–35 × 8–10 µm, 4-spored. Cheilocystidia 36–53 × 6.5–8.0 µm, cylindrical, fusiform, thin-walled, usually with globose or slightly flattened head, 3–6 µm broad. Pileipellis a hymeniderm, built up of broadly lageniform-fusiform, thin-walled elements. Caulocystidia 30–150 × 8–12 µm, in a form of cylindrical to narrowly fusiform, thick-walled hairs, often with distinct constriction in the middle or lower part, numerous; hairs from the lower part of the stem very long, about 1000 µm, thick-walled, with rough walls, from the upper part of the stem shorter, with thinner walls, mixed with thin-walled, cylindrical to clavate elements. Clamps lacking. Context dextrinoid only at stem apex.

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on beech leaves, 49°16′26″N, 19°57′08″E, 14 Oct. 2003 (KRAM F-54001); 12 Oct. 2001 (KRAM F-51762); Grześkówki ridge, 950 m a.s.l., *DgF*, on beech leaves, 49°16′43″N, 19°56′32″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54002); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on beech leaves, 49°16′42″N, 19°57′27″E, 14 Oct. 2001 (KRAM F-51761); upper part of Dolina Spadowiec valley, at a stream, 1150 m a.s.l., *DgF*, on beech leaves, 49°16′17″N, 19°57′02″E, 3 Oct. 2002 (ZAMU 4380).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on beech leaves, 49°16′42″N, 19°57′27″E, 14 Oct. 2003; 3 Oct. 2002; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on beech leaves, 49°16′26″N, 19°57′08″E, 3 Oct. 2002; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on beech leaves, 49°16′39″N, 19°56′30″E, 14 Oct. 2003; Grześkówki

ridge, 1060 m a.s.l., *DgF*, on beech leaves, 49°16′17″N, 19°56′15″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

181. ***Marasmius torquescens*** Quél. Fig. 120

Pileus 10 mm broad, expanded, with a slight depression in center, yellow-brown, smooth. Lamellae distant, broadly attached, broad, thick, edge smooth. Stem 50 × 2 mm, paler in upper part, yellow-brown, darker in lower part, dark brown, pruinose over entire length, with cream mycelium at base. Flesh thin, smell and taste none. Spores 8.0–10.5 × 4–5 µm, ellipsoid, cylindrical, smooth, hyaline. Basidia 37–45 × 7 µm, 4-spored. Cheilocystidia clavate, fusiform 24–31 × 8–10 µm. Pleurocystidia narrowly clavate, cylindrical, 42–50 × 6.5–7.0 µm. Pileipellis a hymeniderm, built up of broadly clavate, broadly fusiform and broadly lageniform elements 15–25 × 10–15 µm, with slightly thickened walls. Pileocystidia similar to cheilocystidia. Caulocystidia 50–100 × 7–12 µm, thick-walled (walls 1.0–1.5 µm thick), narrowly lageniform, narrowly fusiform, numerous. Clamps numerous. Context dextrinoid.

SPECIMENS EXAMINED. Grześkówki ridge, 1100 m a.s.l., spruce forest with beech, *Larix*, *Calamagrostis* and *Vaccinium myrtillus*, among litter, 49°16′17″N, 19°56′19″E, 19 Sept. 2000 (KRAM F-50686).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

182. ***Marasmius wettsteinii*** Sacc. & P. Syd. Fig. 121

Pileus 1–6 mm broad, first hemispherical, then convex, with a distinct depression in center or with a truncate apex, cream-ochraceous, sometimes paler in center, deeply radially furroved. Lamellae distant, broad, broadly adnate to collarium, white to cream, edge smooth. Stem filiform, 10–35 mm long, shinning, apex pale, whitish, lower part black-brown with red tint, without rhizomorphs at base. Flesh very thin, smell and taste none. Spores 7–10 × 3–5 µm, narrowly ellipsoid, narrowly dacryoid, smooth, hyaline, nonamyloid. Basidia 25–28 × 5.5–6.5 µm, 4-spored. Cheilocystidia 12–26 × 8–14 µm, broom-cell-like, clavate with numerous,

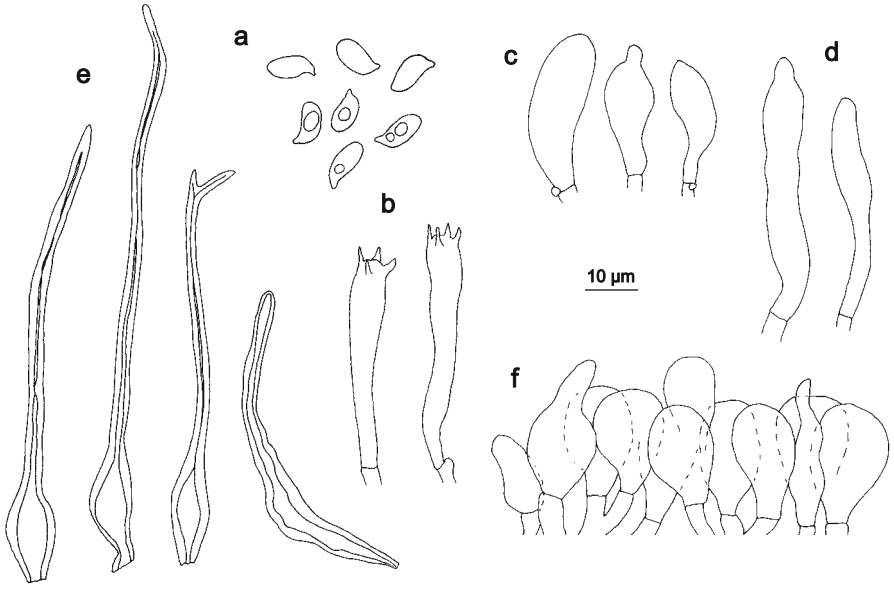

Fig. 120. *Marasmius torquescens* Quél.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia, f – pileipellis (KRAM F-50686).

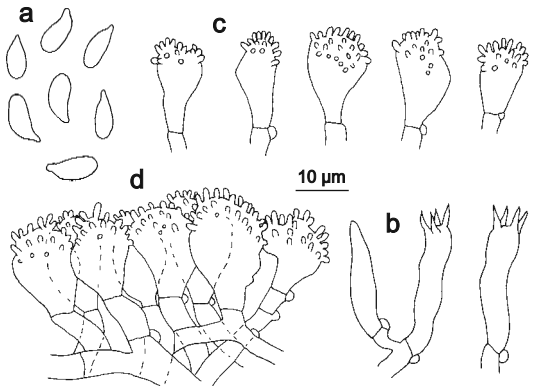

Fig. 121. *Marasmius wettsteinii* Sacc. & P. Syd.: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-39937).

cylindrical excrescences and slightly thickened walls. Pileipellis a hymeniderm, built up of slightly thick-walled, broadly clavate elements covered with short excrescences, broom-cell-like, similar to cheilocystidia. Pileocystidia and caulocystidia none. Clamps numerous. Context dextrinoid.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, between Dolina Strążyska valley and Czerwona Przełęcz pass, 1220 m a.s.l., *PP*, on litter, among *Petasites*, 49°15′45″N, 19°56′25″E, 20 June 2000 (KRAM F-39937); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on spruce needles, 49°16′15″N, 19°56′58″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53374); 20 Aug. 2001 (ZAMU 4256).

FIELD OBSERVATIONS. Upper part of Dolina Strążyska valley, at hiking trail, 1020 m a.s.l., *DgF*, on litter, 49°15′45″N, 19°55′52″E, 5 Sept. 2000; upper part of Dolina Białego valley, SE of Igła mount, 1150 m a.s.l., spruce monoculture, on litter, 49°15′51″N, 19°57′12″E, 5 Sept. 2000; upper part of Dolina Spadowiec valley, SW slope of 'Łomik', 1240 m a.s.l., *PP*, on litter, 49°16′11″N, 19°56′57″E, 20 Aug. 2001; N of Polana Białego meadow, 1150 m a.s.l., *PP*, on litter, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; edge of Polana Białego meadow, 1200 m a.s.l., meadow overgrown with *Rubus* and young spruce, on litter, 49°15′45″N, 19°56′57″E, 21 Aug. 2001; Grześkówki ridge, 1150 m a.s.l., windthrow with young spruce forest, on litter, 49°16′11″N, 19°56′17″E, 22 Aug. 2001; mouth of Dolina Białego valley, 930 m a.s.l., forest with spruce, *Acer pseudoplatanus* and *Fagus*, on litter, 49°16′43″N, 19°57′27″E, 8 Sept. 2001; upper part of Dolina ku Dziurze valley, near Dziura Wyżnia cave, 1080 m a.s.l., *PP*, on litter, 49°16′17″N, 19°56′37″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, 1150 m a.s.l., *PP*, on litter, 49°16′17″N, 19°56′57″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the Dolina Siedmich Prameňov valley, Belanské Tatry and from the peripheries of the Slovak High Tatras (Antonín & Noordeloos 1993, 2010).

183. ***Marasmius wynnei*** Berk. & Broome
Fig. 122

Pileus 10–30 mm broad, first broadly campanulate, then expanded with low, flat umbo or slightly depressed in center, milky-white, cream-white, sordid-white, greyish-ochraceous with a slight violet tint, hygrophanous, translucently striate at margin when moist, surface smooth, waxy. Lamellae distant, narrow, narrowly adnate, relatively thick, edge smooth. Stem 10–70 × 2–4 mm, white, then cream, ochraceous-brownish, darker at base, delicately pruinose over entire length, cylindrical or slightly broadened at apex, sometimes laterally flattened. Flesh cartilaginous, white in pileus, darker in stem, smell pleasant, taste mild. Spores 6–8 × 3.5–4.5 µm, ellipsoid, smooth, nonamyloid. Basidia 27–35 × 5–6 µm,

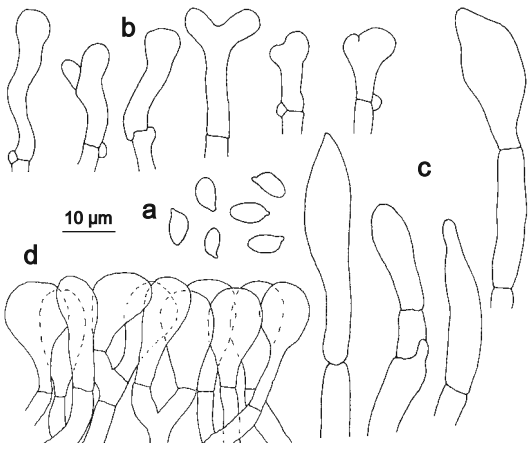

Fig. 122. *Marasmius wynnei* Berk. & Broome: a – spores, b– cheilocystidia, c – caulocystidia, d – pileipellis (KRAM F-53810).

4-spored. Cheilocystidia 14–28 × 5–10 µm, cylindrical, narrowly clavate, sometimes forked at apex. Pleurocystidia none. Pileipellis a hymeniderm, built up of clavate, thin-walled cells 15–20 × 7–11 µm. Caulocystidia in tufts, 17–42 × 6.5–11.0 µm, cylindrical, fusiform. Clamps present. Context dextrinoid.

SPECIMENS EXAMINED. Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′36″N, 19°56′27″E, 20 Aug. 2002 (KRAM F-53810, ZAMU 4330); Spaleniec ridge, 1120 m a.s.l., *DgF*, on litter, 49°16′20″N, 19°56′57″E, 9 Sept. 2001 (KRAM F-53316); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 5 Sept. 2001 (KRAM F-53299); 21 Aug. 2002 (KRAM F-53811).

FIELD OBSERVATIONS. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 3 Oct. 2002; Grześkówki ridge, 1090 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′13″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the peripheries of the Slovak Tatras (Pilát 1926, as *Marasmius globularis* Fr.).

Melanoleuca Pat.

184. ***Melanoleuca*** cf. ***polioleuca*** (Fr.: Fr.) Kühner & Maire Fig. 123

Pileus 40 mm broad, expanded, with broad, flat umbo, chocolate-brown, dark brown, surface lubricous. Lamellae crowded, broad, broadly adnate to emarginate, whitish, pale cream, contrasting with a pileus, edge smooth. Stem 50 × 4 mm, dark, concolorous with pileus or slightly paler, pruinose at apex, base broadened. Flesh pale, smell unpleasant, taste not recorded. Spores 9–10 × 4–5 µm, ellipsoid, covered with distinct, nonuniformly distributed amyloid warts. Basidia 25–32 × 7–8 µm, 4-spored. Cheilocystidia 36–61 × 9–13 µm, fusiform, lageniform, nonseptate, only a few septate, with crystals at apex. Pleurocystidia and caulocystidia (present at stem apex) similar to cheilocystidia. Pileipellis a trichoderm. Clamps lacking.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 980 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°57′17″E, 3 Oct. 2002 (KRAM F-54525).

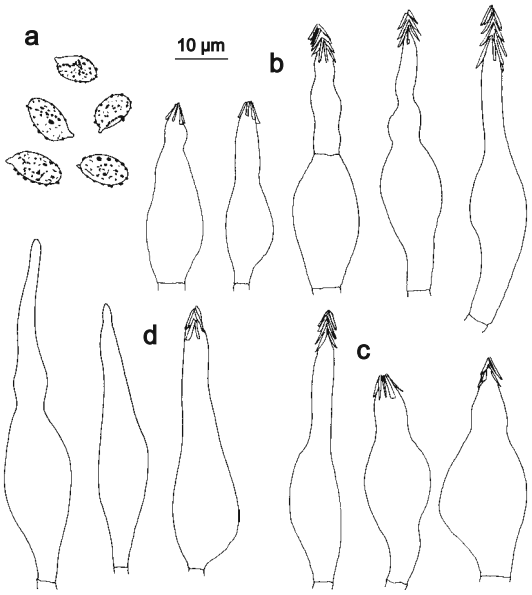

Fig. 123. *Melanoleuca* cf. *polioleuca* (Fr.: Fr.) Kühner & Maire: a – spores, b – cheilocystidia, c – pleurocystidia, d – caulocystidia (KRAM F-54525).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

185. ***Melanoleuca*** cf. ***robertiana*** Bon Fig. 124

Pileus 20–30 mm broad, expanded, grey-brown, dark brown. Lamellae crowded, broad, broadly adnate or emarginate, white, edge smooth.

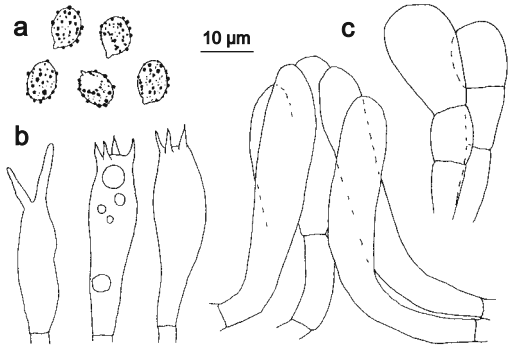

Fig. 124. *Melanoleuca* cf. *robertiana* Bon: a – spores, b – basidia, c – cells from stem apex (KRAM F-51521).

Stem 40–60 × 2–4 mm, pale, cream, beige, pale grey-brown, cylindrical, smooth, slightly pruinose at apex, base slightly broadened. Flesh pale, smell and taste none. Spores 7–8 × 5.5–6.0 µm, ellipsoid, covered with distinct, nonuniformly distributed amyloid warts. Basidia 25–36 × 7–9 µm, 1–4-spored. Cystidia none. Cylindrical or clavate cells, solitary or in tufts, 20–50 × 8.5–13.0 µm present at stem apex. Pileipellis built up of cylindrical hyphae. Clamps lacking.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′53″N, 19°56′38″E, 4 July 2001 (KRAM F-51506); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′28″E, 4 July 2001 (KRAM F-51521).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

186. ***Melanoleuca stridula*** (Fr.) Singer Fig. 125

Pileus 15 mm broad, expanded, grey-brown, not translucently striate. Lamellae crowded, broad, shortly decurrent, edge smooth. Stem 30 × 2 mm, cylindrical, beige, pruinose at apex, base slightly broadened. Flesh pale, smell and taste none. Spores 7–8 × 5–6 µm, ellipsoid, covered with distinct, nonuniformly distributed amyloid warts. Basidia 32–36 × 8–9 µm, 4-spored. Cystidia none. Cylindrical cells in tufts, 35–75 × 3.5–6.0 µm present at stem apex. Pileipellis built up of cylindrical hyphae. Clamps lacking.

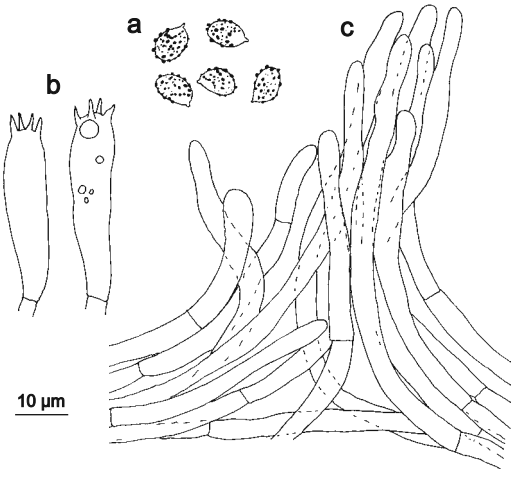

Fig. 125. *Melanoleuca stridula* (Fr.) Singer: a – spores, b – basidia, c – cells from stem apex (KRAM F-54524).

SPECIMENS EXAMINED. On the summit ridge of Sarnia Skała massif, 1375 m a.s.l., among *Dryas octopetala*, on soil, 49°15′54″N, 19°56′32″E, 20 Aug. 2002 (KRAM F-54524).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Mycena (Pers.) Roussel

187. ***Mycena acicula*** (Schaeff.) P. Kumm

SPECIMENS EXAMINED. Dolina Białego valley, 960 m a.s.l., *DgF*, on wood (decaying log), 49°16′20″N, 19°57′27″E, 11 June 2003 (KRAM F-53352).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from several localities in Belanské Tatry and one locality in the peripheries of the Polish West Tatras (Kubička 1957, 1962; Gminder 1998).

188. ***Mycena aciculata*** (A. H. Sm.) Desjardin & Horak Fig. 126

Pileus 2–5 mm broad, parabolic-conical, campanulate, rounded at apex, greyish-white, pale beige-white, slightly darker at center, translucently striate, surface covered with white hairs (setae). Lamellae distant, narrow, narrowly adnate, white, greyish-white, edge even. Stem filiform, 20–40 × 1 mm, cylindrical, watery-greyish-white, covered with white hairs (setae), with a setose basal disc. Flesh very thin, watery white, smell and taste none. Spores 8–10 × 3.5–4.0 µm, narrowly ellipsoid, smooth, nonamyloid. Basidia 17–18 × 7–8 µm, clavate, 4-spored. Cheilocystidia 21–25 × 8–10 µm, clavate. Lamellar trama dextrinoid. Caulocystidia in a form of thick-walled, lanceolate, pointed hairs 80–200 × 5–12 µm. Pileipellis made up of elements densely covered with cylindrical, branched excrescences. Pileocystidia in a form of thick-walled, long, pointed hairs, similar to caulocystidia. Clamps lacking.

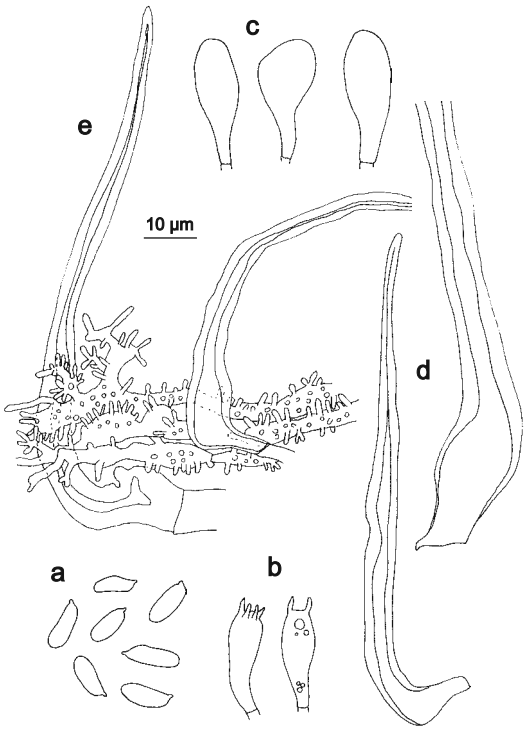

Fig. 126. *Mycena aciculata* (A. H. Sm.) Desjardin & Horak: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (a, b, c, e – KRAM F-54236; d – KRAM F-51585).

SPECIMENS EXAMINED. Summit area of Sarnia Skała massif, N slopes, 1360 m a.s.l., *Pmc*, on litter, 49º15′57″N, 19º56′27″E, 21 Aug. 2002 (KRAM F-54236); 4 July 2001 (KRAM F-54238); 22 Aug. 2001 (ZAMU 4249); summit area of Sarnia Skała massif, N slopes, 1375 m a.s.l., *Pmc*, on litter, 49º15′55″N, 19º56′32″E, 4 July 2001 (KRAM F-51501); summit area of Sarnia Skała massif, S slopes, 1350 m a.s.l., *Pmc*, on litter, 49º15′54″N, 19º56′30″E, 21 Aug. 2002 (KRAM F-54237); 8 Sept. 2001 (KRAM F-54235); 21 Aug. 2001 (KRAM F-51585).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 21 Aug. 2001; 8 Sept. 2001; 21 Aug. 2002; N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported so far only from Slovakia, from the Dolina Siedmich Prameňov valley, Belanské Tatry, almost always on fallen needles of *Pinus mugo* (Kubička 1957, 1963b, as *Mycena longiseta* Höhn.). Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

189. ***Mycena amicta*** (Fr.: Fr.) Quél. Fig. 127

Pileus 3–6 mm broad, convex to conical, hygrophanous, beige-grey, cream-beige with paler margin, sometimes with a dark blue tint, translucently striate up to the pileus center, sticky when moist, pale cream-beige and shinning when dry, covered with entirely peeliable gelatinous pellicle, sometimes with dark blue coloration at margin. Lamellae, distant, narrowly adnate, whitish-cream, edge slightly paler, white or pale yellowish ciliate. Stem 25–100 × 1 mm, filiform, cylindrical, watery-beige, entirely covered with white hairs, with more or less distinct dark-blue coloration at base. Flesh thin, watery-beige, smell and taste none. Spores 8–10 × 4.5–6.0 µm, cylindrical, smooth, amyloid. Basidia 20–23 × 6–7 µm, 4-spored. Cheilocystidia 21–35 × 7–14 µm, clavate, cylindrical. Caulocystidia cylindrical, 50–107 × 6.0–8.5 µm. Pileipellis built up of cylindrical, smooth hyphae

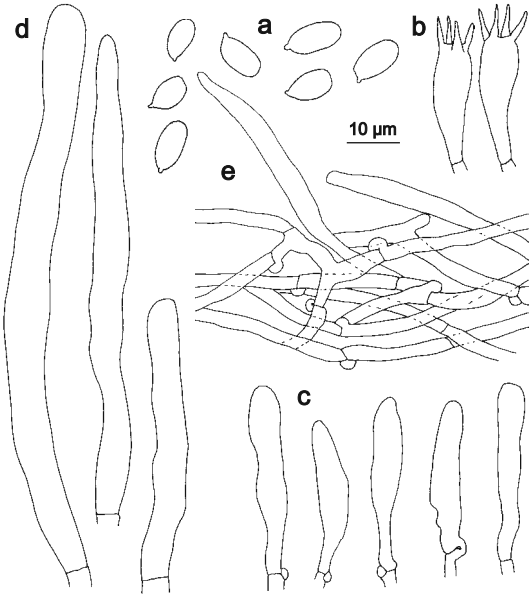

Fig. 127. *Mycena amicta* (Fr.: Fr.) Quél.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-39930).

with cylindrical to slightly fusiform terminal elements. Clamps present.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, left side of valley, 1200 m a.s.l., spruce forest with *Sorbus* and *Acer pseudoplatanus*, on small twig and spruce cone, 49°16′14″N, 19°56′57″E, 20 June 2000 (KRAM F-39930); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood remnants, 49°16′42″N, 19°57′27″E, 11 July 2002 (KRAM F-54227); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, among litter, 49°15′55″N, 19°56′32″E, 11 June 2003 (KRAM F-53356); 22 June 2001 (ZAMU 4250).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on wood remnants, 49°15′57″N, 19°56′27″E, 4 July 2001; 6 Oct. 2001; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on wood remnants, 49°15′55″N, 19°56′32″E, 4 July 2001; 6 Oct. 2001; S slope of Sarnia Skała massif, at the top, 1350 m a.s.l., *Pmc*, on wood remnants, 49°15′54″N, 19°56′30″E, 6 July 2001; 6 Oct. 2001; N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on wood remnants, 49°15′53″N, 19°56′38″E, 4 July 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood remnants, 49°16′06″N, 19°56′24″E, 6 July 2001.

DISTRIBUTION IN THE TATRA MTS. The species is probably common in the Tatra Mts. It has been reported on more then 30 localities in Belanské Tatry and once at the Polish side of the border (Dominik & Pachlewski 1956; Kubička 1962; Svrček 1987). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

190. ***Mycena aurantiomarginata*** (Fr.: Fr.) Quél.
Fig. 128

Pileus 4–15 mm broad, obtusely conical, yellow-olivaceous, brown-olivaceous, margin paler, golden-yellow, orange-yellow, yellow-olivaceous, translucently striate up to center, surface smooth. Lamellae, medium spaced, broadly adnate, golden-yellow, golden-olivaceous, edge bright orange ciliate. Stem 25–80 × 0.5–2.0 mm, cylindrical, grey-olivaceous, golden-yellow, slightly yellow-orange pruinose at apex. Flesh thin, beige, smell and taste not recorded. Spores 7.5–9.0 × 4.5–5.0 µm, cylindrical, narrowly dacryoid, amyloid. Basidia 18–21 × 6–7 µm, 4-spored. Cheilocystidia 18–46 × 7–14 µm, clavate, with orange-yellow pigment, covered with short, cylindrical, unbranched excrescences. Caulocystidia 32–64 × 7–10 µm, cylindrical, clavate, with short or slightly elongated, cylindrical excrescences. Pileipellis built up of hyphae densely covered with simple or forked, cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 3 Oct. 2002 (KRAM F-54233); at Droga pod Reglami hiking trail, mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′23″E, 19 Sept. 2000 (KRAM F-50678); lower part of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°57′27″E, 3 Oct. 2002 (KRAM F-54234); upper part of Dolina Białego valley, W slope of Igła mount, 1120 m a.s.l., planted spruce forest, on needles of spruce, 49°15′51″N, 19°57′12″E, 8 Sept. 2001 (KRAM F-51670); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 8 Sept. 2001 (KRAM F-53387); Czerwona Przełęcz pas, at Ścieżka

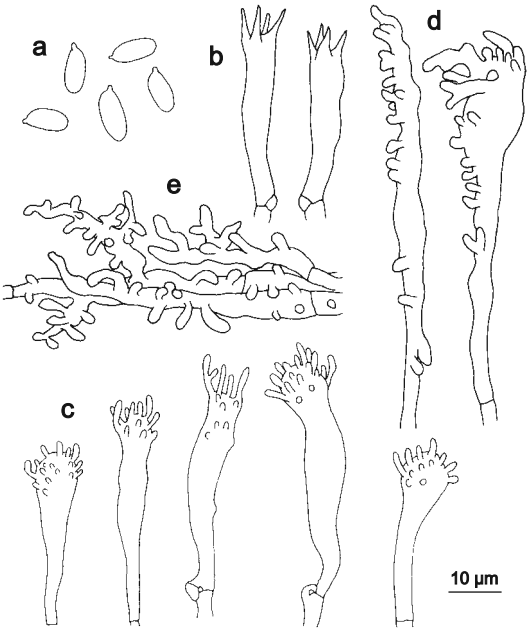

Fig. 128. *Mycena aurantiomarginata* (Fr.: Fr.) Quél.: a – spores, b – basidia, c – cheilocystidia, d – terminal elements of stipitipellis, e – pileipellis (a & c – KRAM F-54233; b, d, e – KRAM F-51670).

nad Reglami hiking trail, at a path, 1300 m a.s.l., edge of spruce forest, 49°15′46″N, 19°56′39″E, 13 Oct. 2001 (ZAMU 4237).

FIELD OBSERVATIONS. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, among litter, 49°16′15″N, 19°56′58″E, 9 Sept. 2001; 3 Oct. 2002; W slope of Sarnia Skała massif, 1160 m a.s.l., at a path, *PP*, among litter, 49°16′04″N, 19°56′18″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from Belanské Tatry, from the West Tatras (Kubička 1962; Lizoň & Kautmanová 2004) and from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

191. ***Mycena capillaris*** (Schumach.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 960 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′37″N, 19°56′27″E, 25 Oct. 2000 (KRAM F-54288); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′42″N, 19°57′27″E, 13 Oct. 2002 (KRAM F-54290); 14 Oct. 2001 (KRAM F-54289); 14 Oct. 2003, (ZAMU 4402); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′39″N, 19°56′30″E, 14 Oct. 2003 (KRAM F-54287); 12 Oct. 2001 (KRAM F-51755).

FIELD OBSERVATIONS. Middle part of Grześkówki ridge, 1020 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°56′20″E, 12 Oct. 2001; Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′15″E, 12 Oct. 2001; 14 Oct. 2003; Dolina Spadowiec valley, western slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 13 Oct. 2002; 14 Oct. 2003; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 14 Oct. 2003; middle part of Dolina Białego valley, 1000 m a.s.l., *DgF*, on litter, 49°16′10″N, 19°57′27″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′47″E, 13 Oct. 2002; upper part of Dolina Spadowiec valley, at a stream, alt 1080 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°57′02″E, 13 Oct. 2002; middle part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on litter, 49°16′33″N, 19°57′12″E, 13 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in Belanské Tatry (Kubička 1962).

192. ***Mycena cinerella*** (P. Karst.) P. Karst.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 14 Oct. 2001 (KRAM F-54285); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′39″N, 19°56′30″E, 14 Oct. 2001 (KRAM F-54286); upper part of Grześkówki ridge, 1150 m a.s.l., *AP*, among mosses, 49°16′11″N, 19°56′17″E, 12 Oct. 2001 (KRAM F-54291).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from a few localities in Belanské Tatry (Kubička 1962; Svrček 1987).

193. ***Mycena citrinomarginata*** Gillet Fig. 129

Pileus 5 mm broad, conical, sulphur-yellow, darker, pale olicaceous-yellow in center, translucently striate when moist. Lamellae narrow, adnate, white, edge pale citrine-yellow. Stem 35 × 1 mm, cylindrical, sulphur-yellow, with white

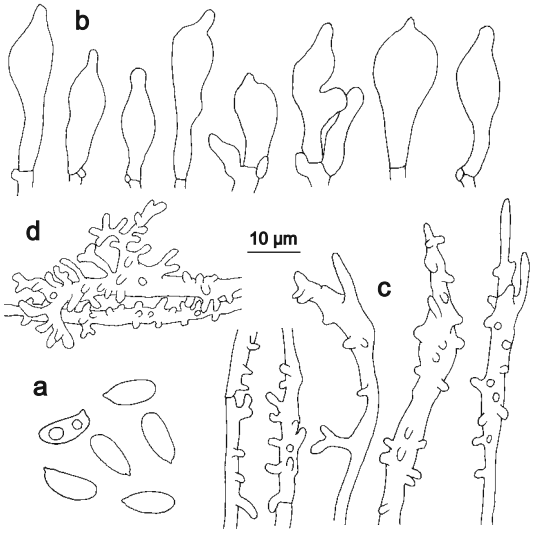

Fig. 129. *Mycena citrinomarginata* Gillet: a – spores, b – cheilocystidia, c – elements of stipitipellis, d – hyphae of pileipellis (KRAM F-54298).

mycelium at base. Flesh thin, smell and taste not recorded. Spores 8.5–12.0 × 4.0–4.5 µm, narrowly ellipsoid, cylindrical, amyloid. Basidia 21–27 × 6–7 µm, 4-spored. Cheilocystidia 18–32 × 7–12 µm, fusiform, clavate with an appendage. Terminal elements of stipitipellis cylindrical, covered with short or slightly elongated, mostly simple, cylindrical excrescences. Pileipellis built up of hyphae densely covered with simple or branched cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, among mosses, 49°15′53″N, 19°56′38″E, 20 June 2000 (KRAM F-54298).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from one locality in the Polish High Tatras (Frejlak 1973) and from many localities in Belanské Tatry (Kubička 1962). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989b). The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

194. ***Mycena clavata*** (Peck) Redhead
Figs 130 & 131

Pileus 4–10 mm broad, first hemispherical, then expanded, umbrella-like, flattened or slightly depressed, with a small umbo in center, hygrophanous, yellow-brown, buff-brown when moist, slightly darker (brown) in center, surface finely pruinose (micaceous). Lamellae arcuate, 10–16 reaching stem, narrow, triangulate, beige-brown, pale buff, edge even, slightly paler than surface. Stem 25–80 × 0.5–1.0 mm, filiform, beige-brown, pale yellow-brown, in upper part slightly pruinose, at base long mycelial threads present. Context thin, pale beige, smell and taste none. Spores (6.5–)7.0–8.0(–9.0) × 5–6(–7) µm, broadly ellipsoid, ovoid, nonamyloid. Basidia 25–28 × 7–8 µm, clavate, 4-spored. Cheilocystidia 32–53 × 8–11 µm, lageniform, fusiform, sometimes forked or flexuous. Pleurocystidia none. Caulocystidia 20–57 × 3.5–6.0 µm, cylindrical or flexuous, some of them branched. Trama of lamellae nondextrinoid. Pileipellis built up of hyphae densely covered with single or forked excrescences. Hyphae of trama rough and brown, incrusted. Clamps present.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, among mosses (probably on wood), 49º15′53″N, 19º56′38″E, 4 July 2001 (KRAM F-54292); on wood (branch of ?*Pinus mugo*), 11 June 2003 (KRAM F-54293); among mosses, on litter, 11 June 2003 (KRAM F-54294); on litter, 22 June 2001 (KRAM F-54295); among mosses, 10 June 2002 (KRAM F-54296); 20 June 2000 (KRAM F-54357).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier & Aronsen 2007; Ronikier 2009).

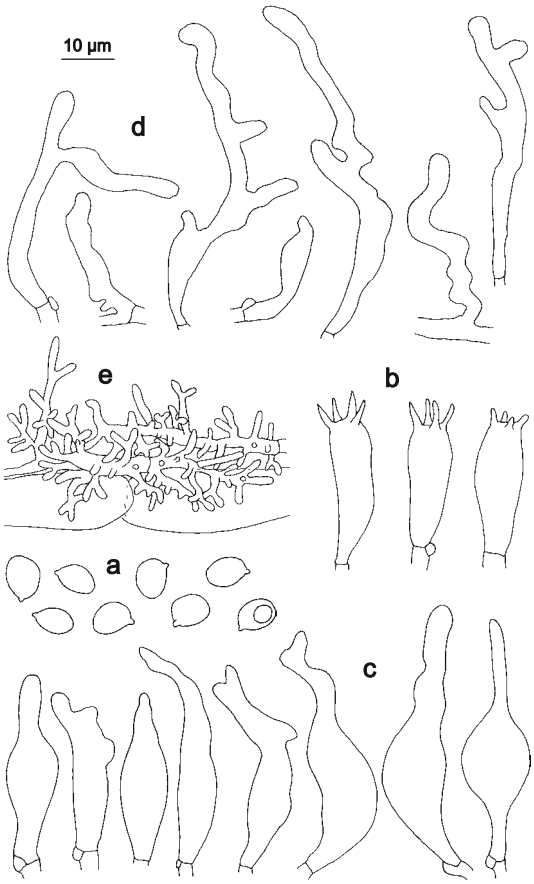

Fig. 130. *Mycena clavata* (Peck) Redhead: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-54292).

Fig. 131. *Mycena clavata* (Peck) Redhead (KRAM F-54292). Scale bar = 10 mm.

195. ***Mycena clavicularis*** (Fr.: Fr.) Gillet
Fig. 132

Pileus 4–10 mm broad, hemispherical, campanulate, then convex with a distinct umbo, lubricous and translucently striate when moist, grey-brown, ochraceous-brown. Lamellae medium spaced, broadly adnate or arcuately decurrent, grey-white, pale beige. Stem 25–60 × 1–2 mm, cylindrical, watery-grey-beige, slimy. Flesh thin, pale beige, smell and taste none. Spores 8–10 × 4–5 µm, ellipsoid, amyloid. Basidia 25–28 × 6–7 µm, clavate, 4-spored. Cheilocystidia 18–46 × 7–14 µm, clavate to narrowly clavate, covered with rather short, cylindrical, excrescences. Pleurocystidia similar to cheilocystidia. Stipitipellis made up of hyphae 2.5–3.0(–4.0) µm wide, sparsely covered with cylindrical excrescences, terminal elements 32–64 × 7–10 µm, cylindrical, covered with rather short, cylindrical excrescences. Pileipellis made up of elements densely covered with simple or branched, cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. N slopes of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on litter, 49º15′55″N, 19º56′32″E, 22 June 2001 (KRAM F-51498); N slopes of Sarnia Skała massif, at the summit, 1375m, *Pmc*, on litter (pine needles), 49º15′57″N, 19º56′27″E, 22 June 2001 (ZAMU 4252); upper part of the Dolina Spadowiec valley, N slopes, 1145 m a.s.l., *PP*, among mosses, 49º16′15″N, 19º56′58″E, 12 July 2002 (KRAM F-54265).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32, 4 July 2001; N slope of Sarnia Skała massif,

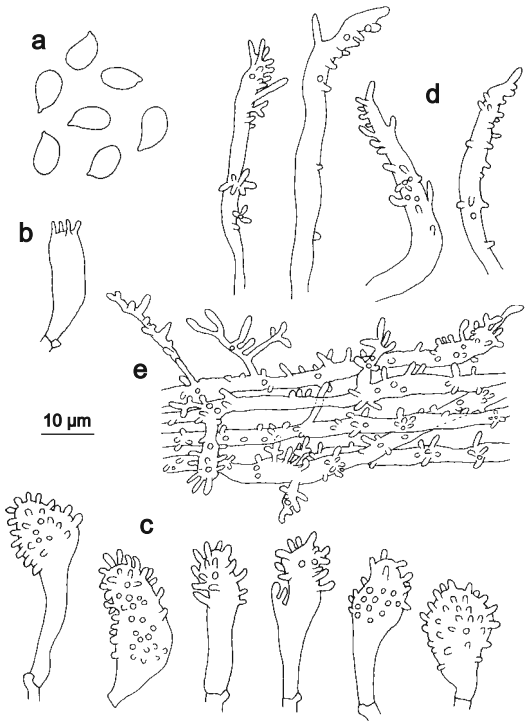

Fig. 132. *Mycena clavicularis* (Fr.: Fr.) Gillet: a – spores, b – basidium, c – cheilocystidia, d – terminal elements of stipitipellis, e – pileipellis (KRAM F-51498).

at the top, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 4 July 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been found at two localities in the Tatra Mts: in the Dolina Pańszczycy valley, Polish West Tatras (Nespiak 1960) and in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

196. ***Mycena cyanorrhiza*** Quél. Fig. 133

Pileus 3–4 mm broad, hemispherical, then convex, white, covered with gelatinous pellicle. Lamellae, distant, narrowly adnate, white. Stem filiform 25–40 × 1.0–1.5 mm, white, blue at base. Flesh thin, white, smell and taste not recorded. Spores 6–7 × 4.0–4.5 µm, ellipsoid, weakly amyloid. Basidia 4-spored. Cheilocystidia 15–25 × 4.5–8.5 µm, clavate with long, flexuous, sometimes branched outgrowths. Caulocystidia 15–20 × 5–9 µm, similar to cheilocystidia. Trama of lamellae dextrinoid. Pileipellis made up of hyphae sparsely covered with long outgrowths embedded in gelatinous matter. Clamps present.

SPECIMENS EXAMINED. The summit area of Sarnia Skała massif, N slopes, 1370 m a.s.l., *Pmc*, on wood, 49º15′53″N, 19º56′38″E, 3 Oct. 2002 (KRAM F-54297).

DISTRIBUTION IN THE TATRA MTS. The fungus has been found on several localities in Belanské Tatry, where it has been noted among others on cones of dwarf mountain-pine (Kubička 1957, 1963a; Svrček 1987). The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

197. ***Mycena epipterygia*** (Scop.: Fr.) Gray

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, 1150 m a.s.l., windthrow, on litter, 49°16′11″N, 19°56′47″E, 20 Aug. 2002 (KRAM F-54277); lower part of Dolina ku Dziurze valley, at a stream, 920 m a.s.l., alder forest with *Fraxinus excelsior*, *Acer pseudoplatanus*, on litter, 49°16′42″N, 19°56′41″E, 24 Sept. 1999 (KRAM F-50045); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on wood (small twig), 49°15′55″N, 19°56′32″E, 13 Aug. 2003 (KRAM F-54278); middle part of Dolina Spadowiec valley, orographically right side of valley, 1040 m a.s.l., *DgF*, on spruce cone, 49°16′29″N, 19°57′12″E, 14 Oct. 2002 (RKRAM F-54279).

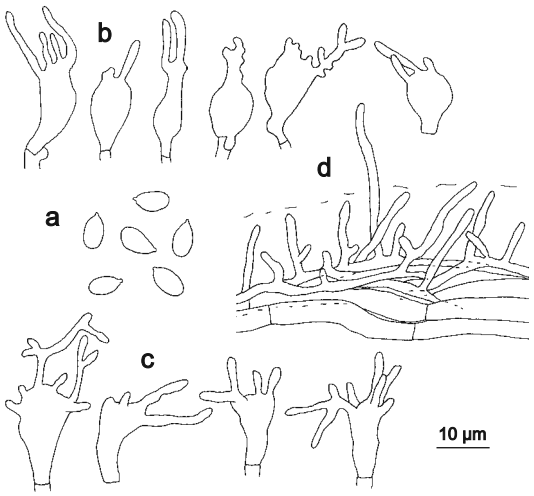

Fig. 133. *Mycena cyanorrhiza* Quél.: a – spores, b – cheilocystidia, c – caulocystidia, d – pileipellis (KRAM F-54297).

DISTRIBUTION IN THE TATRA MTS. The fungus has been noted in the Tatra Mts several times in all three parts of the massif (Pilát 1926; Kubička 1963a; Nespiak 1975; Lizoň & Kautmanová 2004). It has also been found in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

198. ***Mycena epipterygia*** var. ***viscosa*** (Maire) Ricken

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1190 m a.s.l., *PP*, on wood (spruce root), 49°16′06″N, 19°56′20″E, 16 June 2001 (KRAM F-54276).

DISTRIBUTION IN THE TATRA MTS. The fungus has been found on a few localities in the High Tatras, West Tatras and Belanské Tatry [Anonymous 1968, as *Mycena viscosa*; Lisiewska 1987, as *Mycena viscosa* (Secr.) Maire; Svrček 1987, as *Mycena viscosa*; Škubla 1998b, as *Mycena viscosa* (Secr.) Maire; Lizoň & Kautmanová 2004].

199. ***Mycena filopes*** (Bull.: Fr.) P. Kumm.

SPECIMENS EXAMINED. S slope of Sarnia Skała massif, about 200 m N-NE from Czerwona Przełęcz pass, 1290 m a.s.l., *PP*, on litter, 49°15′50″N, 19°56′43″E, 9 June 2000 (KRAM F-39954).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from a few localities in Belanské Tatry (Kubička 1963a).

200. ***Mycena flavescens*** Velen. Fig. 134

Pileus 3–7 mm broad, first hemispherical, then broadly conical, grey-cream with a pale citrine-yellow tint, grey-yellow, olivaceous-yellow, darker at center, margin paler, white-citrine-yellow, hygrophanous, translucently striate up to center when moist, older specimens paler, entirely cream-beige with a citrine-yellow tint. Lamellae crowded, broad, emarginate, white-grey, edge citrine-yellow or white. Stem 20–60 × 1–2 mm, cylindrical, grey-brown, darker in upper part, paler, cream-grey with whitish mycelium at base. Flesh thin, beige, smell and taste strong, of radish. Spores 8–10 × 4.5–5.0 µm, ellipsoid, amyloid. Basidia 20–25 × 7–8 µm, 4-spored. Cheilocystidia 20–50 × 11–30 µm, broadly clavate, covered with very short excrescences. Hyphae of stipitipellis covered with short excrescences. Pileipellis built up of hyphae about 10 µm broad, densely covered with very short excrescences. Clamps present.

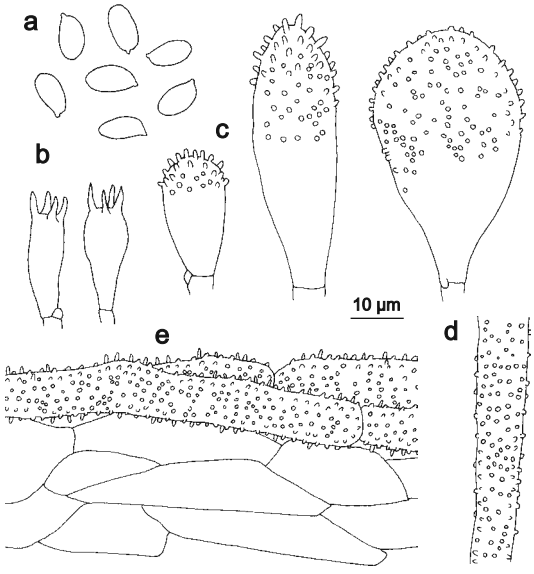

Fig. 134. *Mycena flavescens* Velen.: a – spores, b – basidia, c – cheilocystidia, d – hypha of stipitipellis, e – pileipellis (KRAM F-51626).

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′39″N, 19°56′30″E, 3 Oct. 2002 (KRAM F-54282); 5 Sept. 2001 (KRAM F-51626); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′26″N, 19°57′08″E, 3 Oct. 2002 (KRAM F-54280); Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′17″N, 19°56′15″E, 21 Aug. 2002 (KRAM F-54281); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′42″N, 19°57′27″E, 3 Oct. 2002 (ZAMU 4401).

FIELD OBSERVATIONS. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 21 Aug. 2002; Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′15″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in the vicinity of the Morskie Oko lake, Polish High Tatras (Frejlak 1973).

201. ***Mycena flavoalba*** (Fr.) Quél. Fig. 135

Pileus 3–5 mm broad, conical with a distinct, acute umbo, hygrophanous, cream-yellowish and translucently striate up to center when moist, paler, white, pale yellowish when dry. Lamellae distant, broad, broadly adnate, white, edge smooth. Stem 20–60 × 1–2 mm, cylindrical, watery-white or with a slight yellowish tint, slightly pruinose. Flesh thin, watery-cream, smell and taste none. Spores 7–8 × 3.5–4.5 µm, ellipsoid, nonamyloid. Basidia 20–25 × 6–7 µm, 4-spored. Cheilocystidia 25–50 × 6–10 µm, fusiform to lageniform with 2–3 µm wide neck. Pleurocystidia similar to cheilocystidia. Caulocystidia 14–64 × 7–14 µm, fusiform, lageniform, balloon-shaped. Lamellar trama weakly dextrinoid. Pileipellis built up of densely covered with long and usually forked or branched excrescences. Clamps present.

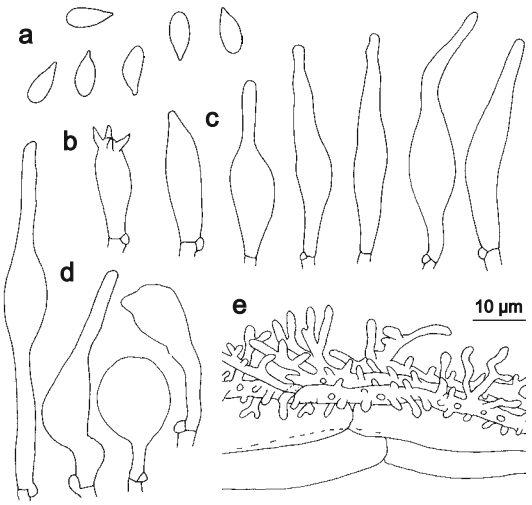

Fig. 135. *Mycena flavoalba* (Fr.) Quél.: a – spores, b – basidium, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-51522).

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1200 m a.s.l., *PP*, on litter, 49°15′59″N, 19°56′18″E, 21 July 2000 (KRAM F-50108); ridge between Dolina Białego valley and Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′40″N, 19°57′17″E, 13 Oct. 2001 (KRAM F-54310); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 6 July 2001 (KRAM F-51522).

FIELD OBSERVATIONS. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 5 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from more than 30 localities in Belanské Tatry (Kubička 1963a) and from one locality in the Dolina Roztoki valley, Polish High Tatras (Lisiewska 1987). It has also been noted from the peripheries of the Slovak Tatras (Kuthan & Singer 1987).

202. ***Mycena galericulata*** (Scop.: Fr.) Gray

SPECIMENS EXAMINED. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 7 June 2003 (KRAM F-53369); lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′28″E, 20 June 2000 (KRAM F-39933); middle part of Grześkówki ridge, 1040 m a.s.l., *DgF*, on wood (fallen trunk), 49°16′29″N, 19°56′19″E, 12 Oct. 2001 (KRAM F-51749); upper part of Dolina ku Dziurze valley, 'Wymyte', 1150 m a.s.l., windthrow, on wood, 49°16′08″N, 19°56′37″E, 4 July 2000 (KRAM F-50027); upper part of Dolina Spadowiec valley, orographically right side of valley, 1150 m a.s.l., *DgF*, on wood, 49°16′15″N, 19°57′07″E, 7 June 2000 (KRAM F-39955); Spseleniec ridge, 1150 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°56′55″E, 7 June 2003 (KRAM F-53370); Dolina Białego valley, vis a vis Siwarowy Żleb gully, above Biały Potok stream, 1070 m a.s.l., *DgF*, trunk of deciduous tree, 49°16′17″N, 19°57′17″E, 2 June 2001 (ZAMU 4246).

FIELD OBSERVATIONS. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1150 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°57′07″E, 20 July 2000; lower part of Dolina ku Dziurze valley, orographically left side of valley, 930 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°56′37″E, 4 July 2000; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on wood, 49°16′35″N, 19°56′27″E, 19 Sept. 2000; middle part of Grześkówki ridge, 1020 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′22″E, 19 Sept. 2000; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1020 m a.s.l., *DgF*, on wood, 49°16′35″N, 19°57′17″E, 15 June 2001; upper part of Dolina Spadowiec valley, orographically left side of valley, 1150 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°56′57″E, 15 June 2001; upper part of Grześkówki ridge, 1200 m a.s.l., *PP*, on wood, 49°16′04″N, 19°56′17″E, 6 July 2001; at Droga pod Reglami hiking trail, orographically left side of Dolina Spadowiec valley, 910 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°57′07″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°57′07″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 3 Oct. 2002; 7 June 2003; 9 Sept. 2003; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 3 Oct. 2002; upper part of Spaleniec ridge, 1090 m a.s.l., *DgF*/*PP*, on wood, 49°16′24″N, 19°56′58″E, 7 June 2003; upper part of Dolina Spadowiec valley, orographically right side of valley, 1010 m a.s.l., *DgF*, on wood, 49°16′28″N, 19°57′09″E, 7 June 2003; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 7 June 2003; upper part of Dolina spadowiec valley, orographically right side of valley, 'Łomik', 1150 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°57′07″E, 16 Aug. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported so far a few times in the Tatra Mts (Pilát 1926; Kubička 1963a; Anonymous 1968; Škubla 1998b; Lizoň & Kautmanová 2004). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989a, b).

203. ***Mycena galopus*** (Pers.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Dolina ku Dziurze valley, orographically left side of valley, 930 m a.s.l., *AP*, on litter, 49°16′43″N, 19°56′37″E, 20 June 2000 (KRAM F-39953); summit area of Sarnia Skała massif, 1375 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 22 June 2001 (ZAMU 4241).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, 950 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°57′27″E, 20 July 2000; lower part of Dolina Strążyska valley, orographically right side of valley, 950 m a.s.l., *DgF* with larches and pines, on litter, 49°16′36″N, 19°56′17″E, 21 July 2000; upper part of Grześkówki ridge, 1120 m a.s.l., *DgF*, on litter, 49°16′11″N, 19°56′17″E, 21 July 2000; upper part of Grześkówki ridge, 1180 m a.s.l., *AP*, on litter, 49°16′06″N, 19°56′17″E, 21 July 2000; SE slope of the massif, 1320 m a.s.l., *PP*, on litter, 49°15′51″N, 19°56′37″E, 20 June 2000; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 20 June 2000; upper part of Dolina ku Dziurze valley, 950 m a.s.l., *Pk*, on litter, 49°16′36″N, 19°56′33″E, 4 July 2000; upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF*, on litter, 49°16′20″N, 19°56′47″E, 4 July 2000; upper part of Dolina Białego valley, S slopes of Igła mount, 1180 m a.s.l., *DgF*, on litter, 49°15′48″N, 19°57′02″E, 4 July 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 4 July 2001; 10 June 2002; 21 Aug. 2002; 3 Oct. 2002; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 4 July 2001; 5 Sept. 2001; 11 July 2002; 21 Aug. 2002; 11 June 2003; N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 4 July 2001; 8 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002; upper part of Grześkówki ridge, 1180 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′17″E, 6 July 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 5 Sept. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 5 Sept. 2001; 3 Oct. 2002; W solpe of Sarnia Skała massif, 1200 m a.s.l., *PP*/*Pmc*, on litter, 49°15′57″N, 19°56′17″E, 5 Sept. 2001; S slope of Sarnia Skała massif, at the top, 1350 m a.s.l., *Pmc*, on litter, 49°15′54″N, 19°56′30″E, 5 Sept. 2001; 8 Sept. 2001; 10 June 2002; mouth of Dolina Białego valley, 920 m a.s.l., spruce forest with *Acer pseudoplatanus*, on litter, 49°16′40″N, 19°57′31″E, 8 Sept. 2001; upper part of Dolina Białego valley, 1150 m a.s.l., spruce forest (planted), on litter, 49°15′51″N, 19°57′07″E, 8 Sept. 2001; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on litter, 49°16′44″N, 19°57′16″E, 9 Sept. 2001; mouth of Dolina Spadowiec valley, orographically left side of valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′06″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, N slopes, 1050 m a.s.l., *PP*, on litter, 49°16′17″N, 19°56′37″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, near caves, 1100 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts (Pilát 1926, as *Mycena lactescens* Schrad.; Nespiak 1960, 1962b, c, 1966, 1975; Kubička 1963a; Frejlak 1973; Lisiewska 1987; Škubla 1998a). It has also been found in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

204. ***Mycena haematopus*** (Pers.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Middle part of Dolina Białego valley, 960 m a.s.l., *DgF*, on wood (decaying log), 49°16′20″N, 19°57′27″E, 11 June 2003 (KRAM F-53358); 9 Sept. 2003 (KRAM F-54263); Grześkówki ridge, 1030 m a.s.l., *DgF*, on wood, 49°16′28″N, 19°56′20″E, 7 June 2003 (KRAM F-53357); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 7 June 2000 (KRAM F-39958); upper part of Dolina Spadowiec valley, orographically right side of valley, 1040 m a.s.l., *DgF*, on wood (log of *Fagus sylvatica*), 49°16′24″N, 19°57′07″E, 9 Sept. 2003 (KRAM F-54228); Dolina Białego valley, S from Kazalnica rock, at hiking trail, 950 m a.s.l., *DgF*, on trunk of ?*Fagus sylvatica*, 49°16′30″N, 19°57′27″E, 1 June 2001 (ZAMU 4248).

FIELD OBSERVATIONS. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 7 June 2000; 13 Oct. 2001; 21 Aug. 2002; 5 Sept. 2001; 15 June 2001; lower part of Dolina ku Dziurze valley, orographically right side of valley, 950 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′37″E, 20 June 2000; lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on wood, 49°16′33″N, 19°56′27″E, 19 Sept. 2000; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 15 June 2001; upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°57′07″E, 15 June 2001; upper part of Dolina Spadowiec valle, orographically left side of valley, 1080 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°56′57″E, 20 Aug. 2001; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on wood, 49°16′44″N, 19°57′17″E, 5 Sept. 2001; lower part of Dolina Białego valley, 930 m a.s.l., *DgF*, on wood, 49°16′33″N, 19°57′27″E, 8 Sept. 2001; lower part of Grześkówki ridge, 1010 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′22″E, 21 Aug. 2002; middle part of Dolina Białego valley, 980 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°57′27″E, 3 Oct. 2002; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood, 49°16′06″N, 19°56′24″E, 3 Oct. 2002; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°56′47″E, 9 Sept. 2003.

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in the peripheries of the Polish West Tatras (Rudnicka-Jezierska 1965).

205. ***Mycena laevigata*** (Lasch) Gillet Fig. 136

Pileus 10–15 mm broad, first hemispherical, then convex to broadly conical or expanded with slightly depressed center, hygrophanous, translucently striate up to center, ochraceous-cream, grey-beige when moist, white, ivory when dry. Lamellae broad, broadly adnate, white, staining copper-yellow on touching, edge smooth. Stem 30–100 × 1–3 mm, watery-white, elastic, staining copper-yellow on touching. Flesh thin, white, yellow on damage, smell and taste none. Older specimens discoloring orange-brownish. Spores 6.5–9.0 × 3.5–4.0 µm, ellipsoid, smooth, amyloid. Basidia 20–22 × 5–6 µm, 4-spored. Cheilocystidia 20–46 × 4–9 µm, fusiform, narrowly conical, rarely

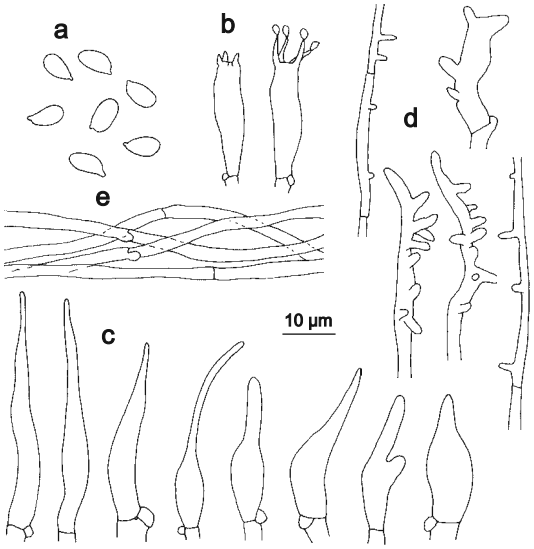

Fig. 136. *Mycena laevigata* (Lasch) Gillet: a – spores, b – basidia, c – cheilocystidia, d – elements of stipitipellis, e – pileipellis (KRAM F-53371).

forked. Lamellar trama dextrinoid. Pileipellis built up of narrow, smooth hyphae, 2.5–3.5 µm broad. Hyphae of the cortical layer of the stipe with scattered cylindrical excrescences, terminal elements cylindrical covered with cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1200 m a.s.l., *PP*, on spruce log, 49°16′04″N, 19°56′22″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53371); upper part of Dolina Białego valley, Polana Białego meadow, 1190 m a.s.l., old meadow with spruces and *Rubus idaeus*, on wood (fallen trunk of ?*Picea abies*), 49°15′46″N, 19°56′57″E, 9 June 2000 (KRAM F-54266).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from a few localities in Belanské Tatry (Kubička 1963b).

206. ***Mycena leptocephala*** (Pers.) Gillet Fig. 137

Pileus 4–10 mm broad, first hemispherical then convex with a distinct umbo, lubricous, grey-brown, ochraceous-brown. Lamellae, medium spaced, broadly adnate or arcuately decurrent, grey-white to pale beige, edge smooth. Stem 25–60

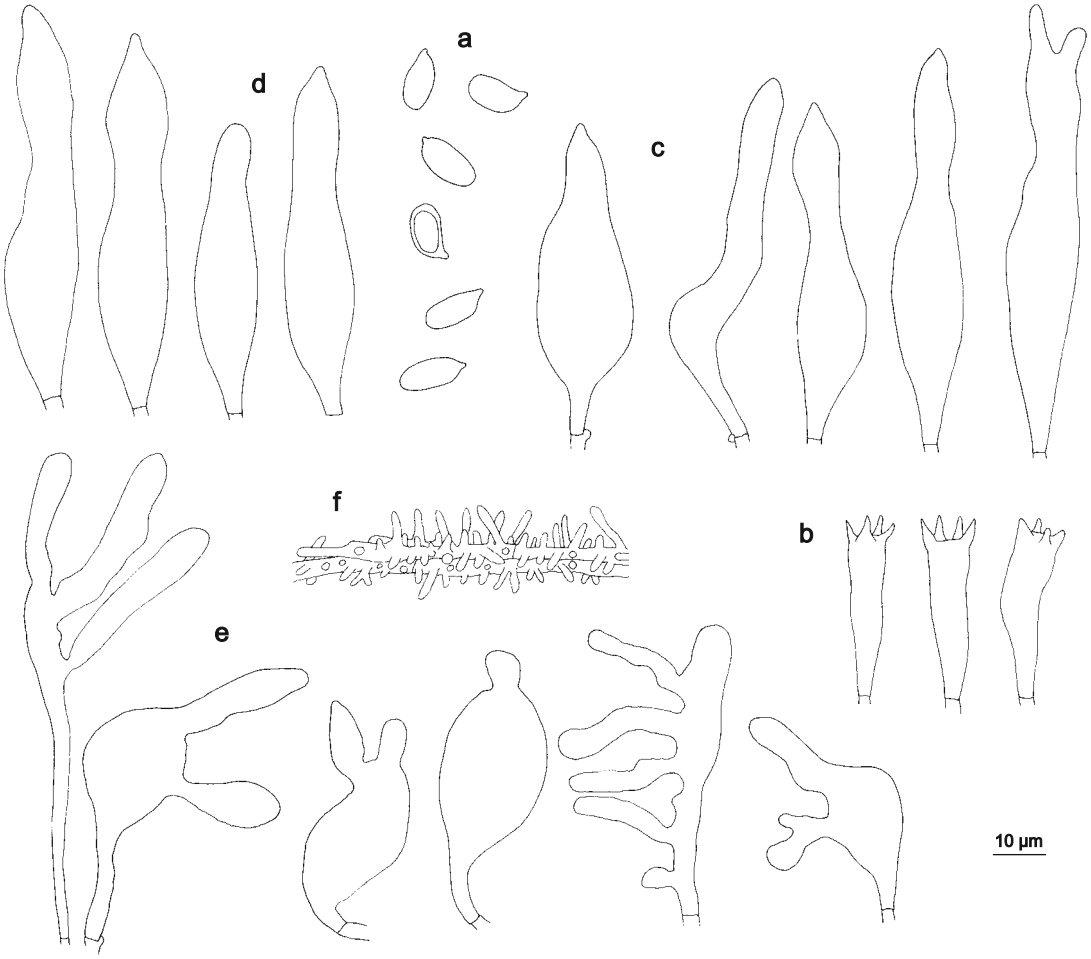

Fig. 137. *Mycena leptocephala* (Pers.) Gillet: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia, f – hyphae of pileipellis (KRAM F-53349).

× 1–2 mm, watery-grey-beige. Flesh thin, beige, smell and taste none. Spores 8–10 × 4–5 µm, ellipsoid, amyloid. Basidia 18–21 × 6–7 µm, 4-spored. Cheilocystidia 18–46 × 7–14 µm, cylindrical, ventricose, fusiform, some constricted in upper part, rarely forked at apex. Pleurocystidia similar to cheilocystidia. Caulocystidia 32–64 × 7–10 µm, cylindrical to clavate with broad and short or long outgrowths. Pileipellis built up of hyphae densely coveted with rather long cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on wood remnants, 49°16′39″N, 19°56′30″E, 7 June 2003 (KRAM F-53349).

DISTRIBUTION IN THE TATRA MTS. The fungus is known from a few localities in Belanské Tatry (Kubička 1963b) and from the peripheries of the Slovak West Tatras (Kuthan 1989b).

207. ***Mycena leucogala*** (Cooke) Sacc. Fig. 138

Pileus 5–10 mm broad, conical, black-brown, translucently striate to center when moist, surface smooth. Lamellae, medium spaced, narrowly adnate, greyish-white, edge smooth. Stem 25–80 × 1–2 mm, black-brown, smooth, pruinose at

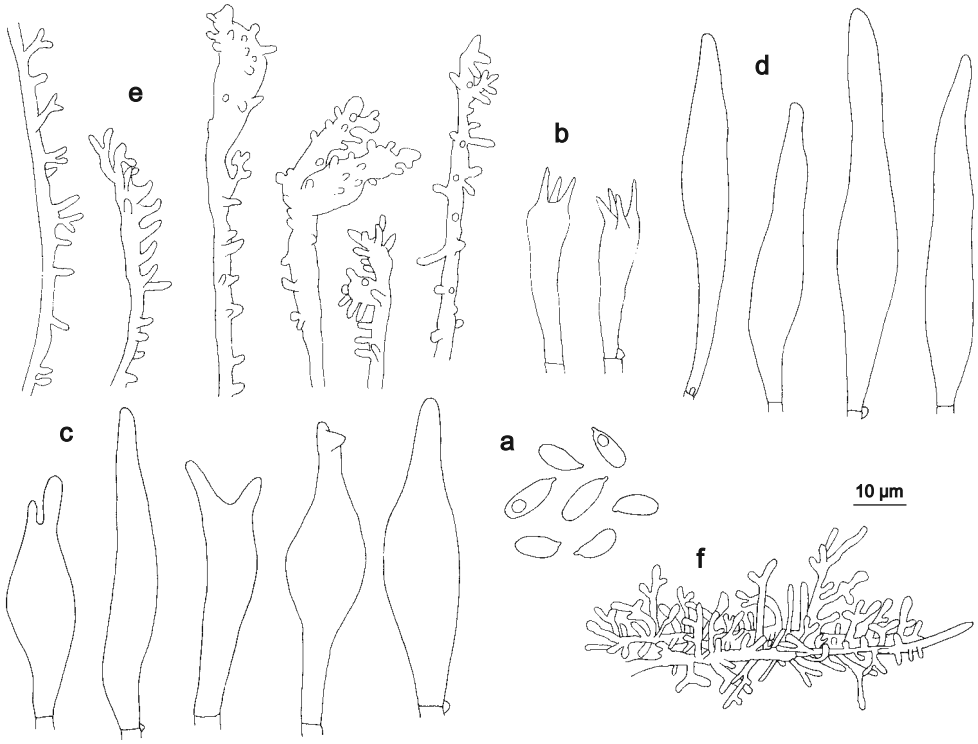

Fig. 138. *Mycena leucogala* (Cooke) Sacc.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – elements of stipitipellis, f – hyphae of pileipellis (KRAM F-50085).

apex, with pale coarse mycelium at base. Flesh thin, smell and taste not recorded. Milk present, white. Spores 8–10 × 4–5 µm, cylindrical, narrowly dacryoid, amyloid. Basidia 20–30 × 7–8 µm, 4-spored. Cheilocystidia 46–68 × 8–16 µm, fusiform, some with a few outgrowths or forked at apex. Pleurocystidia 57–80 × 7–12 µm, fusiform. Terminal elements of stipitipellis cylindrical to clavate, densely covered with cylindrical, simple or branched exrescences. Pileipellis covered with long and branched, cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. Lower part of Dolina ku Dziurze valley, orographically left side of valley, 930 m a.s.l., *AP*, on litter, 49°16′43″N, 19°56′37″E, 20 June 2000 (KRAM F-50085).

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004).

208. ***Mycena maculata*** P. Karst. Fig. 139

Pileus 10–25 mm broad, first hemispherical, then broadly conical, hygrophanous, translucently striate to center, grey-brown, ochraceous-brown when moist, grey-beige, when dry, stained with vinaceous-brown spots. Lamellae broad, broadly adnate, grey, stained with vinaceous-brown spots, edge, paler, whitish, smooth. Stem 30–100 × 1–3 mm, grey-brown, vinaceous-brown. Flesh thin, grey in pileus and stem apex, vinaceous-brown in stem, smell weak, of radish or spermatic, taste mild. Spores 8–9 × 4.5–6.0 µm, ellipsoid, smooth, amyloid. Basidia 30–40 × 7–9 µm, 4-spored. Cheilocystidia 28–46 × 6–9 µm, cylindrical, clavate, with short and very long, usually branched, cylindrical outgrowths. Lamellar trama dextrinoid. Pileipellis built up of narrow, smooth hyphae. Hyphae of stipitipellis covered with few, scattered excrescences, terminal elements cylindrical with excrescences. Clamps present.

SPECIMENS EXAMINED. NW slopes of Sarnia Skała massif, 1220 m a.s.l., *PP*, on wood (coniferous tree), 49°16′03″N, 19°56′22″E, 12 Oct. 2001 (KRAM F-51746); lower part of Grześkówki ridge, 1030 m a.s.l., *DgF*, on wood (coniferous tree), 49°16′31″N, 19°56′22″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54273); upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on wood (fallen log of coniferous tree), 49°16′17″N, 19°56′17″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54271); NW slopes of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood, 49°16′06″N, 19°56′24″E, 20 Aug. 2002 (KRAM F-54275); 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (ZAMU 4400); upper part of Dolina Białego valley, 1090 m a.s.l., spruce forest (planted), on wood, 49°15′51″N, 19°57′22″E, 16 May 2001 (KRAM F-54272); upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood (stump of *Fagus sylvatica*), 49°16′24″N, 19°57′07″E, 8 Nov. 2000 (KRAM F-54274).

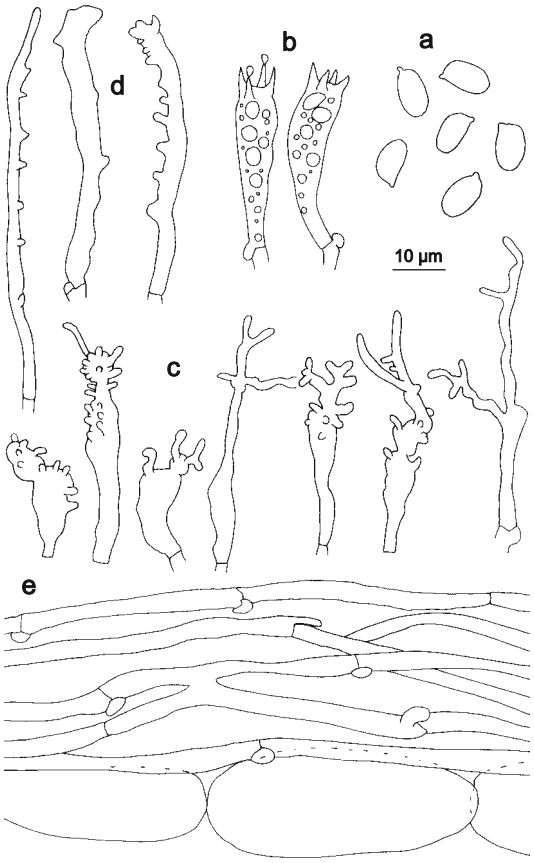

Fig. 139. *Mycena maculata* P. Karst.: a – spores, b – basidia, c – cheilocystidia, d – terminal elements of stipitipellis, e – pileipellis (KRAM F-54271).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood, 49°16′06″N, 19°56′24″E, 12 Oct. 2001; upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°57′07″E, 14 Oct. 2003; upper part of orographically left branch of Dolina ku Dziurze valley, 970 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°56′27″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus is known so far from the Slovak side of the massif: Belanské Tatry (Kubička 1963b; Svrček 1987) and West Tatras (Lizoň & Kautmanová 2004).

209. ***Mycena oregonensis*** A. H. Sm. Fig. 140

Pileus 2–6 mm broad, parabolic to campanulate with prominent papilla, bright yellow to orange-yellow, darker in center and in young specimens, fading with age; margin translucently striate when moist. Stem up to 30 × 0.5 mm, equal, concolorous with cap, pruinose, covered with yellow hairs at base. Lamellae decurrent, very distant, 6–9 reaching the stem, bright orange-yellow, especially in young specimens, edge darker. Flesh thin, yellow, smell and taste none. Yellow colors persist also on herbarium specimens. Spores 7.5–9.0 × 3.5–5.5 µm, ellipsoid, smooth. Basidia 20–25 × 5–6 µm, 1–2-spored. Cheilocystidia 30–49 × 7–13 µm, fusiform, lageniform, clavate or irregular, sometimes with a few outgrowths, with yellow content. Caulocystidia 25–50 × 7–16 µm, variously shaped: cylindrical, fusiform, clavate, flexuous, sometimes branched, with yellow content. Pileipellis made of hyphae covered with simple or branched excrescences. All hyphae without clamps.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on fallen needles of *Pinus mugo*, 49°15′53″N, 19°56′38″E, 7 July 2001 (KRAM F-51513); 22 Aug. 2001 (ZAMU 4251).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on needles of dwarf pine, 49°15′53″N, 19°56′38″E, 8 Sept. 2001; 21 Aug. 2002.

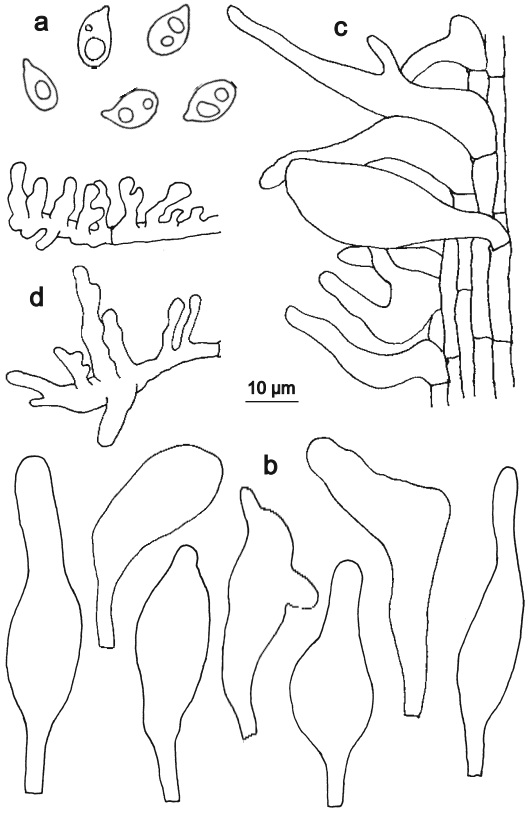

Fig. 140. *Mycena oregonensis* A. H. Sm.: a – spores, b – cheilocystidia, c – caulocystidia, d – hyphae of pileipellis (KRAM F-51513).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2003a, 2009).

NOTES. For colour illustration of specimen KRAM F-51513, see Ronikier (2003a: Fig. 1).

210. ***Mycena pura*** (Pers.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, among litter, 49°16′15″N, 19°56′47″E, 7 June 2003 (KRAM F-53379); Grześkówki ridge, 1020 m a.s.l., *DgF*, among litter, 49°16′30″N, 19°56′22″E, 7 June 2003 (KRAM F-53381); upper part of Dolina Spadowiec valley, orographically right side of valley, 1110 m a.s.l., *PP*, among litter, 49°16′18″N, 19°57′00″E, 7 June 2000 (KRAM F-39956); S slopes of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on litter, 49°15′50″N, 19°56′38″E, 20 June 2000 (KRAM F-39939); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 15 June 2001 (KRAM F-54267); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°57′17″E, 15 June 2001 (KRAM F-54268); Zawieszka ridge, 1300 m a.s.l., vegetation with *Dryas octopetala*, on litter, 49°15′58″N, 19°56′42″E, 20 Aug. 2002 (KRAM F-54269); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 21 Aug. 2002 (KRAM F-54270); summit area of Sarnia Skała massif, 1370 m a.s.l., *Pmc*, among litter, 49°15′57″N, 19°56′27″E, 22 June 2001 (ZAMU 4322).

FIELD OBSERVATIONS. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°57′17″E, 20 July 2000; lower part of Dolina Strążyska valley, orographically right side of valley, 950 m a.s.l., *DgF* (with *Pinus sylvestris*), on litter, 49°16′37″N, 19°56′17″E, 21 July 2000; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′36″N, 19°56′26″E, 21 July 2000; ridge between Dolina Białego valley and Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on litter, 49°16′35″N, 19°57′15″E, 20 Aug. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 20 Aug. 2001; 9 Sept. 2001; 13 Oct. 2001; 21 Aug. 2002; 14 Oct. 2003; 7 July 2001; upper part of Dolina Spadowiec valley, orographically left side of valley, 1150 m a.s.l., *DgF*, on litter, 49°16′19″N, 19°56′57″E, 20 Aug. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 20 Aug. 2001; upper part of Dolina Białego valley, orographically left branch of valley, SE slopes, 1100 m a.s.l., *DgF*, on litter, 49°16′00″N, 19°57′07″E, 21 Aug. 2001; upper part of Dolina Białego valley, ridge of Polana Białego meadow, 1180 m a.s.l., edge of the meadow, on litter, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 21 Aug. 2001; S slope of Sarnia Skała massif, at the top, 1350 m a.s.l., *Pmc*, on litter, 49°15′54″N, 19°56′30″E, 21 Aug. 2001; 8 Sept. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 22 Aug. 2001; 3 Oct. 2002; 16 June 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 22 Aug. 2001; 9 Sept. 2001; 3 Oct. 2002; 6 July 2001; upper part of Dolina ku Dziurze valley, vicinity of

caves, 1050 m a.s.l., *DgF*/*PP*, on litter, 49°16′18″N, 19°56′42″E, 9 Sept. 2001; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°56′30″E, 12 Oct. 2001; 21 Aug. 2001; 6 July 2001; upper part of Grześkówki ridge, 1070 m a.s.l., *DgF*, on litter, 49°16′22″N, 19°56′17″E, 12 Oct. 2001; Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′15″E, 12 Oct. 2001; 21 Aug. 2002; 3 Oct. 2002; 16 June 2001; 6 July 2001; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′36″N, 19°56′26″E, 21 Aug. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 7 June 2002; upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *DgF*, on litter, 49°16′25″N, 19°56′43″E, 7 June 2003; middle part of Dolina Spadowiec valley, orographically right side of valley, 1050 m a.s.l., *DgF*, on litter, 49°16′29″N, 19°57′07″E, 7 June 2003; upper part of Dolina ku Dziurze valley, orographically left side of valley, 1000 m a.s.l., *DgF*, on litter, 49°16′27″N, 19°56′27″E, 14 Oct. 2003; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1070 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′17″E, 15 June 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on litter, 49°16′39″N, 19°57′20″E, 15 June 2001; upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on litter, 49°16′23″N, 19°57′07″E, 15 June 2001; lower part of Grześkówki ridge, 950 m a.s.l., *DgF*, on litter, 49°16′41″N, 19°56′33″E, 16 June 2001; middle part of Dolina ku Dziurze valley, orographically left side of valley, 980 m a.s.l., *DgF*, on litter, 49°16′31″N, 19°56′27″E, 16 June 2001; middle part of Grześkówki ridge, 990 m a.s.l., *DgF*, on litter, 49°16′32″N, 19°56′19″E, 16 June 2001; NW slopes of the massif, 1190 m a.s.l., *Pmc*, on litter, 49°15′59″N, 19°56′17″E, 16 June 2001; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′17″E, 15 June 2001; upper part of Grześkówki ridge, 1090 m a.s.l., *DgF*, on litter, 49°16′19″N, 19°56′17″E, 7 July 2001; upper part of Dolina Białego valley, 1150 m a.s.l., spruce forest (planted), on litter, 49°15′51″N, 19°57′07″E, 4 July 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 960 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′22″E, 7 July 2001; upper part of Dolina ku Dziurze valley, 1150 m a.s.l., widfall, on litter, 49°16′11″N, 19°56′47″E, 7 July 2001; mouth of Dolina ku Dziurze valley, 920 m a.s.l., *DgF*, on litter, 49°16′44″N, 19°56′37″E, 6 July 2001; Grześkówki ridge, 1020 m a.s.l., *DgF*, on litter, 49°16′32″N, 19°56′23″E, 6 July 2001; mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°57′30″E, 7 July 2001; Grześkówki ridge, 960 m a.s.l., *DgF*, on litter, 49°16′34″N, 19°56′28″E, 6 July 2001; Grześkówki ridge, 1050 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′18″E, 6 July 2001; upper part of Grześkówki ridge, 1200 m a.s.l., *PP*, on litter, 49°16′05″N, 19°56′23″E, 6 July 2001.

Distribution in the Tatra Mts. The species is very common in the Tatra Mts (Nespiak 1960, 1962b, 1975; Kubička 1963b; Škubla 1998a, b; Lizoň & Kautmanová 2004). It has also been noted from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

211. ***Mycena renati*** Quél.

Specimens examined. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on fir log, 49°16′39″N, 19°56′30″E, 7 June 2003 (KRAM F-53367); Dolina Spadowiec valley, W slope, 1030 m a.s.l., *DgF*, on beech log, 49°16′30″N, 19°57′10″E, 7 June 2003 (KRAM F-53368); lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on wood (fallen trunk of ?*Fagus sylvatica*), 49°16′38″N, 19°56′30″E, 7 June 2000 (KRAM F-39957); upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°57′05″E, 20 June 2000 (KRAM F-39929); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on wood (of ?coniferous tree), 49°16′36″N, 19°57′15″E, 20 June 2000 (KRAM F-39946); Spaleniec ridge, E slope, 1000 m a.s.l., *DgF*, on wood, 49°16′35″N, 19°56′55″E, 20 June 2000 (KRAM F-39948); lower part of Dolina Białego valley, at hiking trail, 950 m a.s.l., *DgF*, on wood (fallen beech trunk), 49°16′31″N, 19°57′27″E, 1 June 2001 (KRAM F-51406); Grześkówki ridge, E slope, 1050 m a.s.l., *DgF*, on fallen trunk of *Fagus sylvatica*, 49°16′23.5″N, 19°56′27″E, 2 June 2001 (ZAMU 4238).

Field observations. Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 7 June 2003; upper part of Dolina Spadowiec valley, orographically right side of valley, 1080 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°57′07″E, 7 June 2000; 15 June 2001; middle part of Dolina Białego valley, 960 m a.s.l., *DgF*, on wood, 49°16′36″N, 19°57′27″E, 9 June 2000; lower part of Dolina Białego valley, 920 m a.s.l., *DgF*,

on wood, 49°16′40″N, 19°57′27″E, 20 June 2000; at Droga pod Reglami hiking trail, N slopes of Spaleniec ridge, 930 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°56′57″E, 2 June 2001; ridge between Dolina Białego valley and Dolina spadowiec valley, 1000 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°57′18″E, 15 June 2001; middle part of Dolina Białego valley, orographically left side of valley, at a path, 1050 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°57′22″E, 15 June 2001; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°56′47″E, 15 June 2001; lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′27″E, 16 June 2001; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°56′30″E, 16 June 2001; lower part of Grześkówki ridge, 1000 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′22″E, 16 June 2001; middle part of Grześkówki ridge, 1040 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°56′17″E, 16 June 2001; lower part of Dolina Białego valley, 940 m a.s.l., *DgF*, on wood, 49°16′36″N, 19°57′32″E, 21 Aug. 2001; upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°56′16″E, 10 June 2002; upper part of Grześkówki ridge, 1120 m a.s.l., *DgF*, on wood, 49°16′13″N, 19°56′15″E, 10 June 2002; upper part of Grześkówki ridge, 1150 m a.s.l., *DgF*, on wood, 49°16′11″N, 19°56′22″E, 7 June 2003; upper part of Dolina Białego valley, mouth of Siwarowy Żleb gully, 1000 m a.s.l., *DgF*, on wood, 49°16′11″N, 19°57′27″E, 11 June 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported only from the area of the Sarnia Skała masif, at one locality in the Dolina Strążyska valley (Domański 1997).

212. ***Mycena rosella*** (Fr.: Fr.) P. Kumm.

Fig. 141

Pileus 6–10 mm broad, first hemispherical with an umbo, then convex, pink, salmon-pink, translucently striate to center when moist. Lamellae distant, broadly adnate or slightly arcuately decurrent, pink, edge darker, purple-pink. Stem 20–60 × 1–2 mm, concolorous with pileus, with cream coarse mycelium at base. Flesh thin, cream-pinkish, smell and taste none. Spores 8–10 × 4.0–4.5 µm, cylindrical, narrowly dacryoid, smooth, amyloid. Basidia 21–28 × 5.5–6.5 µm, 4-spored. Cheilocystidia 21–42 × 7–14 µm, with red pigment, clavate, fusiform or cylindrical, in upper or middle part covered with scattered, small or slightly flattened excrescences. Pleurocystidia 35–48 × 10–14 µm, fusiform, smooth. Terminal elements of the cortical layer of the stipe 28–70 × 7–12 µm, cylindrical, clavate, with a few to several excrescences. Pileipellis built up of hyphae covered with many short excrescences and scattered long and branched, cylindrical outgrowths. Clamps present.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on litter,

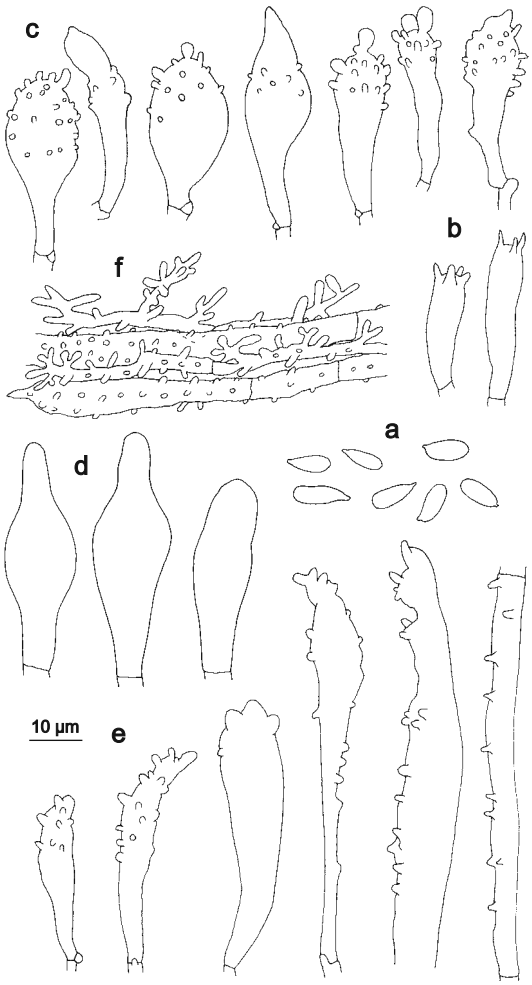

Fig. 141. *Mycena rosella* (Fr.: Fr.) P. Kumm.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – hyphae of stipitipellis, f – pileipellis (KRAM F-51583).

49°15′55″N, 19°56′32″E, 21 Aug. 2001 (KRAM F-51583); upper part of Dolina Białego valley, S edge of Polana Białego meadow, 1150 m a.s.l., spruce forest with beech, on litter, 49°15′51″N, 19°56′57″E, 21 Aug. 2001 (ZAMU 4244).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 8 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002; N slope of Sarnia Skała massif, at the top, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The species is fairly common in the Tatra Mts (Nespiak 1960, 1962b; Kubička 1963b; Anonymous 1968; Lisiewska 1987). It has also been noted in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

213. ***Mycena rubromarginata*** (Fr.: Fr.) P. Kumm. Fig. 142

Pileus 6–20 mm broad, first hemispherical, then convex, greyish-pink, translucently striate to center when moist. Lamellae distant, broad, broadly adnate, cream-pinkish, edge darker, purple-pink. Stem 20–60 × 1–2 mm, concolorous with pileus, with cream, coarse mycelium at base. Flesh cream-pinkish, smell none, taste not recorded. Spores 9–13 × 6–7 µm, broadly ellipsoid, smooth, amyloid. Basidia 25–32 × 7–10 µm, 4-spored. Cheilocystidia 35–50 × 8–14 µm, fusiform, some forked at apex, with red pigment. Terminal elements of stipitipellis cylindrical, covered with scattered, simple or branched, cylindrical excrescences. Pileipellis built up of hyphae densely covered with long and usually branched cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. Dolina ku Dziurze valley, at hiking trail, 960 m a.s.l., *DgF*, on stump, 49°16′24″N, 19°56′37″E, 7 Sept. 2003 (KRAM F-53365); mouth of Dolina Spadowiec valley, at Droga pod Reglami hiking trail, 920 m a.s.l., *DgF*, on wood (fallen trunk of *Picea abies*), 49°16′43″N, 19°57′07″E, 7 Aug. 2000 (KRAM F-50208); S slope of Sarnia Skała massif, at the summit, 1350 m a.s.l., *Pmc*, on wood, 49°15′54″N, 19°56′30″E, 16 June 2001 (KRAM F-54262); at Droga pod Reglami hiking trail, betwen Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, trunk of coniferous tree, 49°16′43″N, 19°57′17″E, 15 June 2001 (ZAMU 4245).

FIELD OBSERVATIONS. S slope of Sarnia Skała massif, at the top, 1350 m a.s.l., *Pmc*, on wood, 49°15′54″N, 19°56′30″E, 6 July 2001; 21 Aug. 2001; upper part of Dolina Białego valley, 1070 m a.s.l., spruce forest (planted), on wood, 49°15′51″N, 19°57′17″E, 4 July 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on wood, 49°15′57″N, 19°56′27″E, 4 July 2001; 21 Aug. 2001; 10 June 2002; 11 July 2002; 21 Aug. 2002; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*,

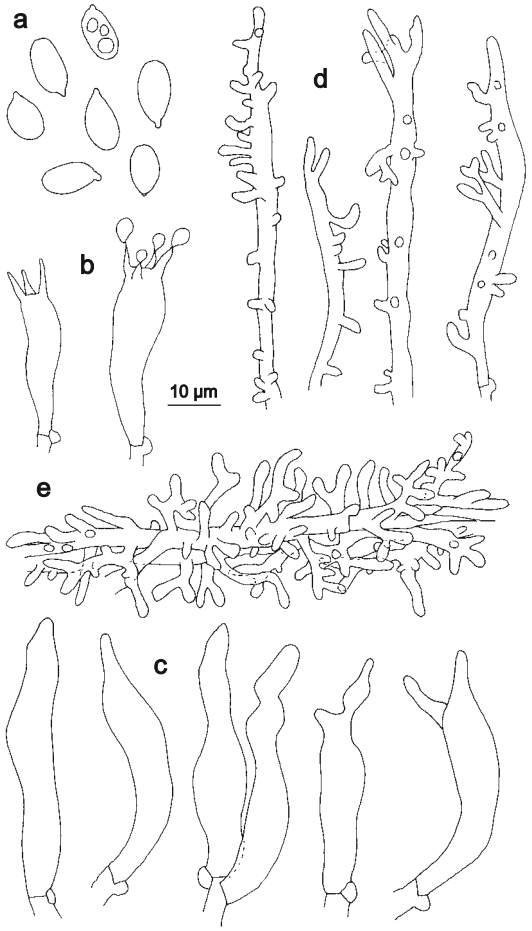

Fig. 142. *Mycena rubromarginata* (Fr.: Fr.) P. Kumm.: a – spores, b – basidia, c – cheilocystidia, d – terminal elements of stipitipellis, e – hyphae of pileipellis (KRAM F-54262).

on wood, 49°15′55″N, 19°56′32″E, 4 July 2001; upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°56′17″E, 6 July 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood, 49°16′06″N, 19°56′24″E, 6 July 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 20 Aug. 2001; N slopes of Grześkówki ridge, at Droga pod Reglami hiking trail, 920 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°56′27″E, 21 Aug. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on wood, 49°16′04″N, 19°56′18″E, 5 Sept. 2001; 21 Aug. 2002; 7 June 2003; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadoweic valley, 950 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°57′17″E, 9 Sept. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from one locality in 'Stara Roztoka', Polish High Tatras (Lisiewska 1987) and on more than 30 localities in Belanské Tatry (Kubička 1963b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

214. ***Mycena sanguinolenta*** (Alb. & Schwein.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on wood and litter, 49°16′38″N, 19°56′30″E, 20 June 2000 (KRAM F-39942); middle part of Dolina Spadowiec valley, orographically right side of valley, 1040 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°57′12″E, 20 June 2000 (KRAM F-39935); upper part of Dolina Białego valley, 1070 m a.s.l., *DgF*, on litter, 49°15′58″N, 19°57′17″E, 8 Sept. 2001 (KRAM F-51666); summit area of Sarnia Skała massif, 1375 m a.s.l., *Pmc*, on litter, 49°15′57.5″N, 19°56′27″E, 21 Aug. 2001 (ZAMU 4243).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter, 49°16′42″N, 19°57′27″E, 20 July 2000; 9 Sept. 2001; upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°57′07″E, 4 July 2000; lower part of Grześkówki ridge, 1030 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°56′22″E, 6 July 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′22″E, 7 July 2001; lower part of Grześkówki ridge, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′37″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 940 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′17″E, 9 Sept. 2001; at Droga pod Regalmi hiking trail, N slopes of Spaleniec ridge, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′57″E, 9 Sept. 2001; lower part of Dolina ku Dziurze valley, 940 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°56′37″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, vicinity of caves, 1100 m a.s.l., *PP*, on litter, 49°16′17″N, 19°56′47″E, 9 Sept. 2001; middle part of Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on litter, 49°16′31″N, 19°57′07″E, 9 Sept. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 21 Aug. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is known from nearly 30 localities in Belanské Tatry (Kubička 1963b; Škubla 1998a). Some localities from the Sarnia Skała massif have been published before (Ronikier 2002, 2009).

215. ***Mycena speirea*** (Fr.: Fr.) Gillet f. ***candida*** Robich Fig. 143

Pileus 2–6 mm broad, first hemispherical, then expanded with a small umbo or slightly depressed in center, white, slightly darker in center, cream, translucently striate when moist. Lamellae arcuately decurrent, distant, white, edge delicately ciliate. Stem 20–30 × 1 mm, white, with coarse, whitish, radial mycelium at base. Flesh white, smell and taste none. Spores 9–12 × 5–6.5 µm, ellipsoid, smooth, nonamyloid. Basidia 22–28 × 5–6 µm, 2-spored. Cheilocystidia 46–65 × 3.5–8.0 µm, cylindrical, irregular, simple or with a few outgrowths. Lamellar trama weakly dextrinoid. Caulocystidia 39–57 × 3.5–6.0 µm, cylindrical, blunt or acute at apex, with slightly thickened walls. Pileipellis built up of hyphae densely covered with simple or branched, cylindrical excrescences. Clamps absent.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on wood,

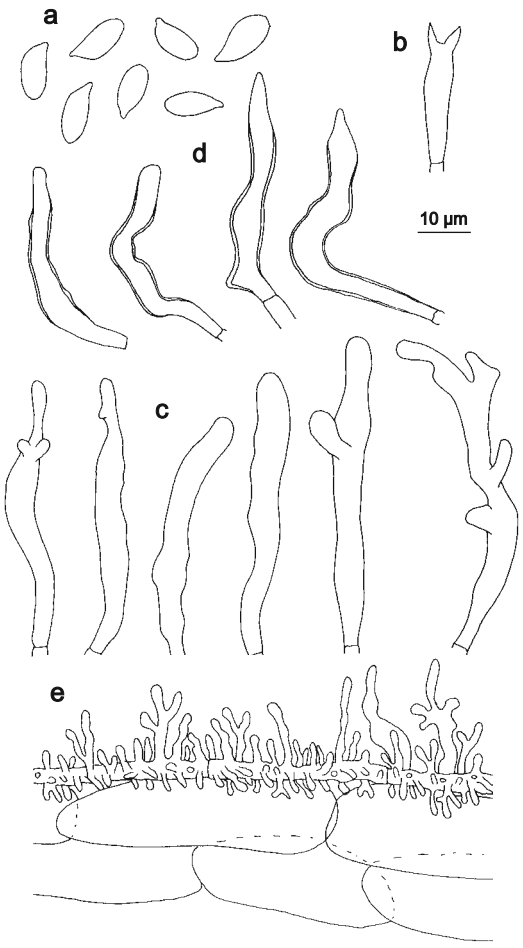

Fig. 143. *Mycena speirea* (Fr.: Fr.) Gillet f. *candida* Robich: a – spores, b – basidium, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-54071).

49°15′57″N, 19°56′27″E, 11 July 2002 (KRAM F-54071).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

216. ***Mycena stipata*** Maas Geest. & Schwöbel

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, orographically right side of valley, 1030 m a.s.l., *DgF*, on wood (trunk of coniferous tree), 49°16′30″N, 19°57′07″E, 15 May 2001 (KRAM F-54283).

DISTRIBUTION IN THE TATRA MTS. The fungus has often been reported from the Tatra Mts, under the name *Mycena alcalina* (Fr.) P. Kumm. (Kubicka 1962; Rudnicka-Jezierska 1965; Frejlak 1973; Nespiak 1975; Svrček 1987; Škubla 1998b). It has also been found in the peripheries of the Slovak West Tatras (Kuthan 1989b).

217. ***Mycena stylobates*** (Pers.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, E slopes, 940 m a.s.l., *DgF*, on litter (beech leaves), 49°16′43″N, 19°56′37″E, 4 July 2000 (KRAM F-50030); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°57′17″E, 4 July 2000 (KRAM F-50029); W slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on fallen needles, 49°16′03″N, 19°56′18″E, 22 Aug. 2001 (ZAMU 4239).

FIELD OBSERVATIONS. Ridge between Dolina Białego valley and Dolina spadowiec valley, 1020 m a.s.l., *DgF*, on litter, 49°16′36″N, 19°57′17″E, 20 July 2000; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 22 Aug. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 5 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the Slovak part of the Tatra Mts: the High Tatra and Belanské Tatry (Pilát 1926; Kubička 1963b; Svrček 1987).

218. ***Mycena viridimarginata*** P. Karst. Fig. 144

Pileus 10–20 mm broad, first ovoid, then conical, yellow-olivaceous-brown, translucently striate when moist and slightly sulcate, margin paler, yellow-olivaceous. Lamellae grey-white, broad, narrowly adnate, edge olivaceous-green, brownish-green, more rarely concolorous with lamella surface. Stem 40–100 × 1–2 mm, yellow-olivaceous, smooth, with grey-ochraceous mycelium at base. Flesh grey-olivaceous, smell nitrous, taste mild. Spores 8.5–10.5 × 6–7 µm, broadly ellipsoid, smooth, amyloid. Basidia 22–25 × 8–10 µm, 4-spored. Cheilocystidia 28–42 × 7–17 µm, cylindrical, ventricose, fusiform, rarely with a few flattened outgrowths. Lamellar trama

dextrinoid. Terminal elements of stipitipellis 43–71 × 6–10 µm, cylindrical, with scattered, low, broad excrescences. Pileipellis built up of hyphae densely covered with cylindrical excrescences. Clamps present.

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, on decayed wood, 49°16′17″N, 19°56′15″E, 7 June 2003 (KRAM F-53359); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on decayed wood (*Pinus mugo*), 49°15′57″N, 19°56′27″E, 11 June 2003 (KRAM F-53360); N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on wood, 49°15′55″N, 19°56′32″E, 11 June 2003 (KRAM F-53361); Grześkówki ridge, 1130 m a.s.l., *PP*, on wood, 49°16′11″N, 19°56′17″E, 7 June 2003 (KRAM F-53362); at Ścieżka nad Reglami hiking trail, about 50 m E below Czerwona Przełęcz pass, 1280 m a.s.l., *PP*, on wood, 49°15′46″N, 19°56′42″E, 11 June 2003 (KRAM F-53363); lower part of Dolina ku Dziurze valley, left side of valley, 910 m a.s.l., *DgF*, on trunk, 49°16′43″N, 19°56′42″E, 20 June 2000 (KRAM F-39927); upper part of Dolina Spadowiec valley, left side of valley, 1130 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°57′00″E, 20 June 2000 (KRAM F-39943); lower part of Dolina ku Dziurze valley, left side of valley, 960 m a.s.l., *DgF*, on wood, 49°16′40″N, 19°56′35″E, 4 July 2000 (KRAM F-50028); upper part of Dolina ku Dziurze valley, 1150 m a.s.l., *DgF/PP*, on wood, 49°16′11″N, 19°56′47″E, 4 July 2000 (KRAM F-54229); upper part of Dolina Białego valley, mouth of orographically left branch of valley, 1050 m a.s.l., *DgF*, on wood, 49°16′04″N, 19°57′17″E, 10 June 2002 (KRAM F-52305); upper part of Dolina Białego valley, at hiking trail in valley, 1030 m a.s.l., *DgF*, on wood, 49°16′00″N, 19°57′17″E, 7 June 2000 (KRAM F-54284); at Droga pod Reglami hiking trail, E from mouth of Dolina ku Dziurze valley, 910 m a.s.l., beech forest with *Acer pseudoplatanus* and *Picea abies*, on wood, 49°16′43″N, 19°56′47″E, 2 June 2001 (ZAMU 4247).

FIELD OBSERVATIONS. Dolina Spadowiec valley, right side of valley, 1070 m a.s.l., *DgF*, on trunk of coniferous tree, 49°16′24″N, 19°57′07″E, 15 June 2001; upper part of Dolina ku Dziurze valley, 1100 m a.s.l., *DgF*/*PP*, on wood, 49°16′17″N, 19°56′47″E, 7 July 2001; lower part of Dolina Białego valley, left side of valley, 980 m a.s.l., *DgF*, on wood, 49°16′40″N, 19°57′27″E, 7 July 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1030 m a.s.l., *DgF*, on wood of coniferous tree, 49°16′30″N, 19°57′17″E, 15 June 2001; Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 920 m a.s.l., *DgF*, on trunk of coniferous tree, 49°16′43″N, 19°57′17″E, 15 June 2001; Grześkówki ridge, 1180 m a.s.l., *PP*, on wood of coniferous tree, 49°16′08″N, 19°56′17″E, 15 June 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on wood of coniferous tree, 49°16′04″N, 19°56′18″E, 6 July 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on wood of coniferous tree, 49°16′06″N, 19°56′24″E, 6 July 2001; 7 June 2003; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on wood, 49°15′57″N, 19°56′27″E, 4 July 2001; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on wood, 49°15′55″N, 19°56′32″E, 7 July 2001; 11 July 2002; N slopes of Sarnia Skała massif, 1200 m a.s.l., *DgF*/*PP*, on wood, 49°16′04″N, 19°56′27″E, 6 July 2001; 7 June 2003; middle part of Dolina Białego valley, 1000 m a.s.l., *DgF*, on wood remnants, 49°16′12″N, 19°57′22″E, 10 June 2002; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′17″N, 19°56′54″E, 10 June 2002; Spaleniec ridge, 1150 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°56′55″E, 7 June 2003; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 7 June 2003; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′52″E, 7 June 2003; upper part of Dolina Białego valley, 1150 m a.s.l., spruce forest (planted), on wood, 49°15′48″N, 19°57′12″E, 11 June 2003; upper

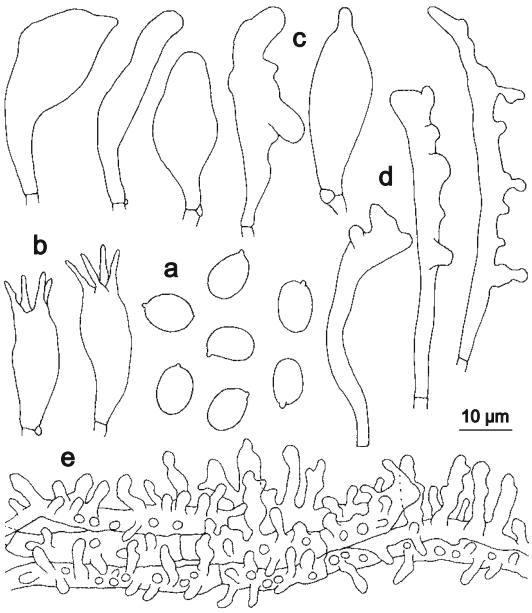

Fig. 144. *Mycena viridimarginata* P. Karst.: a – spores, b – basidia, c – cheilocystidia, d – terminal elements of stipitipellis, e – pileipellis (KRAM F-52305).

part of Dolina Spadowiec valley, orographically right side of valley, 1030 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°57′07″E, 16 Aug. 2003; upper part of Dolina Spadowiec valley, orographically right side of valley, 1150 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°57′07″E, 16 Aug. 2003; upper part of Dolina Spadowiec valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°57′07″E, 30 June 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from one locality in the Dolina Roztoki valley, Polish High Tatra (Lisiewska 1987) and from several localities at Slovak side, mostly in Belanské Tatry (Herink & Kubička 1955; Kubička 1957, 1963b; Svrček 1987). It has also been found in the peripheries of the Slovak West Tatras (Kuthan 1989a, b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

219. ***Mycena vulgaris*** (Pers.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 960 m a.s.l., *AP*, on litter (spruce needles), 49°16′40″N, 19°56′32″E, 14 Oct. 2003 (KRAM F-54240); NE ridge of Sarnia Skała massif, E slope of Zawieszka ridge, 1300 m a.s.l., *PP/Pmc*, on litter, 49°15′57″N, 19°56′47″E, 19 Sept. 2000 (KRAM F-50680); upper part of Grześkówki ridge, 1250 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′22″E, 14 Oct. 2003 (KRAM F-54241); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 22 Aug. 2001 (ZAMU 4242).

DISTRIBUTION IN THE TATRA MTS. The species is known from several localities in the Polish and Slovak Tatras (Pilát 1926; Dominik *et al*. 1954; Kubička 1963b; Rudnicka-Jezierska 1965; Frejlak 1973). It has also been reported from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

220. ***Mycena zephirus*** (Fr.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on wood remnants, 49°16′20″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-54239).

DISTRIBUTION IN THE TATRA MTS. The species is known from three localities in Belanské Tatry (Kubička 1963b).

Mycetinis Earle

221. ***Mycetinis alliaceus*** (Jacq.: Fr.) Earle

SPECIMENS EXAMINED. Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on pieces of wood buried in soil, 49°16′30″N, 19°57′07″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-55454); Grześkówki ridge, 1020 m a.s.l., *DgF*, on pieces of wood buried in soil, 49°16′30″N, 19°56′22″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53355); lower part of Dolina ku Dziurze valley, at hiking trail, 950 m a.s.l., *DgF*, on small twig, 49°16′33″N, 19°56′31″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53354); lower part of Grześkówki ridge, E slope, 960 m a.s.l., *DgF*, on pieces of wood buried in soil, 49°16′40″N, 19°56′32″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53353); Dolina ku Dziurze valley, at a stream, 910 m a.s.l., deciduous trees: *Acer pseudoplatanus*, *Fraxinus excelsior*, on wood remnants, 49°16′37″N, 19°56′37″E, 9 Sept. 2003 (KRAM F-53808); Spaleniec ridge, 1000 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′57″E, 27 Sept. 1999 (KRAM F-50053); Grześkówki ridge, 960 m a.s.l., *DgF*, on wood of *Fagus*, 49°16′35″N, 19°56′27″E, 20 June 2000 (KRAM F-39931); E slope of Grześkówki ridge, 1030 m a.s.l., *DgF*, on wood remnants, 49°16′27″N, 19°56′22″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-53809); ridge between Dolina Białego valley and Dolina Spadowiec valley, 1060 m a.s.l., *DgF*, on wood, 49°16′23.5″N, 19°57′07″E, 15 June 2001 (ZAMU 4254).

FIELD OBSERVATIONS. Grześkówki ridge, 960 m a.s.l., *DgF*, on wood of Fagus, 49°16′35″N, 19°56′27″E, 6 July 2001; Dolina ku Dziurze valley, orographicaly left side of valley, 940 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′32″E, 9 Sept. 2003; Grześkówki ridge, 1070 m a.s.l., *DgF*, on wood, 49°16′22″N, 19°56′17″E, 9 Sept. 2003; Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′27″E, 16 June 2001; Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′32″N, 19°56′27″E, 22 Aug. 2001; Grześkówki ridge, 1070 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°56′17″E, 5 Sept. 2001; upper part of Dolina Białego valley, at hiking trail, 1050 m a.s.l., *DgF*, on wood, 49°15′58″N, 19°57′17″E, 8 Sept. 2001; upper part of Dolina Białego valley, at hiking trail, 1080 m a.s.l., *DgF*, on wood, 49°15′51″N, 19°57′17″E, 8 Sept. 2001; Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°57′07″E, 9 Sept. 2001; Grześkówki ridge, 1020 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′22″E, 21 Aug. 2002; Grześkówki ridge, 1120 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°56′17″E, 21 Aug. 2002; 3 Oct. 2002;

Grześkówki ridge, 1070 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°56′17″E, 3 Oct. 2002; Spaleniec ridge, 1150 m a.s.l., *DgF*, on wood, 49°16′24″N, 19°56′52″E, no date; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the area of the Sarnia Skała massif, the Dolina Strążyska valley (Nespiak 1962c, as *Marasmius alliaceus*). It has also been noted in the Dolina Siedmich Prameňov valley, Belanské Tatry [Kubička 1964, as *Marasmius alliaceus* (Jacq. *ex* Fr.) Fr.]. Wojewoda (1996) mentions the fungus from Polish Tatra, without locality.

Panellus P. Karst.

222. ***Panellus stypticus*** (Bull.: Fr.) P. Karst.

SPECIMENS EXAMINED. Dolina Spadowiec valley, E slope of Spaleniec ridge, 1080 m a.s.l., *DgF*, on wood (branch of *Fagus sylvatica*), 49°16′30″N, 19°56′57″E, 1 Dec. 2000 (KRAM F-50460, ZAMU 4356); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on beech wood, 49°16′42″N, 19°57′27″E, 9 Sept. 2001 (KRAM F-51707).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 3 Oct. 2002; 9 Sept. 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported by Pilát (1926), as *Panus stypticus* Bull. from the Slovak side of the massif.

Parasola Redhead, Vilgalys & Hopple

223. ***Parasola conopilus*** (Fr.) Örstadius & E. Larss. Fig. 145

Psathyrella conopilea (Fr.: Fr.) Ulbr.

Pileus 20–30 mm broad, 15–25 mm high, broadly conical, hygrophanous, brown (5E4, 5E5, 5F4, 5F5), translucently striate when moist, pallescent on drying to beige (4B3, 4B4), without red tints when dry, surface smooth. Veil absent. Lamellae distant, 3 mm broad, narrowly adnate, very dark brown to black, edge white ciliate. Stem 70–130 × 3 mm, clavate, base swollen up to 0.5 cm, cream (4A2), silky smooth, finely pruinose at apex. Context very thin, cream, smell and taste none. Spores 15–17 × 8–9 µm ellipsoid, smooth, thick-walled, with distinct central germ pore 2.0–2.5(–3.0)

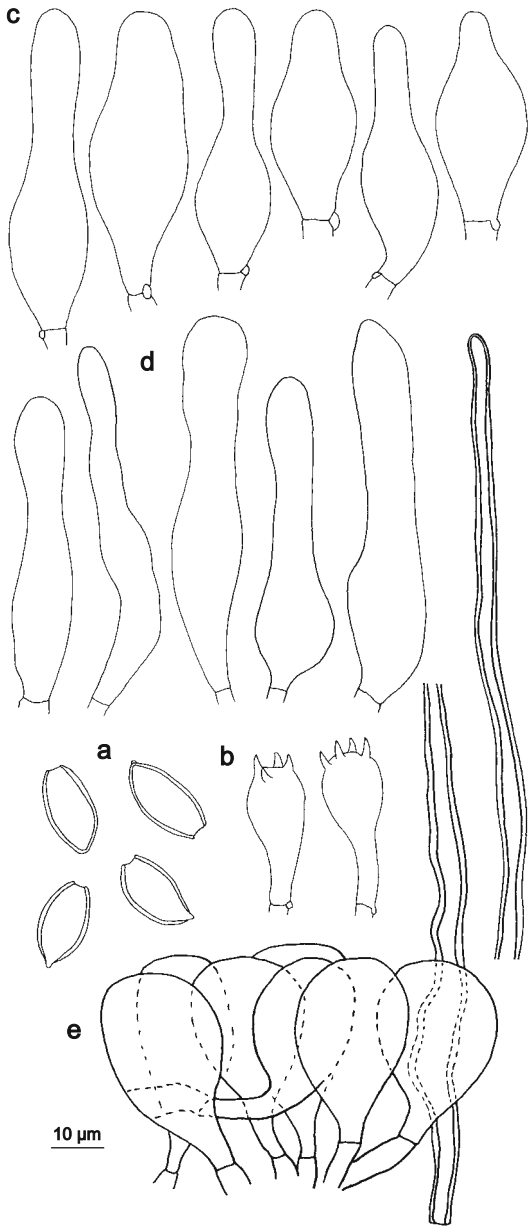

Fig. 145. *Parasola conopilus* (Fr.) Örstadius & E. Larss.: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-54148).

μm in diameter, grey-olive-brown in 5% KOH, warm brown in 10% NH_4OH. Basidia 26–30 × 11–12 μm, broadly clavate, 4-spored and clamped. Cheilocystidia 35–60 × 11–20 μm, lageniform, utriform, ventricose, hyaline, thin-walled, numerous. Pleurocystidia none. Caulocystidia present at stem apex, 37–72 × 10–20 μm, cylindrical to lageniform with rounded and often slightly broadened apex. Pileipellis a hymeniderm, built up of clavate cells 27–45 × 20–26 μm; red-brown, thick-walled setae 100–300 μm long present in pileipellis. Hymenophoral trama pale yellow-brown in 10% NH_4OH. Clamps present.

SPECIMENS EXAMINED. Mouth of Dolina Strążyska valley, orographically right side of valley, N slopes of Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′32″E, 14 Oct. 2003 (KRAM F-54148).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before [Ronikier 2007, as *Psathyrella conopilus* (Fr.: Fr.) A. Pearson & Dennis].

NOTES. For colour illustration of specimen KRAM F-54148, see Ronikier (2007: Fig. 3).

224. ***Parasola plicatilis*** (Curtis: Fr.) Redhead, Vilgalys & Hopple

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 20 Aug. 2002 (KRAM F-54341).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Pholiota P. Kumm.

225. ***Pholiota flammans*** (Batsch: Fr.) P. Kumm.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, 1250 m a.s.l., windthrow (with *Sorbus aucuparia*), on wood, 49°16′00″N, 19°56′37″E, 24 Sept. 1999 (KRAM F-50498); Grześkówki ridge, 950 m a.s.l., *DgF*, on wood (strongly decayed coniferous wood), 49°16′38″N, 19°56′32″E, 10 Sept. 2003 (KRAM F-54063); Grześkówki ridge, 980 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°56′27″E, 10 Sept. 2003 (KRAM F-54064); Grześkówki ridge, 980 m a.s.l., *DgF*, on wood, 49°16′36″N, 19°56′27″E, 5 Sept. 2001 (ZAMU 4296).

FIELD OBSERVATIONS. Mouth of Dolina Białego valley, orographically left side of valley, 950 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°57′27″E, 20 Aug. 2001; middle part of Dolina ku Dziurze valley, 940 m a.s.l., *DgF*, on wood, 49°16′33″N, 19°56′37″E, 9 Sept. 2001; E slope of Grześkówki ridge, orographically left side of the left branch of Dolina ku Dziurze valley, 980 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°56′27″E, 21 Aug. 2002; Grześkówki ridge, 1080 m a.s.l., *DgF*/*PP*, on wood, 49°16′24″N, 19°56′17″E, 21 Aug. 2002; upper part of Spaleniec ridge, 1170 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°56′52″E, 16 Aug. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported several times from the Tatra Mts (Pilát 1926; Dominik & Pachlewski 1956; Svrček 1987; Škubla 1998a, b; Holec 2001). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989a, b).

226. ***Pholiota lenta*** (Pers.: Fr.) Singer

SPECIMENS EXAMINED. Grześkówki ridge, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′27″E, 3 Oct. 2002 (KRAM F-54065); middle part of Dolina Spadowiec valley, orographically left side of valley, E slope od Spaleniec ridge, 1080 m a.s.l., *DgF*, on wood (beech twigs), 49°16′30″N, 19°56′57″E, 8 Nov. 2000 (KRAM F-50389); lower part of Dolina Spadowiec valley, at a stream, 970 m a.s.l., *DgF*, on soil and beech twig, 49°16′37″N, 19°57′07″E, 1 Dec. 2000 (KRAM F-50464); Dolina ku Dziurze valley, mouth of orographically left branch of valley, E slope of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 24 Nov. 2000 (KRAM F-50956); a ridge between Dolina Białego valley and Dolina Spadowiec valley, 1040 m a.s.l., *DgF*, on wood (beech twig), 49°16′30″N, 19°57′17″E, 8 Nov. 2000 (KRAM F-50387); Grześkówki ridge, 1070 m a.s.l., *DgF*, on litter, 49°16′24″N, 19°56′17″E, 14 Oct. 2003 (KRAM F-64066); Grześkówki ridge, 980 m a.s.l., *DgF*, on litter, 49°16′37″N, 19°56′27″E, 14 Oct. 2003 (ZAMU 4383).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, orographically left side of valley, 1000 m a.s.l., *DgF*, on litter, 49°16′40″N, 19°57′22″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus is known from two localities in the Slovak West Tatras (Lizoň & Kautmanová 2004) and from Belanské Tatry (Svrček 1987).

227. ***Pholiota limonella*** (Peck) Sacc. Fig. 146

Pileus 50–120 mm broad, first hemispherical to campanulate, then convex to expanded with broad, flat umbo, golden-yellow, ochraceous-yellow, covered with a thick layer of slime and rusty-brown, scattered appressed scales, more rarely without scales when they are washed out by rain, surface shinning when dry. Lamellae crowded, broad, narrowly to broadly adnate, yellow, then yellow-brown, edge delicately yellow ciliate. Stem 50–100 × 4–10 mm, cylindrical or slightly broadened at base, pale ochraceous-yellow at apex, rusty-orange-yellow in lower part, covered with appressed or slightly erect scales. In young basidiomata yellow cortina visible at edge of pileus, then disappearing. Flesh yellow in pileus, yellow-brown in stem, smell pleasant, taste mild. Spore print chocolate-brown. Spores 7–10 × 4.1–5.3(–5.5) µm broadly ellipsoid, slightly phaseoliform, smooth, thick-walled, with distinct grem pore about 1 µm broad, rusty-brown in KOH. Basidia 25–32 × 7–8 µm, 4-spored, clamped. Cheilocystidia (leptocystidia) 23–36 × 6.0–8.5 µm, cylindrical, narrowly clavate, hyaline, or rarely with yellowish pigment, numerous. Chrysocystidia 43–50 × 9–14 µm, fusiform, present on lamellar edge and surface, rusty-brown in KOH, scattered to numerous. Pileipellis an ixocutis, built up of hyphae sometimes containing rusty-yellow pigment. Clamps numerous.

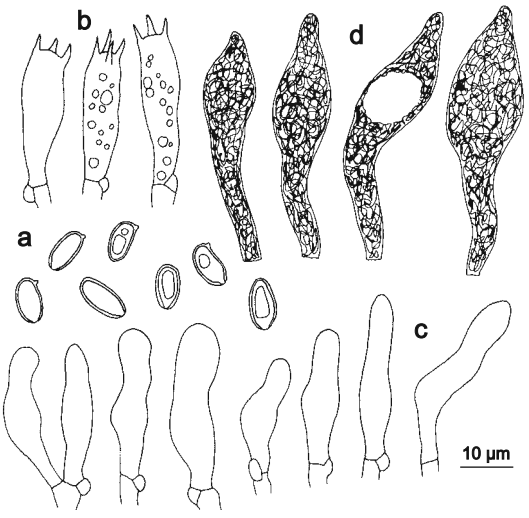

Fig. 146. *Pholiota limonella* (Peck) Sacc.: a – spores, b – basidia, c – cheilocystidia, d – chrysocystidia (KRAM F-54069).

SPECIMENS EXAMINED. Grześkówki ridge, 970 m a.s.l., *DgF*, on wood (standing, living trunk of *Abies alba*, about 5 m above ground), 49°16′40″N, 19°56′27″E, 3 Oct. 2002 (KRAM F-54068); middle part of orographically left branch of Dolina ku Dziurze valley, 960 m a.s.l., *DgF*, on wood (on fallen, not yet decayed trunk of *Abies alba*), 49°16′30″N, 19°56′27″E, 14 Oct. 2003 (KRAM F-54069, ZAMU 4386); lower part of Dolina ku Dziurze valley, orographically right side of valley, 960 m a.s.l., *DgF*, on wood (trunk of ?*Fagus sylvatica*), 49°16′33″N, 19°56′37″E, 24 Sept. 1999 (KRAM F-54067).

DISTRIBUTION IN THE TATRA MTS. The species is knows from one locality in the Osobita massif, Slovak West Tatras (Holec 2001).

228. ***Pholiota scamba*** (Fr.: Fr.) M. M. Moser Fig. 147

Pileus 5–15 mm broad, first hemispherical, then convex, ochraceous, ochraceous-beige, center slightly darker ochraceous-brownish, surface slimy when moist, smooth and somewhat woolly when dry, not hygrophanous, not translucently striate. Lamellae crowded, broad, broadly adnate, whitish-ochraceous, then greyish-brownish, with a slight olivaceous tint, edge yellow ciliate. Stem 10–15 × 1–2 mm, cream-beige, then ochraceous-brown, with whitish rhizomorphs at base. In young specimens, pale beige cortina present, quickly disappearing. Flesh thin, whitish in pileus, brownish in stem, smell and taste none. Spores 8–11 × 5–6.5 µm, broadly ellipsoid, slightly phaseoliform, smooth, thick-walled, with a distinct germ pore about 1 µm broad, rusty-brown in KOH. Basidia 21–26 × 7–8 µm, 4-spored, clamped. Cheilocystidia 28–32 × 10–18 µm, broadly lageniform, fusiform, ventricose, often with broadened head-like apex, 7–10 µm broad, hyaline, or rarely with yellowish pigment, thin-walled or slightly thick-walled, some incrusted at apex. Pleurocystidia similar to cheilocystidia, numerous. Chrysocystidia none. Pileipellis an ixocutis to ixotrichoderm, built up of incrusted hyphae. Clamps numerous.

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on wood

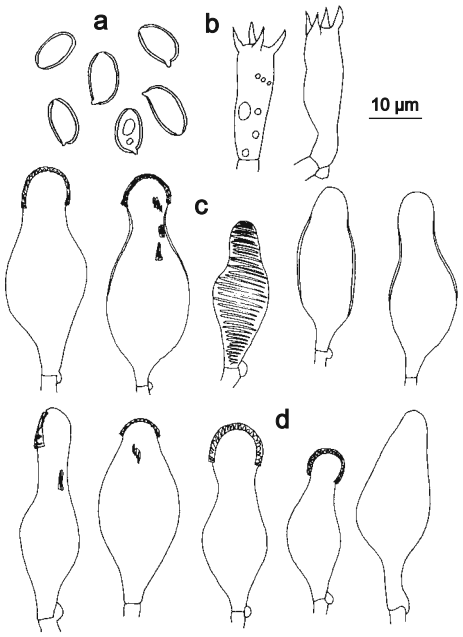

Fig. 147. *Pholiota scamba* (Fr.: Fr.) M. M. Moser: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia (KRAM F-51759).

(branch of *Pinus mugo*), 49°15′55″N, 19°56′32″E, 13 Oct. 2001 (KRAM F-51759).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, close to the top, 1300 m a.s.l., *Pmc*, on wood, 49°15′59″N, 19°56′42″E, 13 Oct. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the High and West Tatras [Nespiak 1960, 1962c, 1966; Frejlak 1973, as *Pholiota* '*scabra*' Fr. (M. M. Moser); Wojewoda 1996; Holec 2001; Lizoň & Kautmanová 2004] and from Belanské Tatry (Svrček 1987). It has also been noted in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b). Localities from the Sarnia Skała massif have been published before (Ronikier 2009).

229. ***Pholiota squarrosa*** (Weigel: Fr.) P. Kumm.

SPECIMENS EXAMINED. Upper part of Dolina Strążyska valley, at Ścieżka nad Reglami hiking trail, about 150 m SE from Polana Strążyska meadow, 1100 m a.s.l., spruce forest with young beech trees, on wood (at base of dead, standing trunk of *Picea abies*), 49°15′45″N, 19°55′57″E, 5 Sept. 2000 (KRAM F-50595); N slopes of Grześkówki ridge, 930 m a.s.l., *DgF*, on wood (at dead, standing trunk of *Picea abies*), 49°16′43″N, 19°56′32″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-54070).

DISTRIBUTION IN THE TATRA MTS. The species has been reported on three localities in the West Tatras: in the Dolina Kościeliska valley and the Wantule forest at Polish side and in the Červené Vrchy massif at Slovak side (Rudnicka-Jezierska 1965; Anonymous 1968; Škubla 1998b) as well as from Belanské Tatry (Svrček 1987).

Pholiotina Fayod

230. ***Pholiotina filaris*** (Fr.) Singer

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on soil, 49°15′56″N, 19°56′30″E, 22 Aug. 2001 (KRAM F-52862).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

Phyllotopsis Singer

231. ***Phyllotopsis nidulans*** (Pers.: Fr.) Singer
Fig. 148

Pileus 30–80 mm broad, spathulate, ochraceous-orange, surface woolly-scaly. Lamellae medium spaced, narrow, up to 3 mm broad, bright yellow-orange. Stem rudimentary or absent, pileus dorsally attached to the substrate. Flesh yellowish, elastic, smell unpleasant, taste mild. Spores 5–7 × 2–3 µm, allantoid, hyaline, nonamyloid. Basidia 29–35 × 3.5–4.0 µm, 4-spored, Cheilocystidia 21–28 × 3.5–5.0 µm, cylindrical, flexuous. Pileipellis irregular, built up of thick-walled hyphae. Clamps numerous.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 940 m a.s.l., *DgF*, on wood (dead, standing trunk of coniferous tree, ?*Picea abies*), 49°16′42″N, 19°57′19″E, 3 Oct. 2002, *leg. A. Ronikier & M. Ronikier* (KRAM F-54081); at Ścieżka nad Reglami hiking trail, between Dolina Strążyska valley and Czerwona Przełęcz pass, 1120 m a.s.l., *PP*, on coniferous log, 49°15′45″N, 19°56′07″E, 3 Oct. 2002 (ZAMU 4339).

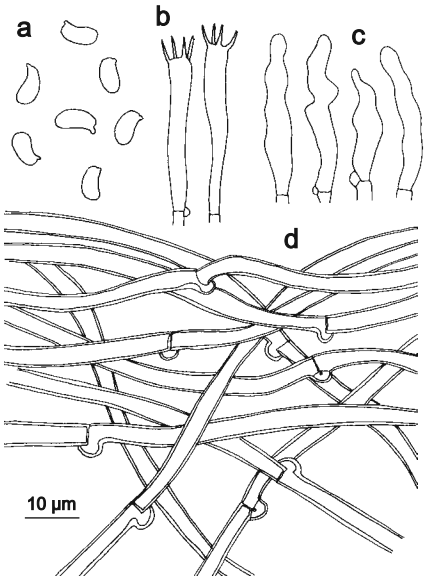

Fig. 148. *Phyllotopsis nidulans* (Pers.: Fr.) Singer: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-54081).

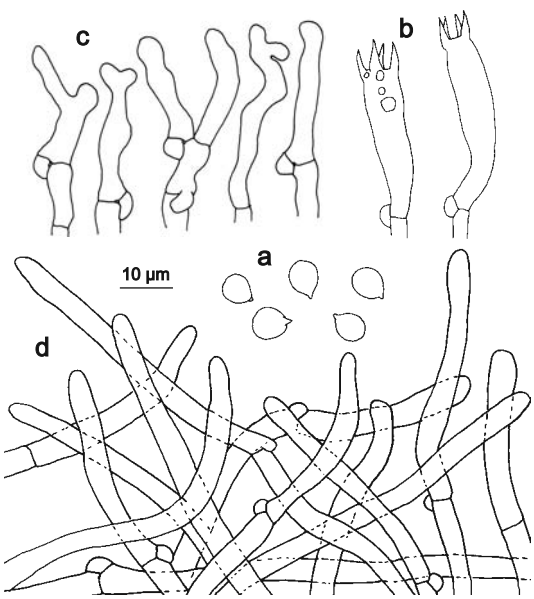

Fig. 149. *Pleurocybella porrigens* (Pers.: Fr.) Singer: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-54149).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Pleurocybella Singer

232. ***Pleurocybella porrigens*** (Pers.: Fr.) Singer
Fig. 149

Pileus 10–30 mm broad, spathulate, ivory-white, margin involute, surface smooth. Lamellae medium spaced, narrow, white, sometimes anastomosing, edge smooth. Stem absent, pileus dorsally attached to the substrate. Flesh white, smell and taste not recorded. Spores 5.0–6.5 × 5–6 µm, globose to subglobose, smooth, nonamyloid. Basidia 28–35 × 6.5–7.0 µm, 4-spored, Cheilocystidia 22–33 × 4–5 µm, cylindrical, flexuous. Pileipellis a trichoderm, built up of thin-walled hyphae. Clamps numerous.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 1020 m a.s.l., *DgF*, on wood (fallen log), 49°16′30″N, 19°56′22″E, 16 Sept. 2004, *leg. A. Ronikier & M. Ronikier* (KRAM F-54149).

DISTRIBUTION IN THE TATRA MTS. The fungus is known from one locality in the Zadná Tichá Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004).

Pleurotus (Fr.) P. Kumm.

233. ***Pleurotus ostreatus*** (Jacq.: Fr.) P. Kumm.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, between Dolina Strążyska valley and Czerwona Przełęcz pass, 1180 m a.s.l., spruce forest, on wood, 49°15′45″N, 19°56′17″E, 5 Sept. 2000 (KRAM F-50592).

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in the Dolina Lejowa valley, Polish West Tatras (Rudnicka-Jezierska 1965).

Pluteus Fr.

234. ***Pluteus atromarginatus*** (Konrad) Kühner

SPECIMENS EXAMINED. No herbarium specimen preserved.

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′42″N, 19°57′27″E, 11 July 2000.

DISTRIBUTION IN THE TATRA MTS. The fungus has been found on three localities in Belanské Tatry and their peripheries (Škubla 1998a).

235. ***Pluteus cervinus*** (Schaeff.) P. Kumm.

SPECIMENS EXAMINED. Lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′27″E, 20 June 2000 (KRAM F-50081); middle part of Dolina Spadowiec valley, orographically right side of valley, at a path, 1030 m a.s.l., *DgF*, on wood (?coniferous), 49°16′30″N, 19°57′11″E, 16 Aug. 2003 (KRAM F-54184); middle part of Dolina Spadowiec valley, orographically right side of valley, at a path, 990 m a.s.l., *DgF*, on wood, 49°16′33″N, 19°57′13″E, 20 June 2000 (KRAM F-50086); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on wood, 49°16′26″N, 19°57′08″E, 16 Aug. 2003 (KRAM F-54185); Grześkówki ridge, 1070 m a.s.l., *DgF*, on wood, 49°16′23″N, 19°56′17″E, 6 July 2001 (ZAMU 4265).

DISTRIBUTION IN THE TATRA MTS. The species is known from a few localities at Polish and Slovak sides of the border (Pilát 1926; Dominik & Pachlewski 1956; Rudnicka-Jezierska 1965).

236. ***Pluteus luctuosus*** Boud. Fig. 150

Pileus 20–30 mm broad, conical, then expanded, brown, margin slightly paler, strongly veined-rugulose in center, slightly striate at margin. Lamellae medium spaced, broad, free, pinkish, edge brown at least at pileus margin. Stem 50–60 × 4–5 mm cylindrical, whitish-cream, finely fibrillose. Flesh thin, whitish, smell and taste none. Spores 6–8 × 5–6 µm broadly ellipsoid, smooth, slightly thick-walled, nonamyloid. Basidia 25–28 × 7.0–8.5 µm, 4-spored. Cheilocystidia 40–80 × 10–20 µm, fusiform-lageniform, ventricose, utriform, some with brown intracellular pigment, numerous. Pleurocystidia 40–80 × 10–18 µm, lageniform, scattered. Pileipellis a hymeniderm, built up of broadly clavate to subglobose cells with brown, intracellular pigment. Clamps lacking.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, NW slope of Zawieszka ridge, 1210 m a.s.l., *DgF/PP*, on wood, 49°16′04″N, 19°56′47″E, 11 July 2000 (KRAM F-50039); upper part of Dolina ku Dziurze valley, NW slopes of NE ridge of Sarnia Skała massif, 1250 m a.s.l., *DgF/PP*, on wood, 49°16′11″N, 19°56′57″E, 11 July 2000 (KRAM F-50040).

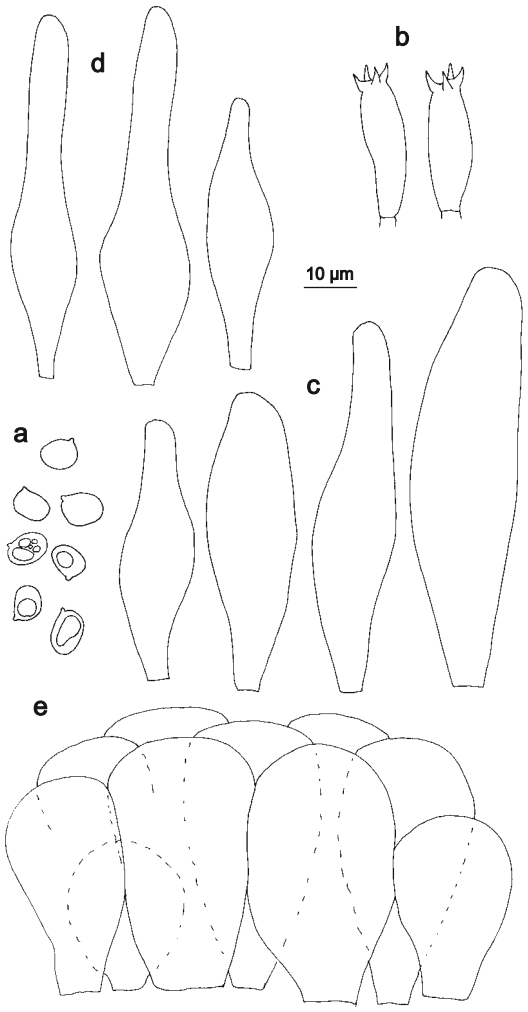

Fig. 150. *Pluteus luctuosus* Boud.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – pileipellis (KRAM F-50039).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

237. ***Pluteus pouzarianus*** Singer

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1080 m a.s.l., *DgF*, on wood (coniferous), 49°16′22″N, 19°56′17″E, 3 Oct. 2002 (KRAM

F-54186); lower part of Dolina ku Dziurze valley, 920 m a.s.l., *DgF*, on wood, 49°16′37″N, 19°56′37″E, 9 Sept. 2003 (KRAM F-54214); Dolina ku Dziurze valley, orographically left branch of valley, left side of valley, 1050 m a.s.l., *DgF*, on wood (beech trunk), 49°16′24″N, 19°56′22″E, 2 June 2001 (KRAM F-51420); lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°56′30″E, 20 Aug. 2002 (ZAMU 4345).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from Belaské Tatry and from the peripheries of the Slovak West Tatras (Svrček 1987; Kuthan 1989b; Škubla 1998a).

238. ***Pluteus*** cf. ***primus*** Bonnard Fig. 151

Pileus 70 mm broad, campanulate, then expanded, brown, slightly darker in center, surface smooth, shining. Lamellae rather distant, broad, free, pinkish, edge slightly white ciliate. Stem 60 × 5 mm cylindrical, slightly widened at base, whitish. Flesh whitish, smell none, taste not recorded. Spores 7–9 × 5.0–6.5 µm broadly ellipsoid, smooth, slightly thick-walled, nonamyloid. Basidia 20–28 × 8–10 µm, 4-spored, often clamped. Cheilocystidia 65–120 × 15–20 µm, narrowly clavate, numerous. Pleurocystidia 50–80 × 10–25 µm, fusiform-lageniform, thick-walled, with (2–)3–5 hooks at apex, numerous. Pileipellis a cutis, built up of cylindrical hyphae. Clamps present at almost every septa, in pileipellis, at cystidia bases and also often at basidia.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 950 m a.s.l., *DgF*, close to coniferous trunk, 49°16′43″N, 19°57′17″E, 10 Sept. 2003 (KRAM F-54183); middle part of Dolina Spadowiec valley, orographically right side of valley, on path, 1030 m a.s.l., *DgF*, on wood, 49°16′30″N, 19°57′07″E, 11 July 2000 (KRAM F-50041).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

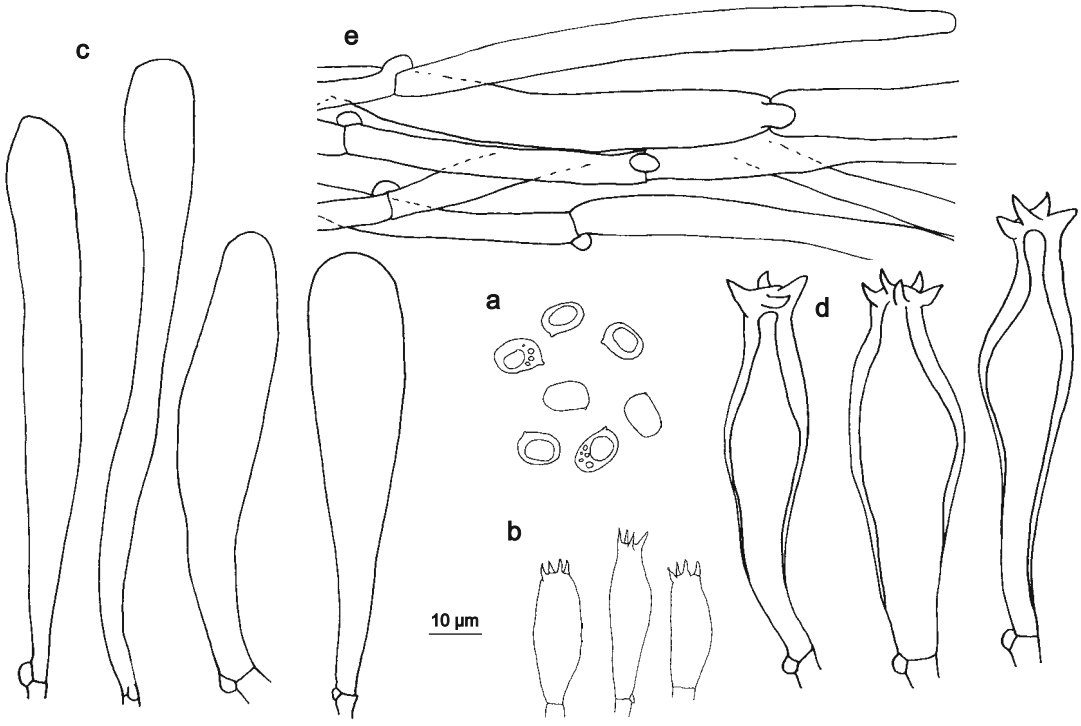

Fig. 151. *Pluteus* cf. *primus* Bonnard: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – pileipellis (KRAM F-54183).

Porphyrellus E.-J. Gilbert

239. ***Porphyrellus porphyrosporus*** (Fr.) J.-E. Gilbert Fig. 152

Pileus 50–70 mm broad, convex, grey-olivaceous-brown, surface velvety. Tubes long, pores small, round, 0.5–1.0 mm broad, grey-brown, olivaceous-brown, free, staining green on bruising. Stem 60–80 × 5–10 mm, cylindrical or narrowly clavate, surface smooth, slightly velvety. Flesh whitish, changing into green in pileus and into grey in stem when cut, smell pleasant, fungoid, taste acidic. Spores 10–15 × 5–6 µm, cylindrical-fusiform, smooth, yellow-brown in transmitted light, thick-walled, walls 0.5–1 µm thick. Basidia 43–46 × 11–14 µm, 4-spored. Cheilocystidia and pleurocystidia 33–58 × 8–14 µm, cylindrical to fusiform. Pileipellis a trichoderm built up of cylindrical hyphae, terminal elements tapering at apex. Clamps very small.

SPECIMENS EXAMINED. Dolina ku Dziurze valley, orographicaly left branch of valley, 960 m a.s.l., *DgF/?AP*, on soil, 49°16′30″N, 19°56′30″E, 22 Aug. 2000, *leg. A. Ronikier & M. Ronikier* (KRAM F-50559); E slope of Igla mount, at hiking trail, 1130 m a.s.l., spruce forest, on soil, 49°15′44″N, 19°57′12″E, 22 Aug. 2001 (ZAMU 4283).

FIELD OBSERVATIONS. Mouth of Dolina Strążyska valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 22 Aug. 2001; 21 Aug. 2002; mouth of Dolina Spadowiec valley, orographicaly left side of valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 5 Sept. 2001; Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′32″E, 21 Aug. 2002; Dolina ku Dziurze valley, upper part of orographicaly left branch of valley, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′27″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is quite common in the Tatra Mts [Pilát 1926, as *Boletus porphyrosporus* Fr.; Dominik & Nespiak 1953, as *Boletus porphyrosporus* Fr.; Dominik & Pachlewski 1956, as *Bolerus porphyrosporus* Fr. and *B. pseudoscaber* Kbch.; Kubička 1957, as *Boletus porphyrosporus* Fr.; Anonymous 1968; Skirgiełło 1972, as *Porphyrellus pseudoscaber* (Secr.) Singer; Frejlak 1973; Dermek 1977, as *Porphyrellus pseudoscaber* (Secr.) Singer; Svrček 1987, as *Porphyrellus pseudoscaber*; Škubla 1998a, b, as *Porphyrellus pseudoscaber* (Secr.) Singer].

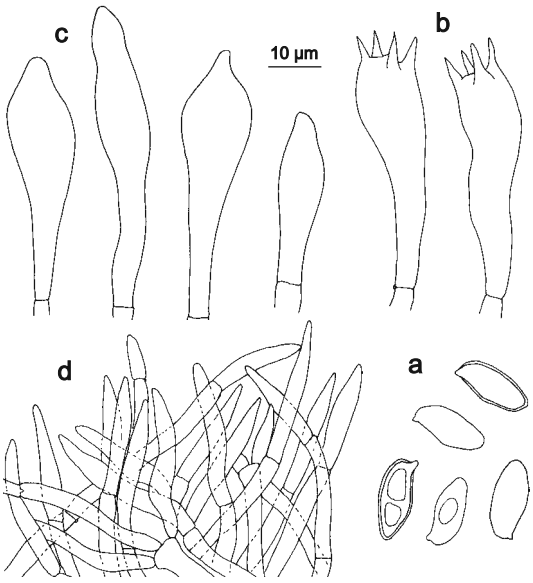

Fig. 152. *Porphyrellus porphyrosporus* (Fr.) J.-E. Gilbert: a – spores, b – basidia, c – cystidia, d – pileipellis (KRAM F-50559).

Psathyrella (Fr.) Quél.

240. ***Psathyrella hydrophiloides*** Kits van Wav. Fig. 153

Pileus 20–25 mm broad, 15 mm high, broadly conical, hygrophanous, chocolate-brown and not translucently striate when moist, pallescent on drying to ochraceous-beige without red tints, surface densely radially wrinkled. Veil not seen. Lamellae distant, 2 mm broad, very narrowly adnate, dark brown, edge finely white ciliate. Stem 15 × 4 mm, whitish, very finely fibrillose, silky, with dense woolly mycelium forming volva-like structure at base, hollow. Context thin, beige, smell and taste none. Spore print dark brown. Spores 5.5–6.0 × 3.0–3.5 µm ellipsoid in front view, slightly phaseoliform in side view, smooth, thick-walled, with a distinct germ pore 1.0–1.5 µm in diameter, greyish-brown in KOH, pale brown in 10% NH_4OH. Basidia difficult to observe, insufficient to make measurements. Cheilocystidia 18–25 ×

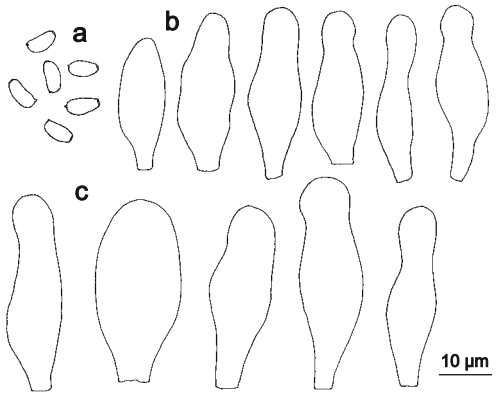

Fig. 153. *Psathyrella hydrophiloides* Kits van Wav. a – spores, b – cheilocystidia, c – pleurocystidia (KRAM F-54446).

5–10 µm, utriform, some of them swollen at apex, hyaline, thin-walled, numerous. Pleurocystidia similar, 30–35 × 8.5–16.0 µm. Hymenophoral trama yellowish-brown in 10% NH_4OH. Clamps numerous in cortical layer of the stem.

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, 950 m a.s.l., *DgF*, on wood, under side of a fallen trunk of *Fagus sylvatica* covered by rhizomorphs of *Armillaria* sp., 49°16′36″N, 19°57′07″E, 1 Dec. 2000 (KRAM F-54446).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2007).

NOTES. For colour illustration of specimen KRAM F-54446, see Ronikier (2007: Fig. 4a).

241. ***Psathyrella murcida*** (Fr.) Kits van Wav.
Fig. 154

Pileus 20–40 mm in diameter, first hemispherical, then broadly conical, paraboloid, hygrophanous, grey-brown, chocolate-brown (5E6, 5F6, 5D5, 5E5), translucently striate when moist, pallescent on drying to ochraceous, ochraceous-beige without red tints (4C4, 4C5), surface smooth. Veil present, white, fugacious, visible only in young specimens. Lamellae moderately distant, very broad (6 mm), broadly adnate, chocolate-brown (5D4, 5E4), edge white ciliate or almost even. Stipe 40–100 × 3–6 mm, cylindrical, sometimes slightly swollen at base, hollow, whitish-cream, dirty white, silky, apex finely pruinose. Context thin, beige in cap, whitish-beige in stipe, smell and taste none. Spore print very dark brown, almost black.

Spores 9–11(–12) × 5–6 µm ellipsoid, smooth, thick-walled, with small but distinct central germ pore about 1.5 µm in diameter, grey-olive-brown in KOH, sordid brown in 10% NH_4OH. Basidia 18–21 × 6.5–10 µm, broadly clavate, 4-spored.

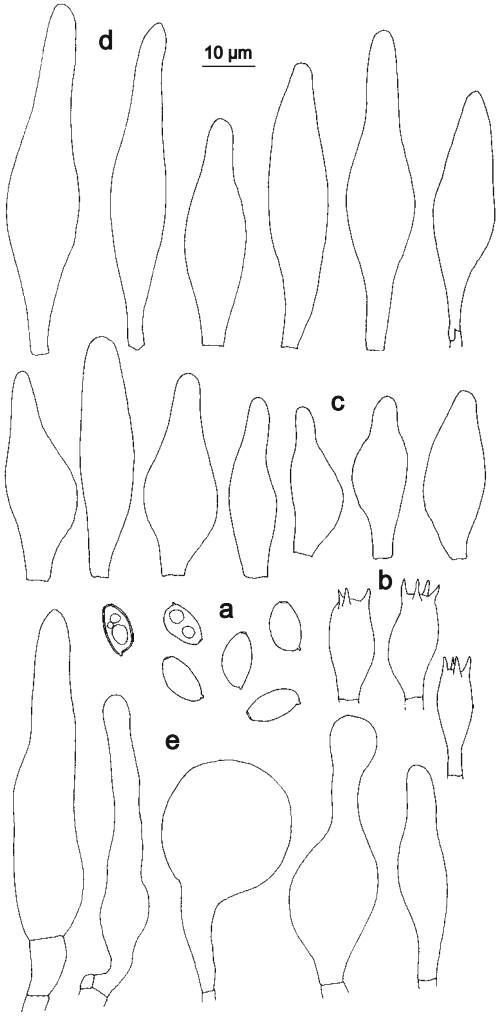

Fig. 154. *Psathyrella murcida* (Fr.) Kits van Wav.: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia, e – caulocystidia (KRAM F-50386).

Cheilocystidia 28–46 × 9–15 µm, obtusely fusiform, lageniform, cylindrical, hyaline, thin-walled, numerous. Pleurocystidia 43–72 × 7–16 µm, narrowly obtusely fusiform, hyaline, abundant. Caulocystidia present at stipe apex, 43–62 × 9–30 µm, cylindrical, lageniform, narrowly fusiform or sphaeropedunculate. Hymenophoral trama pale beige. Clamps present. Veil built up of hyphae.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, orographically right side of valley, 1090 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′24″N, 19°57′07″E, 8 Nov. 2000 (KRAM F-50386); lower part of Dolina Strążyska valley, orographically right side of valley, 960 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′36″N, 19°56′17″E, 24 Nov. 2000 (KRAM F-50458); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′42″N, 19°57′27″E, 14 Oct. 2003 (KRAM F-54443); 3 Oct. 2002 (ZAMU 4407); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on litter (leaves of *Fagus sylvatica*), 49°16′26″N, 19°57′08″E, 3 Oct. 2002 (KRAM F-54444); lower part of the Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on litter (on small piece of wood of ?*Fagus sylvatica*), 49°16′39″N, 19°56′30″E, 3 Oct. 2002 (KRAM F-54445).

FIELD OBSERVATIONS. Lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on litter, 49°16′36″N, 19°56′27″E, 24 Nov. 2000; middle part of Grześkówki ridge, 1030 m a.s.l., *DgF*, among mosses, 49°16′28″N, 19°56′19″E, 24 Nov. 2000.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier 2007).

NOTES. For colour illustration of specimen KRAM F-50386, see Ronikier (2007: Fig. 4b).

242. ***Psathyrella piluliformis*** (Bull.: Fr.) P. D. Orton

SPECIMENS EXAMINED. Upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on wood (*Fagus sylvatica*), 49°16′20″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-54441, ZAMU 4338).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on wood, 49°16′20″N, 19°56′17″E, 3 Oct. 2002; 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. The species is known from one locality in the Dolina Olczyska valley, Polish West Tatras [Nespiak 1975, as *Psathyrella hydrophila* (Bull. *ex* Merat.) Maire].

243. ***Psathyrella prona*** (Fr.) Gillet Fig. 155

Pileus 10 mm broad, 10 mm high, conical, hygrophanous, brown and translucently striate when moist, ochraceous with a pinkish tint when dry, surface smooth. Lamellae distant, broad, narrowly adnate, black, edge white ciliate, with a pink line below the edge. Stem 60 × 1 mm, cylindrical with slightly widened base. Flesh very thin, smell and taste not recorded.

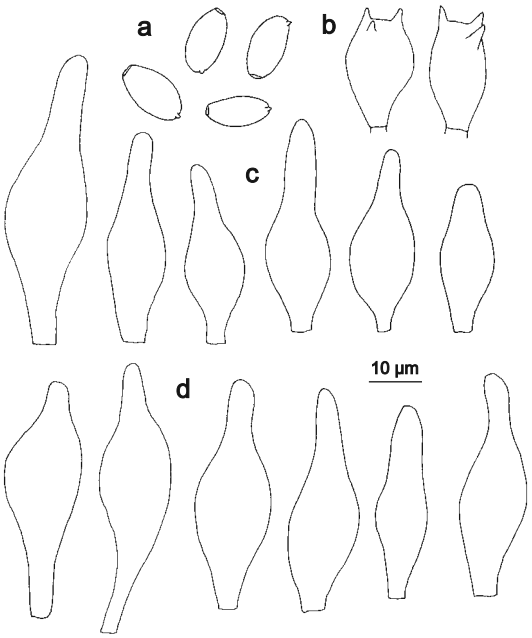

Fig. 155. *Psathyrella prona* (Fr.) Gillet: a – spores, b – basidia, c – cheilocystidia, d – pleurocystidia (KRAM F-54442).

Spores 12–14 × 7–9 µm, ellipsoid, smooth, thick-walled, with a distinct germ pore about 2 µm broad, grey-brown in KOH. Basidia 20–22 × 11–13 µm, 4-spored. Cheilocystidia 30–51 × 10–16 µm, lageniform, hyaline, thin-walled, numerous. Pleurocystidia similar to cheilocystidia. Pileipellis a hymeniderm, built up of clavate cells. Clamps not observed.

SPECIMENS EXAMINED. Lower part of Dolina ku Dziurze valley, 920 m a.s.l., among *Petasites kablikianus*, on litter (leaves of *Fagus sylvatica*), 49°16′43″N, 19°56′42″E, 20 June 2000 (KRAM F-54442).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported only once from the peripheries of the Polish West Tatras (Gminder 1998).

Pseudobaeospora Singer *emend*. Bas

244. ***Pseudobaeospora pillodii*** (Quél.) Wasser
Figs 156 & 157

Pileus 1–7 mm broad, conico-campanulate, conical or convex with or without obtuse small umbo, margin first straight, then reflexed, darker at center, brownish-lilac, purplish-violet, margin usually paler, whitish-lilac, surface matt, slightly silky. Lamellae medium spaced, narrowly andate or almost free, purplish-lilac-violet, edge smooth. Stem filiform, 20–40 × 0.5–1.0 mm, even, whitish pruinose at upper part, at lower 1/3 to 1/2 covered with whitish short to very long rhizoids. Flesh thin, purplish-violet, smell and taste none. Spores 3.4–5 × 2.6–3.5 µm, broadly ellipsoid to ovoid, smooth, slightly thick-walled, weakly dextrinoid. Basidia 17–18 × 4.5–5.0 µm, 1-, 2- or 4-spored. Cheilocystidia absent. Caulocystidia 22–42 × 4.8–6.5 µm, cylindrical, slightly flexuous, in lower part of stem longer, up to 200 µm, septate and branched. Pileipellis pink in H_2O, becoming pale greyish-greenish in 5% KOH, in adult specimens built up of cylindrical, radially arranged hyphae less than 10 µm in diameter; in younger specimens ascending to erect single or numerous marginal cells present, 5.0–6.5 µm in diameter, mostly abundant at center of the cap; subpellis composed of 10–15 µm wide, relatively short elements. Clamps absent. Context dextrinoid.

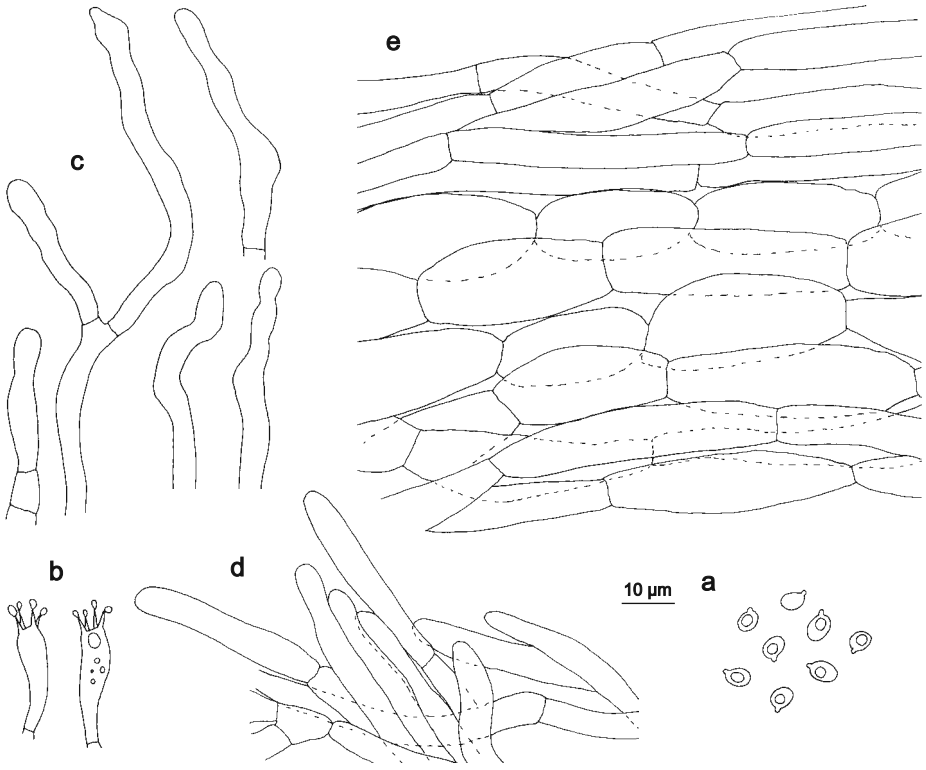

Fig. 156. *Pseudobaeospora pillodii* (Quél.) Wasser: a – spores, b – basidia, c – caulocystidia, d & e – pileipellis (a, b, c, e – KRAM F-53314; d – KRAM F-53298).

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, at the summit, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 22 Aug. 2001 (KRAM F-53298a); 8 Sept. 2001 (KRAM F-53314); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 22 Aug. 2001 (KRAM F-53298b).

Fig. 157. *Pseudobaeospora pillodii* (Quél.) Wasser (KRAM F-53314). Scale bar = 10 mm.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier & Moreau 2007; Ronikier 2009).

Pseudoclitocybe Singer

245. ***Pseudoclitocybe cyathiformis*** (Bull.: Fr.) Singer

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 14 Oct. 2003 (KRAM F-54084).

DISTRIBUTION IN THE TATRA MTS. There is one locality of the fungus in the Dolina Siedmich Prameňov valley, Belanské Tatry (Škubla 1998a).

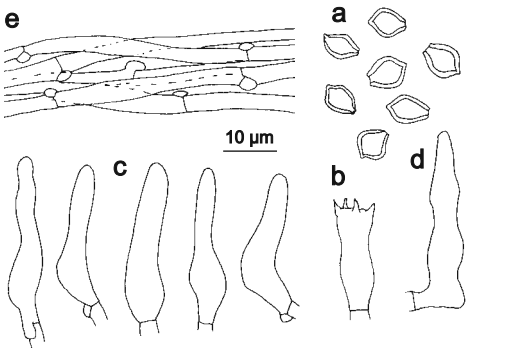

Fig. 158. *Psilocybe phyllogena* (Peck) Peck: a – spores, b – basidium, c – cheilocystidia, d – caulocystidium, e – pileipellis (KRAM F-54447).

Psilocybe (Fr.) P. Kumm.

246. ***Psilocybe phyllogena*** (Peck) Peck Fig. 158

Pileus 20 mm broad, expanded, hygrophanous, brown and translucently striate when moist, ochraceous-beige when dry. Lamellae distant, very broad, broadly adnate, dark brown, edge delicately white ciliate. Stem 30 × 3 mm, cylindrical, beige, fibrillose, apex slightly pruinose. Flesh thin, smell and taste not recorded. Spore print dark brown. Spores 7–8 × 5.0–6.5 µm rhomboid, thick-walled, with a distinct germ pore about 2 µm broad, yellow-brown in KOH. Basidia 19–21 × 5.0–6.5 µm, 4-spored. Cheilocystidia 22–32 × 5–7 µm, lageniform, sometimes with an amorphous substance at apex, numerous. Pleurocystidia none. Caulocystidia similar to cheilocystidia, scattered. Pileipellis a cutis. Clamps numerous.

SPECIMENS EXAMINED. Lower part of Dolina ku Dziurze valley, 920 m a.s.l., among *Petasites kablikianus*, on litter (leaves of *Fagus sylvatica*), 49°16′43″N, 19°56′42″E, 20 June 2000 (KRAM F-54447).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Rhodocollybia Singer

247. ***Rhodocollybia butyracea*** (Bull.: Fr.) Lennox f. ***asema*** (Fr.: Fr.) Antonín, Halling & Noordel.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m

a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 20 July 2000 (KRAM F-50116); lower part of Dolina Strążyska valley, orographically right side of valley, 980 m a.s.l., *DgF* with *Pinus sylvestris* and *Larix* (planted), on soil, 49°16′37″N, 19°56′22″E, 21 July 2000 (KRAM F-50091); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 9 Sept. 2001 (KRAM F-51706); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 13 Oct. 2001 (KRAM F-53821); at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′22″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-53825); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 3 Oct. 2002 (KRAM F-54080); mouth of Dolina Strążyska valley, at Droga pod Reglami hiking trail, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (ZAMU 4377).

Field observations. Dolina ku Dziurze valley, E slope of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′27″E, 12 Oct. 2001; Grześkówki ridge, 1080 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 12 Oct. 2001; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 12 Oct. 2001; 3 Oct. 2002; lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 12 Oct. 2001; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 12 Oct. 2001; 14 Oct. 2003; 22 Aug. 2001; W slope of Sarnia Skała massif, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′22″E, 12 Oct. 2001; lower part of Dolina Białego valley, at hiking trail, 960 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′27″E, 13 Oct. 2001; Dolina Białego valley, at mouth of Siwarowy Żleb gully, 1000 m a.s.l., *DgF*, on soil, 49°16′11″N, 19°57′27″E, 13 Oct. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 3 Oct. 2002; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 13 Oct. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley, right side of valley, 'Wymyte', 1220 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′47″E, 13 Oct. 2001; E slope of Dolina ku Dziurze valley, 980 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 12 Oct. 2001; upper part of Dolina ku Dziurze valley, NW slope, 1150 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′47″E, 13 Oct. 2001; Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 14 Oct. 2003; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′31″N, 19°57′20″E, 14 Oct. 2003; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 7 Aug. 2000; Dolina ku Dziurze valley, at mouth of left branch of valley, 950 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′27″E, 22 Aug. 2000; Grześkówki ridge, 1080 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′27″E, 25 Oct. 2000; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 8 Nov. 2000; upper part of Dolina Spadowiec valley, 'Łomik', 1160 m a.s.l., *DgF*, on soil, 49°16′15″N, 19°57′02″E, 8 Nov. 2000; Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 24 Nov. 2000; mouth of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°57′31″E, 7 July 2001.

Distribution in the Tatra Mts. The fungus has been noted in the Tomanová Dolina valley, Slovak West Tatras (Lizoň & Kautmanová 2004) and a few times in the peripheries of the Slovak Tatras [Pilát 1926, as *Collybia asema* Fr.; Antonín & Noordeloos 1997, 2010; Kuthan 1989b, as *Collybia asema* (Fr. *ex* Fr.) P. Kumm.]. Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

248. ***Rhodocollybia maculata*** (Alb. & Schwein.: Fr.) Singer

Specimens examined. Mouth of Dolina ku Dziurze valley, Grześkówki ridge, 940 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°56′35″E, 4 July 2000 (KRAM F-50017).

Distribution in the Tatra Mts. The species has been found in the Tichá Dolina valley, Slovak West Tatras (Škubla 1998b) and in the peripheries of the Slovak Tatras [Kuthan & Singer 1987, as *Collybia maculata*; Kuthan 1989b, as *Collybia maculata* (Alb. & Schwein. *ex* Fr.) Quél.; Antonín & Noordeloos 2010].

Rhodocybe Maire

249. ***Rhodocybe nitellina*** (Fr.) Singer Fig. 159

Pileus 10–70 mm broad, first hemispherical, then expanded or with slightly depressed center,

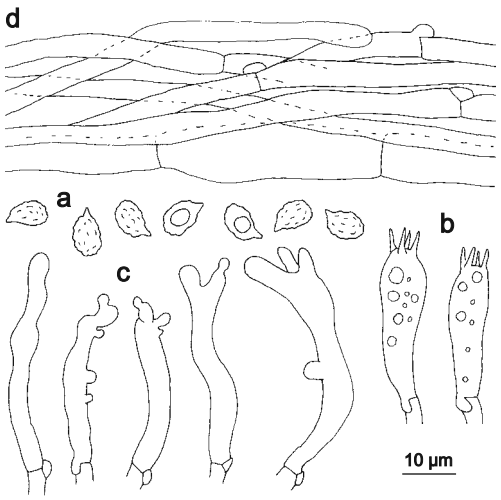

Fig. 159. *Rhodocybe nitellina* (Fr.) Singer: a – spores, b – basidia, c – caulocystidia, d – pileipellis (KRAM F-51651).

hygrophanous, bright orange to orange-brown and translucently striate when moist, pale orange brown when dry, surface lubricous, smooth or slightly wrinkled. Lamellae medium spaced, broad, broadly adnate or emarginate, cream, ochraceous-beige, edge smooth. Stem 20–70 × 2–8 mm, orange-brown, cylindrical, smooth, slightly pruinose at apex, hollow, elastic, with white mycelium at base. Flesh thin, up to 2 mm, ochraeous-orange, smell and taste strong, honey-farinaceous. Spores 7.0–8.5 × 4.5–5.5 µm, ellipsoid in outline, covered with irregular, elongated nodes, nonamyloid. Basidia 25–28 × 7.0–8.5 µm, 4-spored, clamped. Cystidia none. Hairs in upper part of stem 28–50 × 5–8 µm, cylindrical, flexuous, with small or flattened outgrowths. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. W slope of Sarnia Skała massif, at path, 1160 m a.s.l., *PP*, on litter, 49°16′04″N, 19°56′18″E, 5 Sept. 2001 (KRAM F-51651); 20 Aug. 2002 (KRAM F-54318); Grześkówki ridge, 1060 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′15″E, 12 Oct. 2001 (KRAM F-54317); lower part of Grześkówki ridge, 930 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′37″E, 5 Sept. 2001 (KRAM F-51652); upper part of Dolina Spadowiec valley, orographically left side of valley, 1100 m a.s.l., *DgF*, on litter, 49°16′19″N, 19°57′02″E, 9 Sept. 2001 (KRAM F-51697); at Droga pod Reglami hiking trail, NE slopes of Spaleniec rdge, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001 (KRAM F-54320); middle part of Dolina Spadowiec valley, orographically right side of valley, 1030 m a.s.l., *DgF*, on litter, 49°16′30″N, 19°57′12″E, 20 Aug. 2002 (KRAM F-54319); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, 49°16′06″N, 19°56′24″ (KRAM F-54321); upper part of Dolina Białego valley, 1080 m a.s.l., *DgF*, on litter, 49°15′55″N, 19°57′17″E, 8 Sept. 2001 (ZAMU 4403).

DISTRIBUTION IN THE TATRA MTS. The fungus has been found in the Dolina Tomanowa valley and the Dolina Miętusia valley, Polish West Tatras (Nespiak 1960; Anonymous 1968).

Rimbachia Pat.

250. ***Rimbachia neckerae*** (Fr.: Fr.) Redhead
Figs 160 & 161

Pileus 1–3 mm broad, cup-shaped, helmet-shaped, then irregularly lobbed, with involute margin, white, surface felty. Lamellae none, hymenophore smooth, white, slightly cream tinged when dried. Stem none, pileus attached dorsally to mosses' leaves or stems. Flesh thin, white, smell and taste not recorded. Spores 8–12 × 5.5–7.0 µm, ellipsoid, hyaline, nonamyloid. Basidia 25–31 × 7–9 µm, 4-spored, clamped. Cheilocystidia none. Pileipellis a cutis, made up of cylindrical elements 7–15 µm in diameter. Clamps numerous.

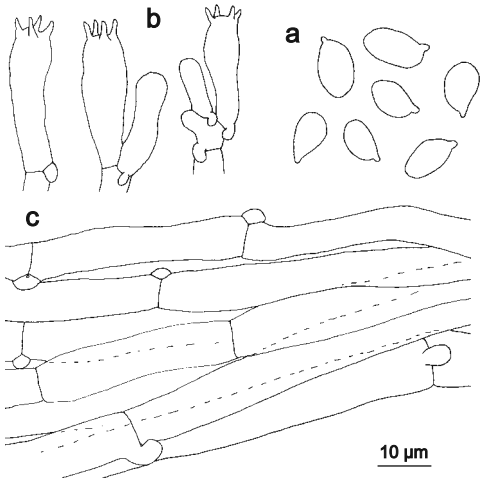

Fig. 160. *Rimbachia neckerae* (Fr.: Fr.) Redhead: a – spores, b – basidia, c – pileipellis (KRAM F-51504).

Fig. 161. *Rimbachia neckerae* (Fr.: Fr.) Redhead (KRAM F-51504). Scale bar = 10 mm.

SPECIMENS EXAMINED. N slopes of Sarnia Skała massif, the summit area, 1370 m a.s.l., *Pmc*, on mosses, 49º15′53″N, 19º56′38″E, 4 July 2001 (KRAM F-51504).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

Ripartites P. Karst.

251. ***Ripartites serotina*** Einhell. Fig. 162

Pileus 5 mm broad, first hemispherical, then convex, pale greyish-beige, surface smooth, margin smooth. Lamellae distant, 11 reaching stem, broadly adnate or arcuately decurrent, yellowish-brownish, edge smooth. Stem 15 × 1 mm, pale brown, cylindrical, pruinose at apex. Flesh thin, smell and taste not recorded. Spores 4.5–5.0 × 3.5–4.0 µm, subglobose, covered with small blunt nodes, nonamyloid. Basidia 26–32 × 7–8 µm, 4-spored, clamped. Cystidia none. Pileipellis a cutis, built up of cylindrical hyphae 6–9 µm broad. Clamps scattered.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 3 Oct. 2002 (KRAM F-54374).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Roridomyces Rexer

252. ***Roridomyces rorida*** (Scop.: Fr.) Rexer

SPECIMENS EXAMINED. Lower part of Dolina ku Dziurze valley, orographically left side of valley, 940 m a.s.l., *DgF*, on litter, 49°16′43″N, 19°56′37″E,

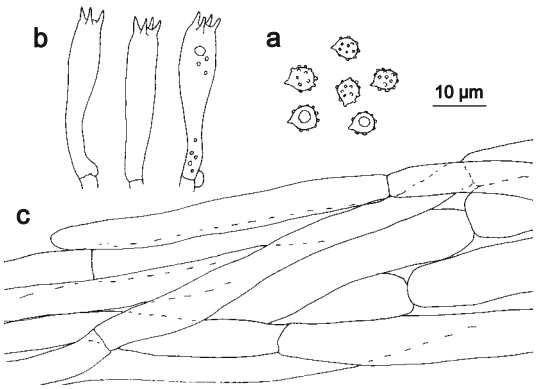

Fig. 162. *Ripartites serotina* Einhell.: a – spores, b – basidia, c – pileipellis (KRAM F-54374).

4 July 2000 (KRAM F-50026); lower part of Dolina Strążyska valley, 910 m a.s.l., *Petasitetum kablikiani*, on litter, 49°16′32″N, 19°56′12″E, 4 July 2000 (KRAM F-50025); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 21 Aug. 2002 (KRAM F-54264); 20 June 2000 (KRAM F-54348); N slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 10 June 2002 (KRAM F-52310); summit area of Sarnia Skała masif, 1375 m a.s.l., *Pmc*, on litter, 49°15′57.5″N, 19°56′27″E, 22 June 2001 (ZAMU 4240).

Field observations. Upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on litter, 49°16′17″N, 19°56′17″E, 21 July 2000; middle part of Dolina Białego valley, 980 m *DgF*, on litter, 49°16′17″N, 19°57′27″E, 5 Sept. 2000; upper part of Dolina Białego valley, E slope of Igła mount, 1180 m a.s.l., spruce forest (planted), on litter, among mosses, 49°15′49″N, 19°57′07″E, 4 July 2001; N slope of Sarnia Skała massif, at the top, 1370 m *Pmc*, on litter, 49°15′53″N, 19°56′38″E, 4 July 2001; 22 Aug. 2001; 8 Sept. 2001; N slope of Sarnia Skała massif, N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on litter, 49°15′55″N, 19°56′32″E, 4 July 2001; 21 Aug. 2001; 8 Sept. 2001; 21 Aug. 2002; N slope of Sarnia Skała massif, at the top, 1360 m a.s.l., *Pmc*, on litter, 49°15′57″N, 19°56′27″E, 4 July 2001; 21 Aug. 2001; 21 Aug. 2002; S slope of Sarnia Skała massif, at the top, 1350 m a.s.l., *Pmc*, on litter, 49°15′54″N, 19°56′30″E, 6 July 2001; NE edge of Polana Białego meadow, 1150 m a.s.l., *PP*, on litter, 49°15′51″N, 19°56′57″E, 21 Aug. 2001; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on litter, 49°16′06″N, 19°56′24″E, 22 Aug. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on litter, 49°16′15″N, 19°56′58″E, 9 Sept. 2001; upper part of Dolina Białego valley, 1000 m a.s.l., *DgF*, on litter, 49°16′11″N, 19°57′27″E, 8 Sept. 2001; upper part of Dolina Białego valley, 1050 m a.s.l., *DgF*, on litter, 49°15′58″N, 19°57′17″E, 8 Sept. 2001; upper part of Dolina Spadowiec valley, orographically left side of valley, 1150 m a.s.l., *DgF*/*PP*, on litter, 49°16′17″N, 19°56′59″E, 7 June 2003.

Distribution in the Tatra Mts. The species has been reported [as *Mycena rorida* (Scop.: Fr.) Quél.] from two localities in the Polish High Tatras (Frejlak 1973; Lisiewska 1987; Wojewoda 1996), and from several localities in Belanské Tatry (Kubička 1963a; Svrček 1987). It has also been noted in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Russula Pers.

253. ***Russula albonigra*** (Krombh.) Fr.

Specimens examined. Lower part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, 49°16′36″N, 19°57′18″E, 20 Aug. 2001 (KRAM F-54733); 980 m a.s.l., *DgF*, 49°16′41″N, 19°57′17″E, 10 Sept. 2003 (KRAM F-54734).

Distribution in the Tatra Mts. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

254. ***Russula anthracina*** Romagn. Fig. 163

Pileus 80–100 mm broad, plane with a low central depression, greyish-brownish-white, not uniformly coloured, slightly darker in center, blackening, margin inflexed, surface matt. Lamellae medium spaced, rather narrow, adnate to slightly decurrent, white with an orange-pinkish tint. Stem 40–50 × 10–15 mm, white, greyish-brownish, blackening, cylindrical or slightly tapering toward base. Flesh white, slowly changing into brown, then black, taste mild, in lamellae acrid. Spores 7–10 × 6–8 µm, broadly ellipsoid, covered with short warts with few low connections forming incomplete reticulum. Pileipellis without dermatocystidia and primordial hyphae. Within the

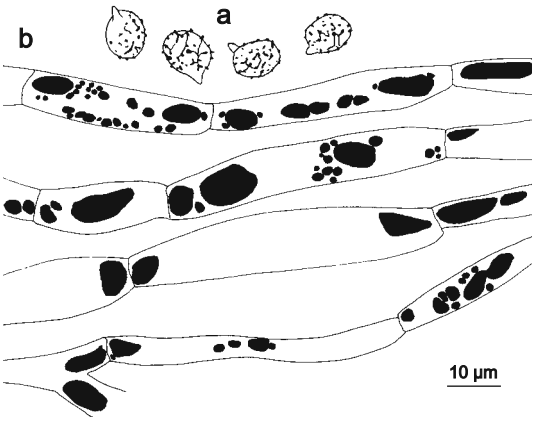

Fig. 163. *Russula anthracina* Romagn.: a – spores, b – pileipellis (KRAM F-54431).

hyphae of the pileipellis drops of blackish-brown pigment present. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, 49°16′37″N, 19°57′17″E, 20 Aug. 2001 (KRAM F-54431).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

255. ***Russula aurea*** Pers. Fig. 164

Pileus 90 mm broad, expanding, plane with low central depression, vividly orange-red, golden-yellow in center, surface smooth, margin sulcate. Lamellae distant, narrowly adnate, very broad, yellowish, edge citrine-yellow. Stem 80 × 30 mm, white, yellowing, cylindrical. Flesh white, brown with $FeSO_4$, woolly inside stem, smell indistinct, taste mild. Spores 7–10 × 7–8 µm, ellipsoid, covered with warts connected with crests forming almost complete reticulum.

Fig. 164. *Russula aurea* Pers.: spores (KRAM F-54390).

Pleurocystidia fusiform with an appendage. Pileipellis without dermatocystidia and primordial hyphae. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, 49°16′44″N, 19°57′23″E, 21 Aug. 2002 (KRAM F-54390).

DISTRIBUTION IN THE TATRA MTS. The fungus has been noted twice at the Polish side of the Tatra Mts (Dominik & Nespiak 1953, as *Russula aurata* Fr.; Dominik & Pachlewski 1956, as *Russula aurata* Fr.). The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

256. ***Russula aurora*** (Krombh.) Bres.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, 49°16′42″N, 19°57′27″E, 9 Sept. 2001 (KRAM F-45059).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

257. ***Russula cavipes*** Britzelm.

SPECIMENS EXAMINED. Grześkówki ridge, mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, 49°16′36″N, 19°56′35″E, 4 July 2000 (KRAM F-50016).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

258. ***Russula chloroides*** (Krombh.) Bres. Fig. 165

Pileus 50–80 mm broad, regular, funnel-shaped, whitish with ochraceous areas, margin inflexed for a long time, surface matt, velvety. Lamellae medium spaced, 8–12 per 1 cm at cap margin, narrow, 4 mm broad, adnate or decurrent, white with a greenish tint. Stem 15–30 × 10–13 mm, white, ochraceous, not uniformly coloured, cylindrical or tapering toward base. Flesh white, brownish spotted in places damaged by insects,

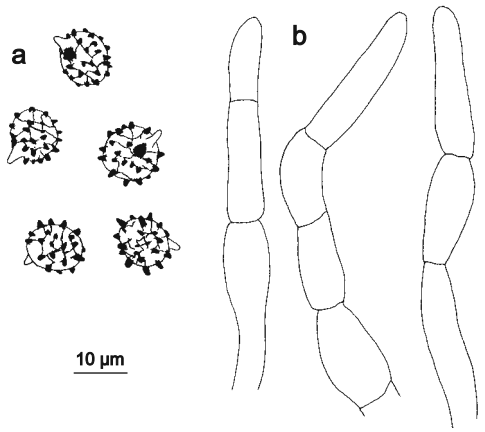

Fig. 165. *Russula chloroides* (Krombh.) Bres.: a – spores, b – dermatocystidia (KRAM F-54392).

pale brownish-pink with $FeSO_4$, smell distinct, fruity, taste mild, slightly acrid in lamellae. Spores 9–10 × 7–9 µm, broadly ellipsoid, covered with rather high warts with many connections. Pileipellis with septate dermatocystidia, 7–12 µm broad, primordial hyphae lacking. Clamps lacking.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, N slopes of the Spaleniec ridge, 900 m a.s.l., *AP*, 49°16′43″N, 19°56′57″E, 21 July 2000 (KRAM F-50145); Grześkówki ridge, *DgF* (KRAM F-54394); at Droga pod Reglami hiking trail, mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, 49°16′43″N, 19°57′27″E, 20 Aug. 2001 (KRAM F-54392); S slope of Sarnia Skała massif, near the summit, 1350 m a.s.l., *Pmc*, 49°15′54″N, 19°56′30″E, 12 Oct. 2001 (KRAM F-54393).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 20 July 2000; ridge between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, no date; at Droga pod Reglami hiking trail, lower part of Dolina Spadowiec valley, orographically right side of valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′02″E, 20 Aug. 2001; at Droga pod Reglami hiking trail, lower part of Dolina Spadowiec valley, orographically left side of valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 21 Aug. 2001; 5 Sept. 2001; 22 Aug. 2001; middle part of Grześkówki ridge, 1050 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 22 Aug. 2001; middle part of Grześkówki ridge, 1020 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′20″E, 22 Aug. 2001; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′27″E, 22 Aug. 2001; middle part of ridge between Dolina Białego valley and Dolina Spadowiec valley, 1040 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′17″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported only from the peripheries of the Slovak West Tatras (Kuthan 1989b). Localities from the Sarnia Skała massif have been published before (Ronikier 2009; Ronikier & Adamčík 2009a).

259. ***Russula cyanoxantha*** (Schaeff.) Fr.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, on Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, 49°16′44″N, 19°57′23″E, 4 July 2000 (KRAM F-50009); lower part of Dolina ku Dziurze valley, orographically left side of valley, 920 m a.s.l., *DgF*, 49°16′36″N, 19°56′37″E, 4 July 2000 (KRAM F-54437); lower part of Grześkówki ridge, 990 m a.s.l., *DgF*, 49°16′33″N, 19°56′23″ (KRAM F-54438); Grześkówki ridge, 970 m a.s.l., *DgF*, 49°16′36″N, 19°56′27″E, 10 Sept. 2003 (ZAMU 4372).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 20 July 2000; 22 Aug. 2001; 9 Sept. 2001; 11 July 2002; 21 Aug. 2002; 16 Aug. 2003; 9 Sept. 2003; upper part of Dolina Spadowiec valley, orographically right side of valley, 1150 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°57′07″E, 20 July 2000; lower part of Grześkówki ridge, W slopes (lower part of Dolina Strążyska valley), 960 m a.s.l., *DgF* with planted *Pinus sylvestris*, on soil, 49°16′33″N, 19°56′17″E, 21 July 2000; at Droga pod Reglami hiking trail, mouth of Dolina ku Dziurze valley, orographically right side of valley, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′47″E, 5 Sept. 2000; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′27″E, 11 July 2000; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′26″E, 4 July 2000; lower part of Dolina ku Dziurze valley, 920 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′37″E, 11 July 2000; middle part of Dolina Spadowiec valley, orographically right side of valley, 1020 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′07″E, 11 July 2000; upper part of Grześkówki ridge, 1070 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′17″E, 19 Sept. 2000; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., spruce

forest with *Abies alba* and *Fagus sylvatica*, on soil, 49°16′43″N, 19°57′17″E, 8 Nov. 2000; at Droga pod Reglami hiking trail, N slopes of Grześkówki ridge, 900 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°56′37″E, 6 July 2001; ridge between Dolina Białego valley and Dolina Spadowiec valley, 1000 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°57′17″E, 20 Aug. 2001; Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 20 Aug. 2001; 9 Sept. 2001; 11 July 2002; 21 Aug. 2002; 16 Aug. 2003; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 20 Aug. 2001; Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 22 Aug. 2001; 11 July 2002; 21 Aug. 2002; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1110 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′47″E, 20 Aug. 2001; upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′18″N, 19°56′18″E, 22 Aug. 2001; lower part of Dolina ku Dziurze valley, 920 m a.s.l., *DgF*, on soil, 49°16′40″N, 19°56′47″E, 22 Aug. 2001; lower part of Dolina Strążyska valley, 920 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′11″E, 21 Aug. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Strążyska valley, orographically right side of valley, 900 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°56′31″E, 21 Aug. 2001; lower, part of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′26″E, 22 Aug. 2001; middle part of Grześkówki ridge, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′18″E, 22 Aug. 2001; lower part of Grześkówki ridge, orographically right side of Dolina Strążyska valley, 940 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′16″E, 22 Aug. 2001; middle part of Grześkówki ridge, 1010 m a.s.l., *DgF*, on soil, 49°16′31″N, 19°56′22″E, 5 Sept. 2001; upper part of Dolina Białego valley, 1050 m a.s.l., *DgF*, on soil, 49°15′57″N, 19°57′17″E, 8 Sept. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′08″E, 9 Sept. 2001; at Droga pod Reglami hiking trail, between Dolina Spadowiec valley and Dolina ku Dziurze valley, 920 m a.s.l., *DgF*, on soil, 49°16′44″N, 19°56′52″E, 9 Sept. 2001; middle part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′31″N, 19°57′10″E, 9 Sept. 2001; lower part of Dolina Spadowiec valley, orographically right side of valley, 1000 m a.s.l., *DgF*, on soil, 49°16′34″N, 19°57′15″E, 11 July 2002; Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′23″E, 11 July 2002; upper part of Grześkówki ridge, 1080 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′17″E, 11 July 2002; N slopes of Grześkówki ridge, 950 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°56′27″E, 21 Aug. 2002; lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°56′26″E, 21 Aug. 2002; upper part of Grześkówki ridge, 1020 m a.s.l., *DgF*, on soil, 49°16′29″N, 19°56′21″E, 21 Aug. 2002; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°57′07″E, 16 Aug. 2003; lower part of orographically left branch of Dolina ku Dziurze valley, left side of valley, at. 960 m a.s.l., *DgF*, on soil, 49°16′31″N, 19°56′27″E, 16 Aug. 2003; lower part of Dolina Strążyska valley, 930 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′13″E, 9 Sept. 2003.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported a few times in the Tatra Mts (Pilát 1926; Dominik & Pachlewski 1956; Nespiak 1962c) and in the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

260. ***Russula emetica*** (Schaeff.: Fr.) Pers.

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, 49°16′15″N, 19°56′37″E, 21 Aug. 2002 (KRAM F-54429); Sarnia Skała massif (KRAM F-54430).

FIELD OBSERVATIONS. Upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 9 Sept. 2001; 3 Oct. 2002; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been noted several times in the Tatra Mts (Dominik & Nespiak 1953; Nespiak 1960, as *Russula emetica* Fr. f. *typica*; Nespiak 1962b, c; Anonymous 1968; Škubla 1998a, b; Lizoň & Kautmanová 2004). It has also been found in the peripheries of the Slovak West Tatras (Kuthan 1989a, b). Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

261. ***Russula favrei*** M. M. Moser Fig. 166

Pileus 30–50 mm broad, first hemispherical, then expanding, plane, often with a low central depression, dark purple-red-brown, vinaceous-

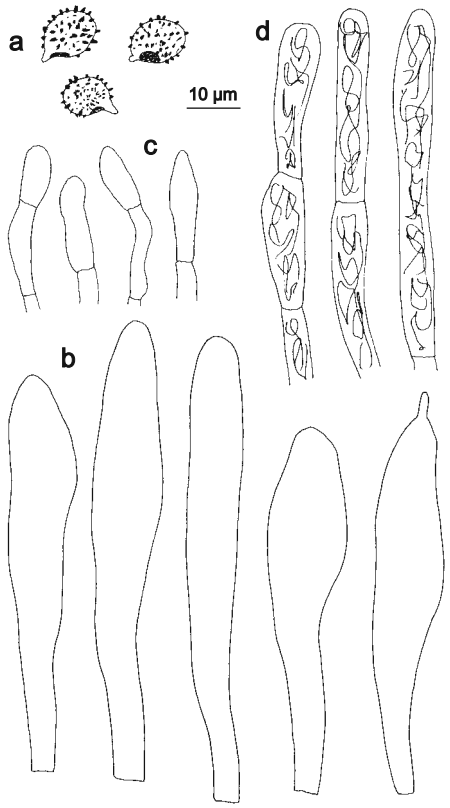

Fig. 166. *Russula favrei* M. M. Moser: a – spores, b – pleurocystidia, c – terminal elements of generative hyphae of pileipellis, d – dermatocystidia (KRAM F-54435).

red-brown, surface matt. Lamellae medium spaced, narrowly adnate, broad, sordid yellow, fragile. Stem 30–50 × 7–12 mm, white with vinaceous-red tint, cylindrical, narrowly clavate, browning when bruised. Flesh relatively thin, greyish-green with $FeSO_4$, smell sweetish, taste mild. Spores 8–11 × 8–9 µm, broadly ellipsoid, covered with rather high warts, connections not numerous. Pleurocystidia mostly clavate, rarely with an appendage, 67–85 × 10–15 µm. Pileipellis with septate dermatocystidia, 7–11 µm broad, primordial hyphae lacking, terminal cells of generative hyphae 4–6 µm broad, cylindrical to narrowly clavate. Clamps lacking.

SPECIMENS EXAMINED. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, 49°16′03″N, 19°56′18″E, 20 Aug. 2002 (KRAM F-54436); 20 Aug. 2002 (KRAM F-54435); Sarnia Skała massif, upper montane belt, *PP*, 20 Aug. 2002 (KRAM F-54434).

DISTRIBUTION IN THE TATRA MTS. The species has been reported so far from the Slovak West Tatras (Adamčík 2001, 2002). Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

262. ***Russula fellea*** (Fr.: Fr.) Fr.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, on Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, 49°16′44″N, 19°57′23″E, 3 Oct. 2002 (KRAM F-54225); upper part of Dolina ku Dziurze valley, 1050 m a.s.l., windthrow with *Sorbus aucuparia* and *Picea abies*, 49°16′14″N, 19°56′37″E, 24 Sept. 1999 (KRAM F-50047); Dolina ku Dziurze valley, E slope of Grześkówki ridge, 990 m a.s.l., *DgF*, 49°16′30″N, 19°56′25″E, 10 Sept. 2003 (ZAMU 4373).

FIELD OBSERVATIONS. Mouth of Dolina Strążyska valley, at Droga pod Reglami hiking trail, 920 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′27″E, 21 Aug. 2001; upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, on soil, 49°16′18″N, 19°56′17″E, 21 Aug. 2002; lower part of Grześkówki ridge, 980 m a.s.l., *DgF*, on soil, 49°16′33″N, 19°56′27″E, 21 Aug. 2002; 21 Aug. 2001; Spaleniec ridge, 1150 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°56′52″E, 3 Oct. 2002; ridge between Dolina Białego valley and Dolina Spadoeiwc valley, 1000 m a.s.l., *DgF*, on soil, 49°16′36″N, 19°57′17″E, 14 Oct. 2003.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

263. ***Russula firmula*** Jul. Schäff. Fig. 167

Pileus 30–50 cm broad, first hemispherical, then expanding, plane with a low central depression, olive-brownish-purple, grey-beige with a violet tint, buff, ochraceous spotted in center, surface smooth. Lamellae crowded, narrowly adnate, anastomosing, dark yellow, fragile. Stem 30–60 × 10–12 mm, white, cylindrical to narrowly clavate, yellowing. Flesh white, smell not recorded, taste acrid. Spore print dark yellow. Spores 8–9 × 6.5–8.0 µm, broadly ellipsoid, covered with isolated warts up to 2 µm high. Pleurocystidia clavate,

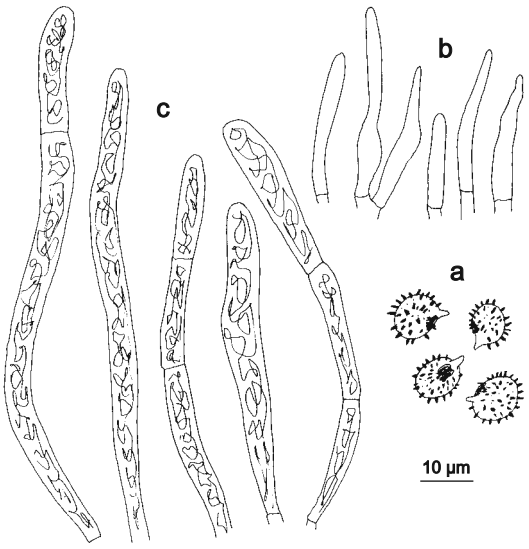

Fig. 167. *Russula firmula* Jul. Schäff.: a – spores, b – terminal elements of generative hyphae of pileipellis, c – dermatocystidia (KRAM F-54735).

obtuse at apex or with an appendage. Pileipellis with narrowly clavate or cylindrical, septate dermatocystidia 5–8 µm broad, primordial hyphae lacking. Terminal cells of generative hyphae cylindrical or slightly tapering toward apex, 3–4 µm broad. Clamps lacking.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, 49°16′15″N, 19°56′54″E, 9 Sept. 2001 (KRAM F-54735); 20 Aug. 2001 (KRAM F-54737); 20 Aug. 2002 (KRAM F-54757); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, 49°16′03″N, 19°56′18″E, 20 Aug. 2002 (KRAM F-54756); 22 Aug. 2001 (KRAM F-54736); W slope of Sarnia Skała massif, on path, 1160 m a.s.l., *PP*, 49°16′04″N, 19°56′16″E, 22 Aug. 2001 (KRAM F-54738).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from two localities in the Dolina Miętusia valley and in the Wantule forest, Polish West Tatras (Anonymous 1968). Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

264. ***Russula integra*** (L.) Fr.

SPECIMENS EXAMINED. Sarnia Skała massif, 14 Oct. 2003 (KRAM F-45244); mouth of Dolina Spadowiec valley, 930 m a.s.l., *AP*, 49°16′44″N, 19°57′07″E, 12 July 2002 (KRAM F-54747); upper part of Dolina Białego valley, 1180 m a.s.l., *PP,* 49°15′54″N, 19°57′07″E, 9 Sept. 2003 (KRAM F-54748).

DISTRIBUTION IN THE TATRA MTS. The species has been reported a few times in the Tatra Mts (Anonymous 1968; Dermek 1977, as *Russula polychroma* Singer *ex* Hora; Škubla 1998a; Lizoň & Kautmanová 2004). Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

265. ***Russula laurocerasi*** Melzer

SPECIMENS EXAMINED. Middle part of Grześkówki ridge, 1000 m a.s.l., *DgF*, 49°16′30″N, 19°56′21″E, 22 Aug. 2001 (KRAM F-51604).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

266. ***Russula mairei*** Singer

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, 49°16′19″N, 19°56′13″E, 20 Aug. 2002 (KRAM F-54427); upper part of Dolina ku Dziurze valley, orographically the right side of valley, just above the caves, 1050 m a.s.l., *DgF*, 49°16′17″N, 19°57′52″E, 1 July 2003 (KRAM F-54428).

FIELD OBSERVATIONS. Orographically left branch of Dolina Białego valley, 1040 m a.s.l., *DgF*, on soil, 49°16′04″N, 19°57′17″E, 21 Aug. 2001; lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 22 Aug. 2001; 9 Sept. 2001; 21 Aug. 2002; 3 Oct. 2002; Dolina Spadowiec valley, western slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 9 Sept. 2001; 11 July 2002; 21 Aug. 2002; 3 Oct. 2002; lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. Localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

267. ***Russula nigricans*** (Bull.) Fr.

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, on Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, 49°16′44″N, 19°57′23″E, 22 Aug. 2001 (KRAM F-51563).

FIELD OBSERVATIONS. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on soil, 49°16′42″N, 19°57′27″E, 21 Aug. 2002; upper part of Dolina Białego valley, 1050 m a.s.l., *DgF*, on soil, 49°15′58″N, 19°57′17″E, 22 Aug. 2001; lower part of Grześkówki ridge, 1000 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′17″E, 22 Aug. 2001; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1100 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′46″E, 9 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported a few times at Polish and Slovak sides of the border (Pilát 1926; Dominik& Pachlewski 1956; Lizoň & Kautmanová 2004). It has also been found in the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

268. ***Russula ochroleuca*** Pers.

SPECIMENS EXAMINED. Ridge between Dolina Białego valley and Dolina Spadowiec valley, 1020 m a.s.l., *DgF*, 49°16′28″N, 19°57′20″E, 8 Nov. 2000 (KRAM F-50392); mouth of Dolina ku Dziurze valley, 900 m a.s.l., *DgF*, 49°16′43″N, 19°56′37″E, 22 Aug. 2001 (ZAMU 4298).

FIELD OBSERVATIONS. Mouth of Dolina Spadowiec valley, 920 m a.s.l., *AP*/*DgF*, on soil, 49°16′43″N, 19°57′07″E, 9 Sept. 2001;, NE ridge of the massif, NW slopes of 'Zawieszka', 1110 m a.s.l., *PP*, on soil, 49°16′11″N, 19°56′47″E, 21 Aug. 2002; Dolina Spadowiec valley, western slope (right side of valley), 1020 m a.s.l., *DgF*, on soil, 49°16′26″N, 19°57′08″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The fungus has been noted a few times in the High and West Tatras (Dominik & Pachlewski 1956; Anonymous 1968; Škubla 1998b; Lizoň & Kautmanová 2004) and in the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

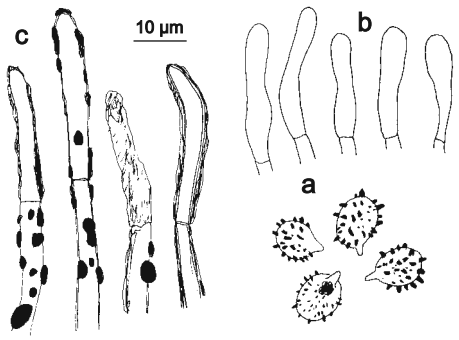

Fig. 168. *Russula postiana* Romell: a – spores, b – terminal elements of generative hyphae of pileipellis, c – primordial hyphae (KRAM F-54439).

269. ***Russula postiana*** Romell Fig. 168

Pileus 50 mm broad, first hemispherical, then plane or slightly depressed in center, olive-yellow in center, paler, greenish-yellow to yellow at margin, surface smooth. Lamellae medium spaced, narrowly adnate, broad, yellowish. Stem 60 × 8–15 mm, white, slightly yellowish at base, narrowly clavate. Flesh white, smell and taste not recorded. Spore print yellow. Spores 9–10 × 7–8 µm, ellipsoid, covered with isolated, irregularly distributed, high warts. Pileipellis with incrusted primordial hyphae, 3.5–5.0 µm broad, dermatocystidia lacking. Terminal cells of generative hyphae cylindrical to clavate. Clamps lacking.

SPECIMENS EXAMINED. N slopes of Grześkówki ridge, by Droga pod Reglami hiking trail, 910 m a.s.l., *DgF*, 49°16′43″N, 19°56′27″E, no date (KRAM F-54439).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

270. ***Russula queletii*** Fr. Fig. 169

Pileus 30–70 mm broad, plane or slightly depressed in center, vinaceous-red, darker in center, dark purple-red, surface shining, cap cuticle peelable only at margin. Lamellae medium spaced, narrowly adnate, broad, cream. Stem 20–50 × 7–10 mm, uniformly vinaceous-pink,

vinaceous-red, cylindrical. Flesh thin, white, pinkish under the cap cuticle, blue with guaiac, not reacting with NH_3, smell fruity, taste very acrid. Spores 8.0–9.5 × 6.5–7.5 µm, ellipsoid, covered with high, isolated warts. Cheilocystidia 55–65 × 7–10 µm, fusiform with an appendage. Pileipellis with mostly nonseptate dermatocystidia (6–)7–9(–11) µm broad, primordial hyphae lacking. Clamps lacking.

SPECIMENS EXAMINED. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, 49°16′15″N, 19°56′54″E, 20 Aug. 2001 (KRAM F-54432); W slope of Sarnia Skała massif, 1250 m a.s.l., *PP/Pmc*, 49°15′58″N, 19°56′17″E, 22 Aug. 2001 (KRAM F-51591); upper part of Dolina Strążyska valley, at Ścieżka nad Reglami hiking trail, 1100 m a.s.l., spruce forest with young beech trees, 49°15′45″N, 19°55′57″E, 5 Sept. 2000 (KRAM F-50605); mouth of Dolina Białego valley, 940 m a.s.l., spruce forest with *Fagus sylvatica* and *Acer pseudoplatanus*, 49°16′44″N, 19°57′27″E, 8 Sept. 2001 (KRAM F-51659).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1190 m a.s.l., *PP* with *Larix*, on soil, 49°16′04″N, 19°56′17″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 940 m a.s.l., *AP*, on soil, 49°16′43″N, 19°57′07″E, 9 Aug. 2002; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1200 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′47″E, 21 Aug. 2002.

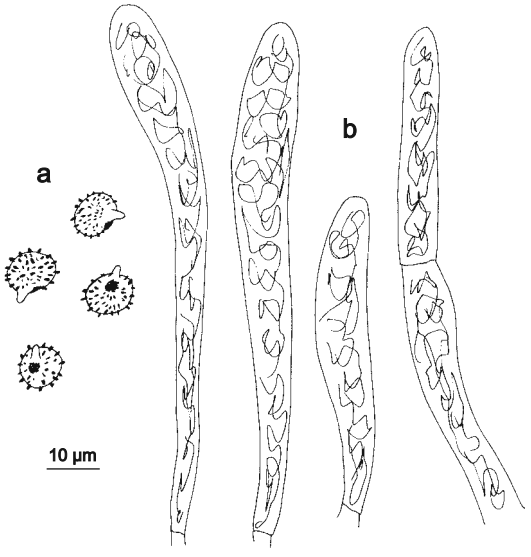

Fig. 169. *Russula queletii* Fr.: a – spores, b – dermatocystidia (KRAM F-50605).

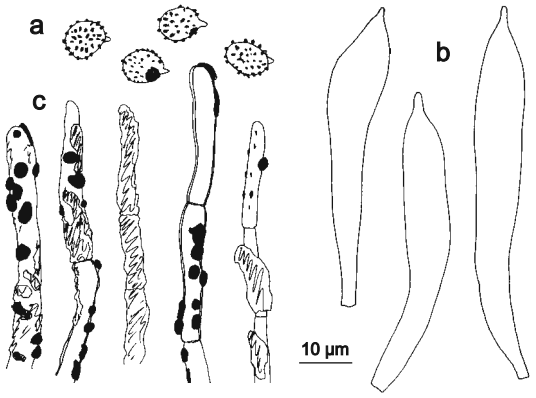

Fig. 170. *Russula risigallina* (Batsch) Sacc.: a – spores, b – pleurocystidia, c – primordial hyphae (KRAM F-54388).

DISTRIBUTION IN THE TATRA MTS. The species has been noted several times in all three parts of the Tatra Mts (Pilát 1926; Nespiak 1960, 1962b; Škubla 1998a, b; Lizoň & Kautmanová 2004). Localities from the Sarnia Skała massif have been published before (Ronikier 2009; Ronikier & Adamčík 2009a).

271. ***Russula risigallina*** (Batsch) Sacc. Fig. 170

Pileus 30–70 cm broad, first hemispherical, then plane, uniformly yellow, sometimes only slightly darker in center, surface smooth. Lamellae medium spaced, narrowly adnate, broad, cream, cream-yellow, fragile. Stem 40–70 × 10–15 cm, white, cylindrical or narrowly clavate. Flesh white, fragile, red-brown with $FeSO_4$, smell indistinct, taste mild. Spores 7–8 × 5.5–6.0 µm, ellipsoid, covered with high, isolated warts. Pleurocystidia fusiform with an appendage. Pileipellis with incrusted primordial hyphae 4–6 µm broad, dermatocystidia lacking. Clamps lacking.

SPECIMENS EXAMINED. Middle part of Dolina Spadowiec valley, orographically right side of valley, 1040 m a.s.l., *DgF*, 49°16′30″N, 19°57′07″E, 7 July 2001 (KRAM F-51515); Dolina Spadowiec valley, W slope (right side of valley), 1020 m a.s.l., *DgF*, 49°16′26″N, 19°57′01″E, 20 Aug. 2002 (KRAM F-54433); lower part of Dolina Białego valley, at Droga pod Reglami hiking trail,

940 m a.s.l., *DgF*, 49°16′44″N, 19°57′23″E, 20 Aug. 2002 (KRAM F-54389); upper part of Grześkówki ridge, 1100 m a.s.l., *DgF*, 49°16′17″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-54388).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′17″E, 6 July 2001.

DISTRIBUTION IN THE TATRA MTS. The species has beed reported once in the Polish Tatras (Dominik & Pachlewski 1956, as *Russula chamaeleontina* Fr.). Some localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

272. ***Russula romellii*** Maire

SPECIMENS EXAMINED. Lower part of Dolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, 49°16′42″N, 19°57′27″E, 20 Aug. 2002 (KRAM F-45066).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

273. ***Russula*** aff. ***silvestris*** (Singer) Reumaux Fig. 171

Pileus 30–50 mm broad, first hemispherical, then plane with central depression, pale red, discoloring into white (sometimes almost completely white), margin sulcate. Lamellae medium spaced, narrowly adnate, broad, white, fragile. Stem 40–70 × 10–12 cm, white, cylindrical to narrowly clavate. Flesh thin, white, very fragile, smell not recorded, taste very acrid. Spores 8.0–10.5 × 6.5–8.5 µm, ellipsoid, covered with warts with few connections. Pileipellis with septate dermatocysidia, 4–9 µm broad, primordial hyphae lacking. Clamps lacking.

SPECIMENS EXAMINED. S slope of Sarnia Skała massif, near the summit, 1350 m a.s.l., *Pmc*, among mosses, 49°15′54″N, 19°56′30″E, 8 Sept. 2001 (KRAM F-54426).

DISTRIBUTION IN THE TATRA MTS. The species has been found on a few localities in the Slovak West Tatras (Škubla 1998b, as *Russula emetica* var. *silvestris* Singer; Lizoň & Kautmanová 2004). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989b). The locality from the Sarnia Skała massif has been published before (Ronikier 2009; Ronikier & Adamčík 2009a).

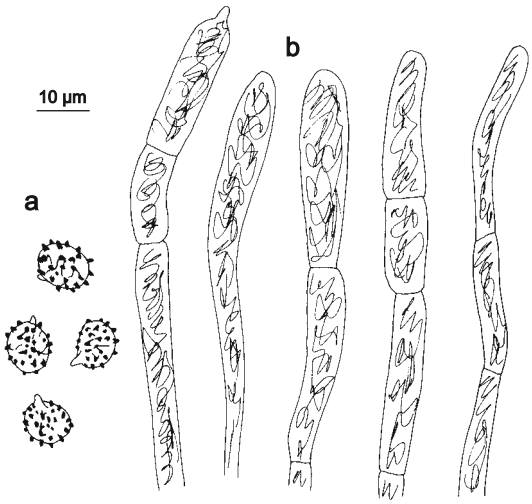

Fig. 171. *Russula* aff. *silvestris* (Singer) Reumaux: a – spores, b – dermatocystidia (KRAM F-54426).

274. ***Russula veternosa*** Fr.

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, 49°16′17″N, 19°56′15″E, 5 Sept. 2001 (KRAM F-45060).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts. The locality from the Sarnia Skała massif has been published before (Ronikier & Adamčík 2009a).

275. ***Russula vinosa*** Lindblad Fig. 172

Pileus 30–70 cm broad, first hemispherical, then expanding, uniformly purple-red, surface smooth, margin smooth or slightly sulcate. Lamellae medium spaced, narrowly adnate, broad, cream, greying. Stem 40–60 × 10–12 mm, white, cylindrical, strongly greying. Flesh white, woolly, greying, smell indistinct, taste mild. Spores 9–10 × 7–8 µm, ellipsoid, covered with high, isolated warts. Pileipellis with incrusted primordial hyphae 3–5 µm broad, dermatocystidia lacking. Clamps lacking.

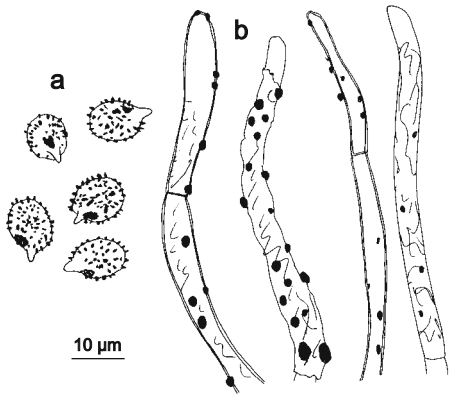

Fig. 172. *Russula vinosa* Lindblad: a – spores, b – primordial hyphae (KRAM F-51572).

SPECIMENS EXAMINED. Mouth of Dolina Strążyska valley, at Droga pod Reglami hiking trail, 930 m a.s.l., *AP*, 49°16′44″N, 19°56′27″E, no date (KRAM F-54440); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, 49°16′03″N, 19°56′18″E, 21 Aug. 2002 (KRAM F-54391); 22 Aug. 2002 (ZAMU 4299); W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, 49°16′04″N, 19°56′16″E, 22 Aug. 2001 (KRAM F-51572).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 5 Sept. 2001; upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′58″E, 21 Aug. 2002; 20 Aug. 2002; upper part of Dolina ku Dziurze valley, near caves, 1060 m a.s.l., *PP*, on soil, 49°16′15″N, 19°56′47″E, 21 Aug. 2002; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 21 Aug. 2002; 16 Aug. 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been found on a few localities in the Slovak West Tatras (Škubla 1998b; Lizoň & Kautmanová 2004) and Belanské Tatry (Škubla 1998a). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier & Adamčík 2009a).

Strobilurus Singer

276. ***Strobilurus esculentus*** (Wulfen: Fr.) Singer

SPECIMENS EXAMINED. N slope of Sarnia Skała massif, 1300 m a.s.l., *PP/Pmc*, on spruce cones, 49°15′57″N, 19°56′32″E, 15 May 2001 (KRAM F-53780); Dolina ku Dziurze valley, bottom of valley, 970 m a.s.l., *DgF*, on spruce cones (buried in soil), 49°16′22″N, 19°56′37″E, 24 Nov. 2000 (KRAM F-50455); at Ścieżka nad Reglami hiking trail, E of Czerwona Przełęcz pass, 1280 m a.s.l., *PP*, on spruce cone buried in soil, 49°15′46″N, 19°56′42″E, 15 May 2003 (KRAM F-53332); lower part of Dolina Strążyska valley, at hiking trail, 900 m a.s.l., *DgF*, on spruce cone buried in soil, 49°16′43″N, 19°56′24″E, 15 May 2003 (ZAMU 4341).

FIELD OBSERVATIONS. Spaleniec ridge, W slope, 1100 m a.s.l., *DgF*/*PP*, on spruce cones, 49°16′17″N, 19°56′47″E, 15 May 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus is known from several localities in the Polish High and West Tatras, including the study area – the Dolina Białego valley (Wojewoda *et al.* 1986; Wojewoda 1996; Komorowska 2006) and from Belanské Tatry (Svrček 1987). It has also been noted from the peripheries of the Slovak Tatras (Kuthan & Singer 1987). Localities from the Sarnia Skała massif have been published before (Komorowska 2006; Ronikier 2009).

277. ***Strobilurus stephanocystis*** (Hora) Singer

SPECIMENS EXAMINED. slope of Sarnia Skała massif, at the summit, 1360 m a.s.l., *Pmc*, on pine cones (*Pinus mugo*), 49°15′57″N, 19°56′27″E, 22 June 2001 (KRAM F-51500); N slope of Sarnia Skała massif, at the summit, 1370 m a.s.l., *Pmc*, ?on a cone, 49°15′53″N, 19°56′38″E, 11 June 2003 (KRAM F-53807).

FIELD OBSERVATIONS. N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on pine cones, 49°15′55″N, 19°56′32″E, 22 June 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been found in the neighboring Krokiew massif (Wojewoda *et al*. 1986). Localities from the Sarnia Skała massif have been published before (Komorowska 2006; Ronikier 2009).

Stropharia (Fr.) Quél.

278. ***Stropharia aeruginosa*** (Curtis: Fr.) Quél.

SPECIMENS EXAMINED. Dolina ku Dziurze valley, orographically right side of valley, 930 m a.s.l., *DgF*, on wood, 49°16′36″N, 19°56′37″E, 24 Sept. 1999 (KRAM

F-50046); N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on wood, 49°15′55″N, 19°56′32″E, 20 Aug. 2002 (KRAM F-53992); at Droga pod Reglami hiking trail, mouth of Dolina Białego valley, 930 m a.s.l., *DgF*, at spruce trunk, 49°16′43″N, 19°57′27″E, 7 Aug. 2000 (KRAM F-50210); at Droga pod Reglami hiking trail, mouth of Dolina Strążyska valley, 900 m a.s.l., *DgF*, on wood remnants, 49°16′43″N, 19°56′27″E, 12 Oct. 2001 (ZAMU 4379); Grześkówki ridge, 1130 m a.s.l., edge of spruce forest with *Larix* and *Fagus*, on wood burried in soil, 49°16′14″N, 19°56′17″E, 14 Oct. 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-53991).

FIELD OBSERVATIONS. Upper part of Dolina ku Dziurze vallley, NW slope, 1100 m a.s.l., young forest with *Sorbus aucuparia* (windthrow), wood, 49°16′11″N, 19°56′42″E, 13 Oct. 2001, at Droga pod Reglami hiking trail, between Dolina ku Dziurze valley and Dolina Spadowiec valley, 910 m a.s.l., *DgF*, on trunk, 49°16′43″N, 19°56′52″E, 12 Oct. 2001; NW slope of the massif, 1200 m a.s.l., *PP*, on wood, 49°16′04″N, 19°56′17″E, 12 Oct. 2001; N slope of Sarnia Skała massif, at the top, 1375 m a.s.l., *Pmc*, on wood, 49°15′55″N, 19°56′32″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from one locality in the Dolina Miętusia valley, Polish West Tatras (Anonymous 1968) and from two localities in the Tichá Dolina valley, Slovak West Tatras (Škubla 1998b). It has also been noted in the peripheries of the West Tatras (Rudnicka-Jezierska 1965; Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

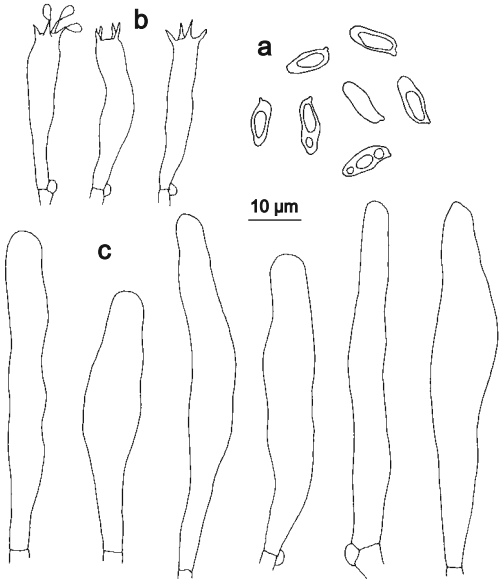

Fig. 173. *Suillus cavipes* (Opat.) A. H. Sm. & Thiers: a – spores, b – basidia, c – cystidia (KRAM F-53781).

279. ***Stropharia semiglobata*** (Batsch: Fr.) Quél.

SPECIMENS EXAMINED. Dolina Strążyska valley, NW slopes of Grześkówki ridge, at a small bridge on Potok Strążyski stream, 930 m a.s.l., *Pk*, on soil, 49°16′30″N, 19°56′09″E, 7 July 2001 (KRAM F-51516).

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts (Nespiak 1960, 1962a, c, 1966; Rudnicka-Jezierska 1965; Anonymous 1968; Frejlak 1973; Wojewoda 1996; Škubla 1998b).

Suillus Adans.

280. ***Suillus cavipes*** (Opat.) A. H. Sm. & Thiers Fig. 173

Pileus 20–50 mm broad, conico-convex, then expanded, sometimes slightly depressed in center, chestnut-brown, red-brown, surface flocculose-squamulose, scales slightly erect, under the scales yellow context visible. Tubes broad and short, 2–3 mm long, pores very big, rhomboid, 1–2 mm broad, olivaceous-yellow, decurrent down to the annulus where they form a reticulate pattern. Stem 30–50 × 5–10 mm, cylindrical to narrowly clavate, hollow, fibrillose-squamulose below the annulus. Annulus distinct, woolly, present in stem and also on pileus margin. Flesh yellowish in pileus, brownish in stem, unchanging, smell pleasant, fungoid, taste mild. Spore print olivaceous. Spores 9–11 × 3.5–4.0 µm, cylindrical to narrowly fusiform, smooth, yellowish in transmitted light. Basidia 27–30 × 5.0–6.5 µm, 4-spored. Cheilocystidia and pleurocystidia 50–68 × 6.5–11.0 µm, cylindrical, scattered. Pileipellis a trichoderm, built up of broad, cylindrical hyphae with vacuolar pigment. Clamps present.

SPECIMENS EXAMINED. W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., spruce forest with *Larix*, under *Larix*, 49°16′04″N, 19°56′18″E, 22 Aug. 2001

(KRAM F-51569); Grześkówki ridge, 1150 m a.s.l., *PP*, under *Larix*, 49°16′10″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-53781, ZAMU 4329).

DISTRIBUTION IN THE TATRA MTS. The species has been reported several times [as *Boletinus cavipes* (Opat.) Kalchbr.] from the Slovak High Tatras (Pilát 1926), from Belanské Tatry, in the Dolina Siedmich Prameňov valley (Kubička1964) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b, as *Boletinus cavipes* f. *aureus* Bull. *ex* Fr.). At the Polish side the fungus has been noted at only one locality in the Sarnia Skała massif, *ca* 1200 m a.sl. (Wojewoda 1991). The specimens studied during the present study are probably from the same area. There is one more record from 'Zakopane' that may refer to the area of the Tatra Mts (Skirgiełło 1977).

281. ***Suillus*** cf. ***granulatus*** (L.: Fr.) Roussel

SPECIMENS EXAMINED. S slopes of Sarnia Skała massif, close to the top, 1340 m a.s.l., *Pmc*, on soil, 49°15′54″N, 19°56′32″E, 20 June 2000 (KRAM F-50082).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from a few localities in the Polish and Slovak High Tatras (Pilát 1926, as *Boletus granulatus* L.; Frejlak 1973; Wojewoda 1996) and from the peripheries of the Slovak West Tatras (Kuthan 1989b). The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

282. ***Suillus grevillei*** (Klotzsch: Fr.) Singer

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, NWW slope of Grześkówki ridge, 970 m a.s.l., *DgF* with planted *Pinus sylvestris* and *Larix*, on soil, under *Larx*, 49°16′39″N, 19°56′24″E, 21 July 2000 (KRAM F-50093, 50107).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1150 m a.s.l., spruce forest with larches and beeches, on soil, 49°16′11″N, 19°56′17″E, 21 July 2000; upper part of Grześkówki ridge, 1150 m a.s.l., spruce forest with larches and beeches, on soil, 49°16′08″N, 19°56′17″E, 5 Sept. 2001.

DISTRIBUTION IN THE TATRA MTS. The species has been reported several times at both sides of the border (Pilát 1926, as *Boletus elegans* Schum.; Dominik & Pachlewski 1956, as *Boletus elegans* Fr.; Rudnicka-Jezierska 1965; Škubla 1998a) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

283. ***Suillus luteus*** (L.: Fr.) Roussel

SPECIMENS EXAMINED. SW slope of Sarnia Skała massif, 1280 m a.s.l., edge of *Pmc*, on soil, 49°15′54″N, 19°56′20″E, 19 Sept. 2000 (KRAM F-50681).

DISTRIBUTION IN THE TATRA MTS. The fungus is the most often reported from the subalpine dwarf mountain-pine shrubland [Pilát 1926, as *Boletus luteus* L.; Dominik & Nespiak 1953, as *Boletus luteus* (L.) Fr.; Nespiak 1962a; Wojewoda 1996]. It has also been found in the peripheries of the Slovak West Tatras (Kuthan 1989b). The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

284. ***Suillus viscidus*** (L.) Roussel Fig. 174

Pileus 30–60 m broad, first hemispherical, then convex, grey-beige, sometimes with a pale olivaceous tint, surface slimy. Tubes 4–6 mm long, pores medium, grey-beige, olivaceous-grey, broadly adnate or slightly decurrent. Stem 30–50 × 5–10 mm, cylindrical or narrowly clavate. Annulus whitish, then grey-brownish. Flesh sordid white, unchanging, smell nice, fungoid, taste mild. Spore print olivaceous. Spores 11–12 × 4–5 µm, cylindrical to fusiform, smooth, pale yellow in transmitted light. Basidia 30–33 × 5–7 µm, cylindrical,

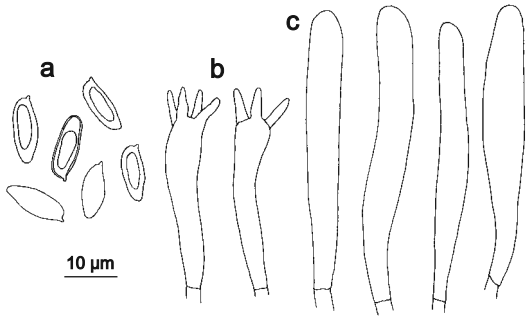

Fig. 174. *Suillus viscidus* (L.) Roussel: a – spores, b – basidia, c – cystidia (KRAM F-50125).

4-spored. Cheilocystidia and pleurocystidia 50–60 × 5–8 µm, cylindrical, in tufts. Pileipellis an ixocutis to ixotrichoderm. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, NWW slope of Grześkówki ridge, 970 m a.s.l., *DgF* with planted *Pinus sylvestris* and *Larix*, on soil, 49°16′39″N, 19°56′24″E, 21 July 2000 (KRAM F-50125); Grześkówki ridge, 1150 m a.s.l., spruce forest with *Larix*, on soil, 49°16′10.5″N, 19°56′17″E, 6 July 2001 (ZAMU 4258).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1150 m a.s.l., spruce forest with larches and beeches, on soil, 49°16′11″N, 19°56′17″E, 21 July 2000; 16 Aug. 2003; W slope of Sarnia Skała massif, at a path, 1160 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′18″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from a few localities in the Slovak West and High Tatras [Pilát 1926, as *Boletus viscidus* L.; Dermek & Pilát 1974, as *Suillus aeruginascens* (Secr.) Snell; Lizoň & Kautmanová 2004, as *Suillus laricinus*] and from the peripheries of the Slovak Tatras [Dermek & Lizoň 1979, as *Suillus aeruginascens* (Secr.) Snell; Kuthan 1989b, as *Suillus aeruginascens* (Secr.) Snell].

Tricholoma (Fr.) P. Kumm.

285. ***Tricholoma atrosquamosum*** (Chevall.) Sacc. Fig. 175

Pileus 30–70 mm broad, first hemispherical, then expanded. greyish, much darker in center, almost black, surface fibrillose-squamulose, scales darker, greyish-black. Lamellae broad, narrowly adnate or emarginate, greyish, sordid white, edge with black spots in places. Stem 20–30 × 5–7 mm, cylindrical and tapering at base, whitish, covered with very fine, black scales. Flesh white, at stem base very weakly turning purple on drying, smell undetermined, taste mild, farinaceous with an unpleasant component. Spores 6.5–8.0 × 3.5–5.0 µm, ellipsoid, smooth, nonamyloid. Basidia 28–36 × 6.5–7 µm, cylindrical. Cystidia none. Pileipellis a cutis. Pigment strongly incrusting hyphae of pileipellis. Clamps lacking.

SPECIMENS EXAMINED. Lower part of Dolina Strążyska valley, Grześkówki ridge, 960 m a.s.l., *DgF*, on soil, 49°16′39″N, 19°56′30″E, 16 Sept. 2004 (KRAM F-54528).

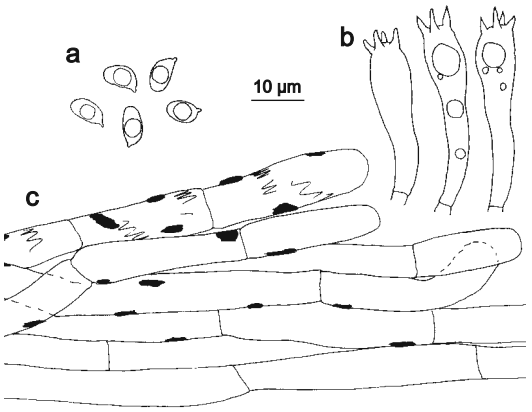

Fig. 175. *Tricholoma atrosquamosum* (Chevall.) Sacc.: a – spores, b – basidia, c – pileipellis (KRAM F-54528).

DISTRIBUTION IN THE TATRA MTS. There is one locality of the fungus in the Dolina Miętusia valley, Polish West Tatras (Anonymous 1968).

286. ***Tricholoma saponaceum*** (Fr.) P. Kumm. Fig. 176

Pileus 40–100 mm broad, first hemispherical, then expanded and slightly irregular in outline, grey-cream, grey-greenish, yellowish-olivaceous, margin paler, cream, surface smooth. Lamellae

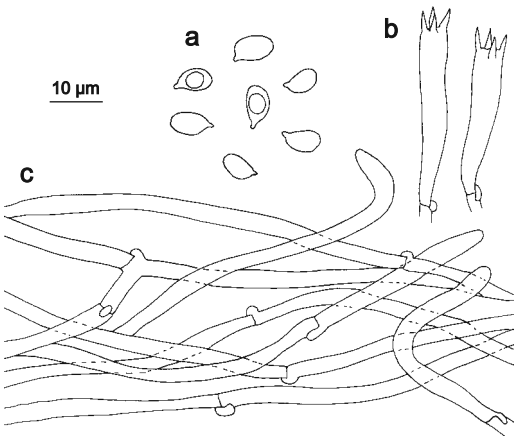

Fig. 176. *Tricholoma saponaceum* (Fr.) P. Kumm.: a – spores, b – basidia, c – pileipellis (KRAM F-54079).

broad, narrowly adnate or emarginate, cream, edge smooth. Stem 40–100 × 10–20 mm, cylindrical, tapering or broadening towards base, white, sometimes with yellowish or greenish tint, covered with very tiny darker flocci. Flesh white, smell unpleasant, taste mild. Spores 4.5–6.0 × 3.5–4.0 µm, broadly ellipsoid, smooth, nonamyloid. Basidia 28–32 × 5–6 µm, 4-spored. Cystidia none. Pileipellis a cutis, built up of narrow hyphae. Clamps numerous.

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, N slopes of Spaleniec ridge, 930 m a.s.l., *AP/DgF*, on soil, 49°16′43″N, 19°57′01″E, 9 Sept. 2001 (KRAM F-54078, ZAMU 4387); 12 Oct. 2001 (KRAM F-54079).

DISTRIBUTION IN THE TATRA MTS. The fungus has been reported from a few localities in the High and West Tatras (Pilát 1926; Rudnicka-Jezierska 1965; Anonymous 1968; Frejlak 1973; Škubla 1998a, b) and from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b).

287. ***Tricholoma sulphureum*** (Bull.: Fr.) P. Kumm.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, between Czerwona Przełęcz pass and Polana Białego meadow, 1250 m a.s.l., *PP*, on soil, 49°15′44″N, 19°56′47″E, 5 Sept. 2000 (KRAM F-50591); NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 22 Aug. 2001 (KRAM F-51570); upper part of Dolina Białego valley, S from Igła mount, at hiking trail, 1180 m a.s.l., *PP*, on soil, 49°15′49″N, 19°57′09″E, 21 Aug. 2001 (ZAMU 4300).

FIELD OBSERVATIONS. NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, on soil, 49°16′06″N, 19°56′24″E, 5 Sept. 2001; 21 Aug. 2002; mouth of Dolina Białego valley, at hiking trail, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′27″E, 8 Sept. 2001; middle part fo Dolina Białego valley, 950 m a.s.l., *DgF*, on soil, 49°16′24″N, 19°57′27″E, 8 Sept. 2001; at Ścieżka nad Reglami hiking trail, S from Polana Białego meadow, 1240 m a.s.l., *PP*, on soil, 49°15′42″N, 19°56′56″E, 8 Sept. 2001; upper part of Dolina ku Dziurze valley, at Dziura Wyżnia cave, 1050 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′42″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, orographically right side of valley, 1110 m a.s.l., *DgF*, on soil, 49°16′20″N, 19°56′47″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, 'Wymyte', (NW slopes), 1220 m a.s.l., *PP*, on soil, 49°16′04″N, 19°56′47″E, 13 Oct. 2001; upper part of Spaleniec ridge, 'Łomik', 1130 m a.s.l., *DgF*/*PP*, on soil, 49°16′11″N, 19°56′47″E, 31 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been found on several localities in the Tatra Mts (Dominik & Pachlewski 1956; Kubička 1964; Anonymous 1968; Skirgiełło 1977; Škubla 1998a; Wojewoda 1996) and in the peripheries of the Slovak West Tatras (Kuthan 1989b).

288. ***Tricholoma terreum*** (Schaeff.: Fr.) P. Kumm.

SPECIMENS EXAMINED. Summit of Sarnia Skała massif, W part of the ridge, 1376 m a.s.l., *Pmc*, on soil, 49°15′55″N, 19°56′30″E, 13 Oct. 2001 (KRAM F-51754).

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the peripheries of the Slovak High Tatras (Pilát 1926). The locality from the Sarnia Skała massif has been published before (Ronikier 2009).

289. ***Tricholoma vaccinum*** (Schaeff.: Fr.) P. Kumm. Fig. 177

Pileus 30–50 mm broad, first campanulate, then expanded with distinct umbo, surface squamulose, scales chestnut-brown, red-brown on paler, ochraceous-brown background, margin first involute and shaggy, then straight. Lamellae broad, narrowly adnate, cream-greyish, staining red-brown when damaged, edge smooth. Stem 30–50 × 8–15 mm, cylindrical, whitish at apex, red-brown in lower part, fibrillose, sometimes fibrillose-squamulose. Flesh cream, smell farinaceous, taste bitter. Spores 6.5–7.0 × 4–5 µm, broadly ellipsoid, smooth. Basidia 26–30 × 6.5–7.0 µm, 4-spored. Cystidia none. Pileipellis a cutis to trichoderm, built up of cylindrical hyphae with incrusting, brown pigment. Clamps lacking.

SPECIMENS EXAMINED. At Ścieżka nad Reglami hiking trail, at the end of hiking trail in Dolina Białego valley, SE from Polana Białego meadow, 1210 m a.s.l., *PP*, on soil, 49°15′42″N, 19°56′57″E, 8 Sept. 2001 (KRAM F-51673); upper part of Dolina ku Dziurze valley, vicinity of caves, 1050 m a.s.l., *PP*, on

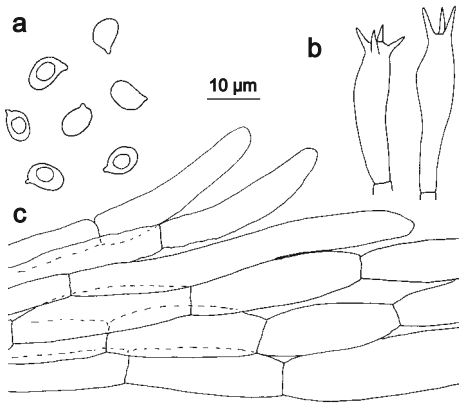

Fig. 177. *Tricholoma vaccinum* (Schaeff.: Fr.) P. Kumm.: a – spores, b – basidia, c – pileipellis (KRAM F-51673).

soil, 49°16′20″N, 19°56′42″E, 9 Sept. 2001 (ZAMU 4301).

FIELD OBSERVATIONS. Upper part of Grześkówki ridge, 1120 m a.s.l., spruce forest with *Larix*, on soil, 49°16′11″N, 19°56′17″E, 12 Oct. 2001; at Ścieżka nad Reglami hiking trail, at the end of hiking trail in Dolina Białego valley, 1210 m a.s.l., *PP*, on soil, 49°15′42″N, 19°57′02″E, 13 Oct. 2001; at hiking trail from Czerwona Przełęcz pass to the top of Sarnia Skała, at a path, 1350 m a.s.l., *Pmc*, on soil, 49°15′51″N, 19°56′37″E, 13 Oct. 2001; upper part of Dolina ku Dziurze valley, N slopes, 'Wymyte', 1250 m a.s.l., *Pmc*/*PP*, on soil, 49°16′ E 19°56′37″E, 13 Oct. 2001; at Droga pod Reglami hiking trail, between Dolina Białego valley and Dolina Spadowiec valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′17″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been reported several times from the Tatra Mts (Pilát 1926; Dominik & Pachlewski 1956; Dermek 1977; Škubla 1998a, b; Lizoň & Kautmanová 2004) and from the peripheries of the Slovak West Tatras (Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2009).

Tricholomopsis Singer

290. ***Tricholomopsis decora*** (Fr.: Fr.) Singer
Fig. 178

Pileus 20–35 mm broad, expanded, sometimes slightly depressed in center, bright yellow, golden-yellow, surface covered with dark, olivaceous-brown, appressed or erect scales. Lamellae narrow, narrowly adnate, yellow, edge smooth. Stem 30–50 × 5–7 mm, cylindrical, yellow, longitudinally fibrillose. Flesh yellow, smell and taste not distinct. Spores 6.5–8.0 × 5.0–5.5 µm, broadly ellipsoid, smooth. Basidia 26–35 × 6–7 µm, 4-spored, clamped. Cheilocystidia 35–68 × 10–19 µm, clavate, rarely cylindrical. Pileipellis a cutis to trichoderm, built up of cylindrical hyphae about 10 µm wide. Clamps numerous.

SPECIMENS EXAMINED. Grześkówki ridge, W slope, 1050 m a.s.l., *DgF*, on wood (fallen trunk of *Abies alba*), 49°16′30″N, 19°56′20″E, 21 July 2000, *leg. A. Ronikier & Z. Mirek* (KRAM F-50155); upper part of Dolina Strążyska valley, at Ścieżka nad Reglami hiking trail, 1120 m a.s.l., *PP*, on fallen trunk (?*Picea abies*), 49°15′45″N, 19°56′07″E, 5 Sept. 2000 (KRAM F-53775); Grześkówki ridge, 1100 m a.s.l., *DgF*, on wood of coniferous tree, 49°16′20″N, 19°56′17″E, 20 Aug. 2002 (KRAM F-53776); E slope of Igła mount, 1130 m a.s.l., spruce forest, on trunk of ?*Abies alba*, 49°15′51″N, 19°57′12″E, 4 July 2001 (ZAMU 4282).

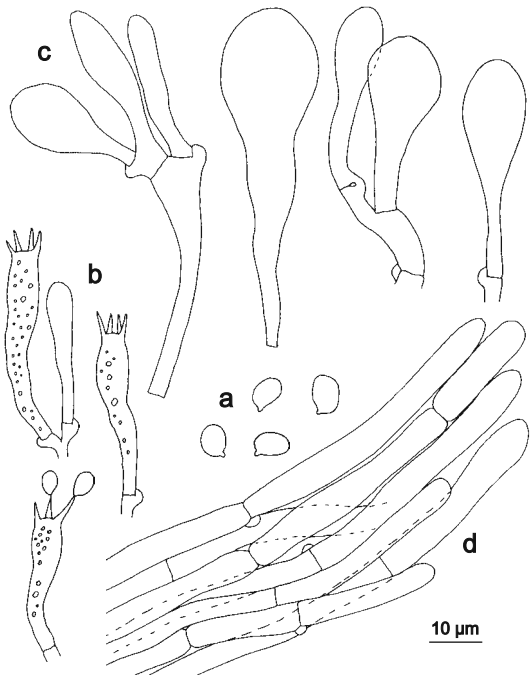

Fig. 178. *Tricholomopsis decora* (Fr.: Fr.) Singer: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-50155).

FIELD OBSERVATIONS. Grześkówki ridge W slope, 1050 m a.s.l., *DgF* , on wood, 49°16′30″N, 19°56′20″E, 6 July 2001; mouth of Bolina Białego valley, at Droga pod Reglami hiking trail, 940 m a.s.l., *DgF*, on wood, 49°16′43″N, 19°57′27″E, 7 July 2001; Grześkówki ridge, 1080 m a.s.l., *DgF* , on wood of coniferous tree, 49°16′23″N, 19°56′17″E, 22 Aug. 2001; Grześkówki ridge, 1100 m a.s.l., *DgF* , on wood of coniferous tree, 49°16′17″N, 19°56′17″E, 5 Sept. 2001; Dolina Spadowiec valley, 990 m a.s.l., *DgF*, on wood of coniferous tree, 49°16′30″N, 19°57′07″E, 9 Sept. 2001; upper part of Dolina ku Dziurze valley, left side of valley, 1130 m a.s.l., windthrow, young forest of *Sorbus aucuparia*, on wood of coniferous tree, 49°16′11″N, 19°56′27″E, 21 Aug. 2002; at Ścieżka nad Reglami hiking trail, between Polana Białego meadow and Czerwona Przełęcz pass, 1250 m a.s.l., windthrow, young forest with *Sorbus aucuparia*, on standing trunk of *Picea abies*, 49°15′45″N, 19°56′47″E, 3 Oct. 2002.

DISTRIBUTION IN THE TATRA MTS. The species has been found a few times in the West Tatras and Belanské Tatry (Kotlaba & Lazebníček 1967; Anonymous 1968; Škubla 1998a, b; Lizoň & Kautmanová 2004) and in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b).

291. ***Tricholomopsis rutilans*** (Schaeff.: Fr.) Singer

SPECIMENS EXAMINED. Upper part of Dolina ku Dziurze valley, above caves, 1150 m a.s.l., *DgF*, on wood, 49°16′15″N, 19°56′49″E, 7 June 2003, *leg. A. Ronikier & P. Mleczko* (KRAM F-53333); Dolina Spadowiec valley, W slope, 980 m a.s.l., *DgF*, on wood, 49°16′40″N, 19°57′17″E, 20 June 2000 (KRAM F-39940); upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 6 July 2001 (KRAM F-51514); upper part of Dolina ku Dziurze valley, 1060 m a.s.l., *PP*, on wood, 49°16′13″N, 19°56′37″E, 20 Aug. 2002 (KRAM F-53777).

FIELD OBSERVATIONS. Upper part of Dolina Spadowiec valley, 1145 m a.s.l., *PP*, on wood, 49°16′15″N, 19°56′58″E, 10 June 2002; 30 June 2003.

DISTRIBUTION IN THE TATRA MTS. The species has been reported from the Polish High and West Tatras [Dominik *et al*. 1954, as *Tricholoma rutilans* (Schaeff.) Fr.; Dominik & Pachlewski 1956, as *Tricholoma rutilans* Schaeff.; Frejlak 1973] and from Belanské Tatry (Svrček 1987). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989b).

Tubaria (W. G. Sm.) Gillet

292. ***Tubaria confragosa*** (Fr.) Harmaja Fig. 179

Pileus 20–35 mm broad, first hemispherical, then expanded, with a low, flat umbo or depressed in center, hygrophanous, red-brown, chestnut-brown, translucently striate when moist, ochraceous-brown when dry, surface fibrillose-squamulose, squamules small, ochraceous. Lamellae broad, broadly adnate, red-brown, edge ciliate. Stem 30–50 × 5–7 mm, cylindrical or narrowly clavate, reddish-brown, with whitish mycelium at base. Ring distinct, membranous, erect, ochraceous. Flesh red-brown, smell fungoid, taste mild. Spore print pale brown. Spores 6.5–8.0 × 4–5 µm ellipsoid, smooth, slightly thick-walled (walls up to 1 µm thick), ochraceous in transmitted light. Basidia 21–25 × 5.0–6.5 µm, 2- or 4-spored, clamped. Cheilocystidia 40–55 × 5–10 µm, cylindrical or slightly lageniform, slightly thick-walled, walls up to 1µm thick. Caulocystidia similar to cheilocystidia. Pileipellis a cutis to trichoderm, built up of thick-walled hyphae, walls up to 3 µm thick. Pigment strongly incrusting. Clamps numerous.

SPECIMENS EXAMINED. NW slope of the NE ridge of Sarnia Skała massif, upper part of Spaleniec ridge, 1250 m a.s.l., *PP*, on wood, 49°16′08″N, 19°56′57″E, 2002 (KRAM F-54083).

DISTRIBUTION IN THE TATRA MTS. The species is known from only one locality in the Dolina Siedmich Prameňov valley, Belanské Tatry (Kubička 1957; Svrček 1987). It has also been noted in the peripheries of the Slovak West Tatras (Kuthan 1989a).

293. ***Tubaria conspersa*** (Pers.: Fr.) Fayod Fig. 180

Pileus 5–10 mm broad, first hemispherical, then convex, cream-beige with a pinkish tint, surface smooth, margin with remnants of velum in a form of white flocci. Lamellae broad, broadly adnate, cream-pinkish, edge delicately ciliate. Stem 15–30 × 1–2 mm, cylindrical, entirely covered

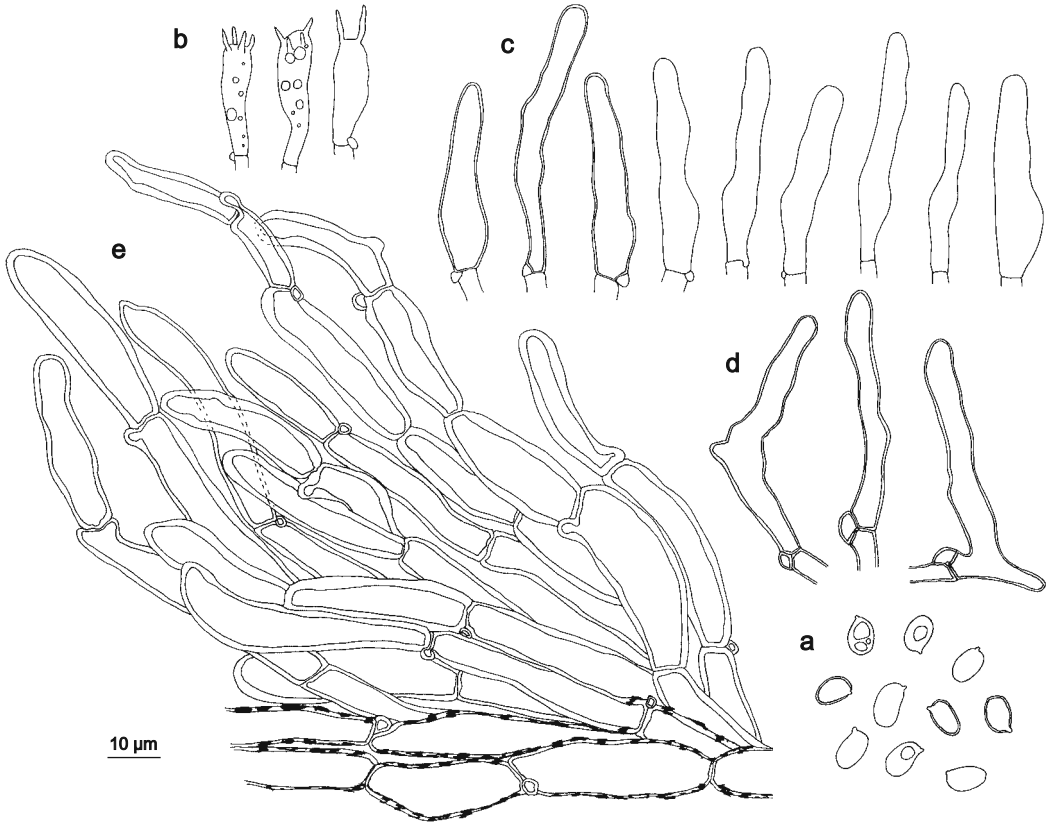

Fig. 179. *Tubaria confragosa* (Fr.) Harmaja: a – spores, b – basidia, c – cheilocystidia, d – caulocystidia, e – pileipellis (KRAM F-54083).

with pale, cream flocci of velum remnants, with whitish mycelium at base. Ring present in young specimens, distinct, persisting for a long time, then disappearing. Flesh cream, smell and taste not recorded. Spores 8–9(–12) × 5–6 µm, broadly amygdaliform, slightly thick-walled, pale in transmitted light. Basidia 20–25 × 5–6 µm, 4-spored, clamped. Cheilocystidia 20–50 × 6–15 µm, cylindrical, fusiform, sometimes septate. Pileipellis a cutis. Clamps present.

SPECIMENS EXAMINED. Grześkówki ridge, 1060 m a.s.l., *DgF*, on soil, 49°16′17″N, 19°56′15″E, 22 Aug. 2001 (KRAM F-54337); upper part of Dolina Białego valley, 1180 m a.s.l., spruce forest (planted), on soil, 49°15′48″N, 19°57′11″E, 5 Sept. 2000 (KRAM F-54338); lower part of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 19 Sept. 2000 (KRAM F-54339).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Xerocomus Quél.

294. ***Xerocomus badius*** (Fr.: Fr.) E.-J. Gilbert

SPECIMENS EXAMINED. At Droga pod Reglami hiking trail, between Dolina Spadowiec valley and Dolina ku Dziurze valley, 930 m a.s.l., *DgF*, on soil (under spruce), 49°16′43″N, 19°56′52″E, 9 Sept. 2001 (KRAM F-51686).

FIELD OBSERVATIONS. Dolina Spadowiec valley, at forest path, 1030 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°57′11″E, 21 Aug. 2002.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts (Pilát 1926, as *Boletus badius* Fr.; Dominik *et al*. 1954, as *Boletus badius*

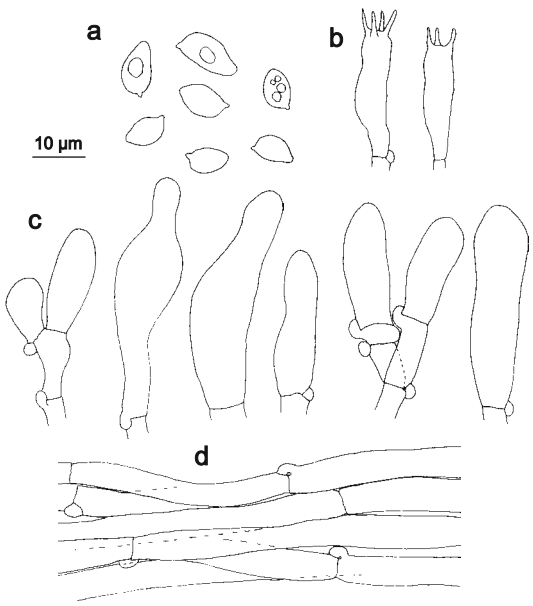

Fig. 180. *Tubaria conspersa* (Pers.: Fr.) Fayod: a – spores, b – basidia, c – cheilocystidia, d – pileipellis (KRAM F-54337).

Fr.; Dominik & Pachlewski 1956, as *Boletus badius* Fr.; Frejlak 1973; Dermek 1977; Wojewoda 1996; Škubla 1998b). It has also been reported from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b).

295. ***Xerocomus chrysenteron*** (Bull.) Quél.

SPECIMENS EXAMINED. Upper part of orographically left branch of Dolina ku Dziurze valley, E slope of Grześkówki ridge, 1150 m a.s.l., beech-fir forest, on soil, 49°16′11″N, 19°56′22″E, 21 July 2000 (KRAM F-50115); lower part of Grześkówki ridge, 1020 m a.s.l., *DgF*, on soil, 49°16′30″N, 19°56′22″E, 16 Sept. 2004 (KRAM F-54150).

FIELD OBSERVATIONS. At Droga pod Reglami hiking trail, mouth of Dolina Spadowiec valley, orographically left side of valley, 930 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°57′07″E, 5 Sept. 2001; at Droga pod Reglami hiking trail, N slope of Grześkówki ridge, 900 m a.s.l., *DgF*, on soil, 49°16′43″N, 19°56′37″E, 22 Aug. 2001.

DISTRIBUTION IN THE TATRA MTS. The fungus is known from several localities in the Tatra Mts (Pilát 1926, as *Boletus chrysenteron* Bull.; Dermek 1977; Škubla 1998a, b). It has also been reported from the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989b). Some localities from the Sarnia Skała massif have been published before (Ronikier 2002).

Xeromphalina Kühner & Maire

296. ***Xeromphalina campanella*** (Batsch: Fr.) Kühner & Maire

SPECIMENS EXAMINED. Upper part of Dolina Białego valley, E slope of Igła mount, 1140 m a.s.l., spruce forest, on spruce stump, 49°15′48″N, 19°57′07″E, 15 May 2003 (KRAM F-53366, ZAMU 4340); Grześkówki ridge, at a path, 980 m a.s.l., *DgF*, stump of coniferous tree, 49°16′36″N, 19°56′27″E, 30 March 2003, *leg. A. Ronikier & M. Ronikier* (KRAM F-53258); mouth of Dolina Białego valley, 960 m a.s.l., *DgF*, on wood of conifers, 49°16′40″N, 19°57′20″E, 4 July 2000 (KRAM F-50012); at hiking trail in Dolina Białego valley, upper part of valley, SE of Igła mount, 1160 m a.s.l., planted spruce forest, on spruce wood, 49°15′48″N, 19°57′11″E, 15 May 2001 (KRAM F-53766).

FIELD OBSERVATIONS. Mouth of Dolina Białego valley, at Droga pod Reglami hiking trail, 930 m a.s.l., *DgF*, on decaying stump, 49°16′40″N, 19°57′25″E, 20 July 2000; Dolina Spadowiec valley, upper part of valley, 1150 m a.s.l., *DgF*, on wood, 49°16′17″N, 19°57′07″E, 20 July 2000; 16 Aug. 2003; lower part of Dolina Strążyska valley, NW slope of Grześkówki ridge, 950 m a.s.l., *DgF* with planted *Pinus sylvestris*, on wood, 49°16′36″N, 19°56′17″E, 21 July 2000; between Dolina Białego valley and Dolina Spadowiec valley, 980 m a.s.l., *DgF*, on wood, 49°16′39″N, 19°57′17″E, 4 July 2000; upper part of Dolina ku Dziurze valley, W slope, 1150 m a.s.l., *DgF*/*PP*, on decaying spruce wood, 49°16′12″N, 19°56′47″E, 4 July 2000; upper part of Dolina Spadowiec valley, ‘Łomik’, 1220 m a.s.l., *DgF*/*PP*, wood of coniferous tree, 49°16′10″N, 19°56′57″E, 4 July 2000; mouth of Dolina ku Dziurze valley, left side of valley, 920 m a.s.l., *DgF*, decaying stump, 49°16′43″N, 19°56′37″E, 4 July 2000; Dolina ku Dziurze valley, E slope of Grześkówki ridge, 960 m a.s.l., *DgF*, decaying wood, 49°16′33″N, 19°56′27″E, 4 July 2000; NW slope of Sarnia Skała massif, 1170 m a.s.l., *PP*, fallen spruce trunk, 49°16′06″N, 19°56′24″E, 15 May 2001; 22 Aug. 2001; Grześkówki ridge, 980 m a.s.l., *DgF*, stump, 49°16′36″N, 19°56′27″E, 16 June 2001; NW slope of the massif, 1180 m a.s.l., *PP*, on spruce stump, 49°16′02″N, 19°56′17″E, 6 July 2001;

Dolina ku Dziurze valley, 930 m a.s.l., *DgF*, decayed stump, 49°16′36″N, 19°56′37″E, 3 July 2002; at Ścieżka nad Reglami hiking trail about 100 m W of Przełęcz Czerwona pass, 1250 m a.s.l., *PP*, spruce stump, 49°15′45″N, 19°56′27″E, 11 July 2002; Dolina Spadowiec valley, 1150 m a.s.l., *DgF*, stump of coniferous tree, 49°16′17″N, 19°57′02″E, 11 July 2002.

DISTRIBUTION IN THE TATRA MTS. The species is common in the Tatra Mts [Dominik & Pachlewski 1956, as *Omphalia campanella* Batsch.; Rudnicka-Jezierska 1965; Anonymous 1968; Frejlak 1973, as *Omphalia campanella* (Batsch.) Fr.; Klán 1984; Svrček 1987; Škubla 1998b; Lizoň & Kautmanová 2004]. It has also been noted in the peripheries of the Slovak Tatras (Kuthan & Singer 1987; Kuthan 1989a, b).

Xerula Singer

297. ***Xerula melanotricha*** Dörfelt Fig. 181

Pileus 30–60 mm broad, first campanulate, then convex with a broad umbo, then plane to slightly depressed, chocolate-brown, greyish-brown, blackish-brown, more rarely yellowish-brown, velvety-tomentose, covered with dark brown to blackish-brown, long hairs (macrosetae), margin of cap involute, then straight. Sometimes two distinct color zones are visible: yellowish-brown at center of cap and chocolate-dark brown at margin. The zones remain visible also in dry specimens. Lamellae white, waxy, moderately thick, distant, broad, narrowly adnate, edge smooth. Stem 40–130 × 2–7 mm, concolorous with cap, cylindrical to clavate, longitudinally grooved, often twisted, often with strongly thickened base, up to 15 mm broad and with tapering root, 40–120 mm long. Whole stem covered with brown to blackish-brown hairs (macrosetae). Flesh thick, whitish, smell faint, taste mild. Spores globose to subglobose 10–11.5 × 8–11 µm, hyaline, nonamyloid. Basidia 4-spored, 26–55 × 10–15 µm. Cheilocystidia scattered, 100–125 × 20–30 µm, ventricose, fusiform, slightly thick-walled, walls up to 1 µm, some slightly incrusted at apex with amorphous substance soluble in 5% KOH. Pleurocystidia more numerous, similar to cheilocystidia, 75–130 × 22–45 µm. Pileipellis hymeniderm, consists of

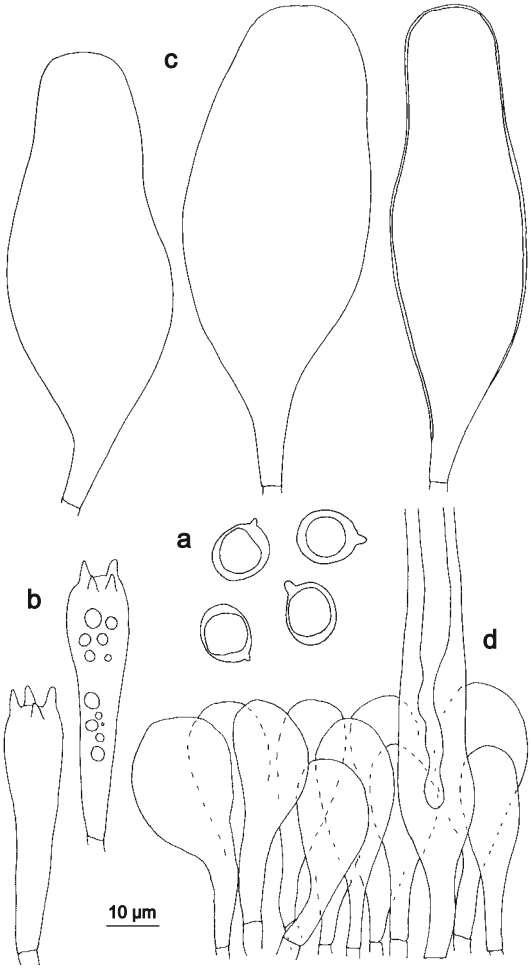

Fig. 181. *Xerula melanotricha* Dörfelt: a – spores, b – basidia, c – pleurocystidia, d – pileipellis (KRAM F-39960).

clavate to vesicular elements 30–85 × 12–35 µm with brown intracellular pigment. Hairs (macrosetae) thick-walled 80–2900 × 15–29 µm, walls 2–4 µm thick.

SPECIMENS EXAMINED. Grześkówki ridge, 960 m a.s.l., *DgF*, on soil (at base of dead, standing trunk of ?*Abies alba*), 49°16′36″N, 19°56′35″E, 9 June 2000 (KRAM F-39960 – neotype of *X. melanotricha*; see Petersen & Hughes 2010); W slope of Grześkówki ridge, 970 m a.s.l., *DgF*, on soil, 49°16′37″N, 19°56′27″E, 16 Aug. 2003 (ZAMU 4358).

DISTRIBUTION IN THE TATRA MTS. This is the first report of the fungus in the Tatra Mts.

Localities from the Sarnia Skała massif have been published before (Ronikier 2003b, 2005b; Petersen & Hughes 2010). Pilát (1926) provides *Collybia longipes* Bull. from the peripheries of Slovak High Tatra. The name *Collybia longipes* is treated as a synonym of *Xerula pudens* (e.g. Petersen & Hughes 2010) – the species associated with *Quercus*. Oak does not occur in the Tatra Mts, therefore it is possible that Pilát's specimen of *Collybia longipes* represents *Xerula melanotricha*.

NOTES. For colour illustration of specimen KRAM F-39960, see Petersen and Hughes (2010: Pl. 25b).

SPECIES DIVERSITY OF THE FUNGI ON THE SARNIA SKAŁA MASSIF: AN ASSESSMENT

As often pointed out in the literature, the fungi of the Tatra Mts is poorly known (Nespiak 1962c; Wojewoda *et al.* 1986; Wojewoda 1996; Ronikier 2002; Ronikier & Adamčík 2009a, b). The results of my study of the Sarnia Skała massif, which covers a small percentage of the total area of the Tatra Mts, confirm this. As much as 38% of the 297 taxa I recorded in this investigation were not previously reported from the Tatra Mts, and a further 24% have fewer than three recorded localities in these mountains to date. More than half (56%) of the taxa I found on the Sarnia Skała massif are new to the Polish Tatra Mts.

Of the 297 taxa I recorded on the Sarnia Skała masiff, 76% were found at a few (1 to 5) localities, and almost 40% have only one locality in the study area. Only 12% of the taxa occurred at more than 10 localities (Fig. 182). *Mycena pura* is the most common species on the Sarnia Skała massif, recorded more than 60 times at 44 localities in total. *Cortinarius odorifer* (52 times at 37 localities), *Russula cyanoxantha, Lactarius deterrimus*, *Mycena viridimarginata* and *Gymnopus confluens* (*ca* 30 localities) were recorded less frequently.

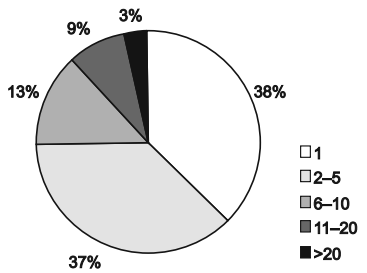

Fig. 182. Percentage of taxa with different number of localities found in the study area.

In the study area I found 39 taxa red-listed in Poland (Wojewoda & Ławrynowicz 2006) and ten species regarded as threatened in the Polish Carpathians (Wojewoda 1991). Most of these taxa occur rarely in the study area, but several species are quite common or are often observed on the Sarnia Skała massif, where they are not threatened, and may not be threatened in the Tatra Mts. These are *Amanita battarae, Crepidotus applanatus, Lactarius acris, L. picinus, Limacella glioderma, Mycena aurantiomarginata, M. renati, Rhodocybe nitellina* and *Tricholomopsis decora*. Although recorded at only two localities (but almost always where larch occurs in the study area), *Suillus cavipes*, associated with larch, is probably not threatened in the Tatra Mts either. The above species are boreal-mountain taxa (cf. Table 10) and their increased occurrence in the study area is connected with the optimum growth conditions that they have here.

There are two interesting types of vegetation in the study area: beech forest and dwarf mountain pine shrubland. Due to the limited occurrence of beech forest in the Tatra Mts, many common species associated with *Fagus sylvatica* may have their only Tatra Mts localities at Sarnia Skała. *Inocybe petiginosa, Lactarius pallidus,* and *Russula mairei*, recorded in Sarnia Skała beech forests, are new to the Tatra Mts. Many rare or very rare species are recorded in dwarf mountain pine shrubland (Ronikier 2009). *Pinetum mugo carpaticum* is one of the least mycologically examined plant associations in Poland (Ławrynowicz *et al.* 2004). It occurs only in upper parts of the mountains, a very small area in Poland, and few fungal species have been reported from it.

The greatest number of species I recorded in the lower montane belt of the Sarnia Skała massif (Figs 183, 184). They occurred more or less uniformly in the belt (Fig. 184). A total of 113 taxa I recorded in the upper montane belt (Fig. 183)

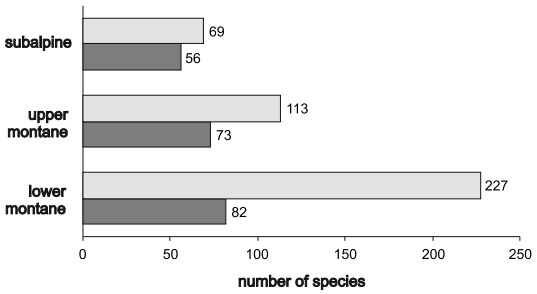

Fig. 183. Number of species recorded in altitudinal belts, pale grey – data from the entire area, dark grey – data from permanent plots (4 × 400 m^2).

and the smallest number of fungi – in the upper part of the belt, at 1201–1350 m a.s.l. (Fig. 184). This is probably due to the inaccessibility of the region. In the subalpine belt I recorded 69 species. The differences in the number of species occurring in individual vegetation belts are due mostly to differences in the surface area of the belts. The lower montane belt occupies 69.8% of the area, the upper montane belt 25.7%, and the subalpine belt only 4.5% (Piękoś 1968). When the numbers of all species recorded at research plots (4 × 400 m^2 for each belt) are compared, the differences in the number of species recorded in each belt are considerably lower (Fig. 183).

The number of species recorded in individual vegetation belts of the Sarnia Skała massif is relatively high. The occurrence of 407 species was recorded in the forests of the lower montane belt of the Babia Góra massif (Bujakiewicz 1979), but the surface area and the diversity of habitats and plant associations examined on the Babia Góra massif were much greater. The number of fungal species in the upper montane belt of the Babia Góra massif (130 taxa) is similar to that recorded on the Sarnia Skała massif despite the differences in the area covered by the belt in the two places. On the other hand, far fewer taxa (88) were recorded in the upper montane belt of the Karkonosze Mts (Nespiak 1971). The number of species recorded in the subalpine belt in a very small area occupied by *Pinetum mugo carpaticum* on the Sarnia Skała massif is also relatively high. Fifty-eight taxa have been reported from a similar plant association developed on crystalline substrate in a considerably larger area in the Morskie Oko lake region in the High Tatra Mts (Dominik & Nespiak 1953; Frejlak 1973).

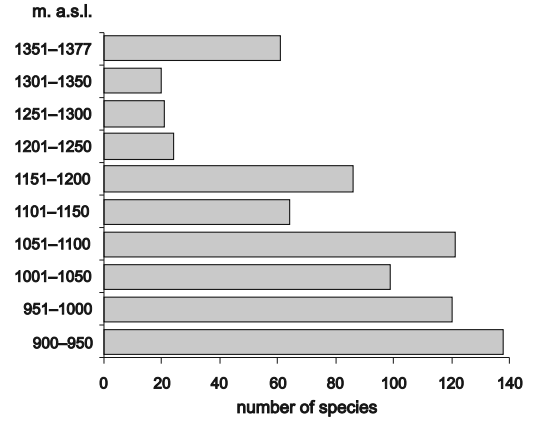

Fig. 184. Number of species recorded in altitude classes with every 50 m intervals.

PLANT ASSOCIATIONS TYPICAL OF THE ALTITUDINAL BELTS OF THE SARNIA SKAŁA MASSIF: VEGETATION AND MYCOCOENOLOGICAL ANALYSIS

I conducted mycocoenological observations at twelve permanent plots. Four permanent plots were established in each belt (cf. MATERIAL AND METHODS). The aim of this part of the study was to identify species characteristic of plant associations typical of altitudinal vegetation belts.

DENTARIO GLANDULOSAE-FAGETUM

Fertile Carpathian beech forest is the plant association typical of the lower montane belt of the Sarnia Skała massif. Its most fertile form, the *Dentario glandulosae-Fagetum cardaminetosum trifoliae* subassociation, occurs in the majority of the study area (cf. DESCRIPTION OF THE STUDY AREA).

Four plots established in the lower montane belt (*Dentario glandulosae-Fagetum cardaminetosum trifoliate*, referred to as *Dentario glandulosae-Fagetum* here) were demarcated at different altitudes on two main northern slopes of the Sarnia Skała massif (Fig. 6). Plot A1 (Fig. 3c) is the lowest one, situated at the mouth of the Dolina

Białego valley, *ca* 100 m above the Droga nad Reglami hiking trail at 940 m a.s.l. (49°16′42″N, 19°57′27″E). Plot A2 (Fig. 3d) lies in the middle part of the Dolina Spadowiec valley, on its orographically right side, at 1020 m a.s.l. (49°16′26″N, 19°57′08″E). Plots A3 and A4 (Fig. 3e, 4a) were established on Grześkówki ridge, first in its lower part (970 m a.s.l., 49°16′39″N, 19°56′30″E) and the second in the upper part of the lower montane belt (1060 m a.s.l., 49°16′17″N, 19°56′15″E), both on the northwestern slope of the ridge. There was a large amount of dead wood in the plots in the lower montane belt.

Plot A1 was found to have ten stumps, five fallen trees, five lying firs (trunk diameter 20 cm), nine lying firs (trunk diameter 10–15 cm), three overturned young beeches (trunk diameter 7 cm) and two dried standing beeches (trunk diameter 10 cm). As the slope gradient was quite steep and uneven in places, beech leaves that slowly decomposed throughout the year accumulated in hollows. Three stumps and a few dead lying trunks were found at plot A2: two fir trunks (trunk diameter 20 cm and 3 cm), four overturned beeches (trunk diameter 10–15 cm) and one very decayed log. Plot A2 has a relatively slight slope gradient, the herb layer cover was greater than in the rest of the plots in the lower montane belt, and the litter was distributed evenly. Plot A3 had a large amount of dead wood in the form of large overturned trees (six firs, trunk diameter 10, 20, 40 cm; 2 beeches, trunk diameter 15, 30 cm) and two stumps. The plot has a steep gradient, the herb layer and litter were almost completely absent in its upper part, and there was a thick layer of accumulated beech leaves in the lower part. Similarly to A2, the layer of dead undecomposed organic matter was not very thick on plot A4, which was established on a low-gradient slope. The amount of dead wood was slightly less than that at the other plots: nine stumps, a large number of branches, several dozen young dead lying firs (trunk diameter 15–20 cm) and five dead young standing trees (four firs, one beech).

The number of vascular plants was highest at plots A1 and A2, with 29 and 31 species respectively. Fewer species (26) were recorded at plot A4, and only 17 vascular plant species were recorded at the floristically poorest plot A3 (Table 3).

A total of 82 species of fungi were collected at the permanent plots established in lower montane forest. The number of taxa was highest at A2 (45) and lowest at A4 (27); 40 species were collected at A1, and 34 at A3. More fungal than vascular plant species were recorded; the difference was small at plots A1 and A4, but the number of fungal species was almost double the number of vascular plant species at plot A3 (Tables 3, 4).

The permanent plots in lower montane forest were characterized by a large contribution of terricolous and litter-inhabiting fungi, while bryophilous fungi were absent (Table 4). The lack of fungi occurring on mosses is due to the absence of this type of habitat in those plots. Mycorrhizal fungi constituted a considerable majority of the terricolous fungi. The number of mycorrhizal fungi was highest at A1 and A2, where the tree stands are slightly younger than at the other two plots. The number of lignicolous species was proportional to the amount of dead wood, which was lowest at A4. The number of fungi occurring at all of the plots (11 taxa) is quite high; plot similarity in the lower montane forest is considerable, and the fungi in the Carpathian beech forest throughout the study area is homogenous (Table 4). Forty-three species can be considered characteristic of the *Dentario glandulosae-Fagetum* association in the study area. Eighteen of them are mycorrhizal fungi, six are saprotrophic soil fungi, 12 are litter-inhabiting species, and seven are lignicolous taxa (Table 9).

POLYSTICHO-PICEETUM

Calciphilous spruce forest is almost the only association developed in the upper montane belt on the Sarnia Skała massif (cf. DESCRIPTION OF THE STUDY AREA).

The four permanent plots in the upper montane belt were demarcated as follows: B1 – upper part of Dolina Spadowiec valley, on its orographically left side at 1170 m a.s.l. (49°16′15″N, 19°56′58″E); B2 – upper part of Dolina ku Dziurze valley at 1060 m a.s.l. (49°16′15″N, 19°56′47″E); B3 – upper part of Grześkówki ridge, on northwest slope of the massif at 1160 m a.s.l. (49°16′04″N, 19°56′18″E); B4

Table 3. Phytosociological relevé of four permanent plots established in the *Dentario glandulosae-Fagetum cardaminetosum trifoliae* in the Sarnia Skała massif. ChAss. – species characteristic of associations, ChAll. – species characteristic of alliance, ChO. – species characteristic of order, ChCl. – species characteristic of class.

No. of relevé		1	2	3	4
Permanent plot		A1	A2	A3	A4
Date			15 May 2001		
Area of permanent plot (m^2)		400	400	400	400
Altitude (m)		940	1020	970	1060
Exposition		E	N-W	N	N-NW
Slope inclination (º)		30–40	5–10	45	5–10
Cover of trees (a) (%)		60	60	40	50
Cover of shrubs (b) (%)		10	5	20	30
Cover of herbs (c) (%)		40	60	30	40
Cover of mosses (%)		–	–	–	–
No. of species in a relevé		29	31	17	25
ChAss.: *Dentario-glandulosae Fagetum* **cardaminetosum trifoliae*					
**Cardamine trifolia*		3.2	1.2	2.3	2.2
Dentaria glandulosa		+	1.1	1.1	+
ChAll.: *Fagion sylvaticeae*					
Fagus sylvatica	a	4.3	4.4	4.3	3.3
Fagus sylvatica	b	+	·	2.1	1.1
Fagus sylvatica	c	+	1.1	1.1	·
Prenanthes purpurea		2.1	1.1	+	1.1
Dentaria bulbifera		·	1.1	·	·
ChO.: *Fagetalia sylvaticeae*					
Phyteuma spicatum		r	+	·	r
Galeobdolon luteum		+	+	1.2	·
Sanicula europaea		+	1.2	·	+
Asarum europaeum		·	1.2	1.3	·
Dryopteris filix-mas		·	2.1	r	·
Viola reichenbachiana		·	+	·	r
Lilium martagon		·	+	·	·
Mercurialis perennis		·	·	+	·
Daphne mezereum		r	·	·	·
Pulmonaria obscura		r	·	·	·
Primula elatior		·	r	·	·
Paris quadrifolia		·	r	·	·
ChCl.: *Querco-Fagetea*					
Fraxinus excelsior	c	r	·	·	·
Poa nemoralis		·	r	·	·
ChCl.: *Vaccinio-Piceetea*					
Abies alba	a	1.1	·	+	+
Abies alba	b	1.1	+	+	2.1
Abies alba	c	+	+	+	+
Picea abies	a	·	·	·	+
Picea abies	c	+	+	·	·
Vaccinium myrtillus		1.1	·	·	+
Pyrola minor		1.1	·	·	·
Dryopteris dilatata		·	1.1	·	·
Homogyne alpina		+	·	·	·
Deschampsia flexuosa		·	·	·	+
Orthilia secunda		·	·	·	r
Ribes petraeum		·	·	·	r
Others					
Acer pseudoplatanus	b	·	·	·	1.1
Acer pseudoplatanus	c	+	+	+	·
Sorbus aucuparia	c	r	+	·	·
Sorbus aucuparia	b	·	·	+	+
Sambucus racemosa	c	·	r	·	·
Oxalis acetosella		3.1	2.1	1.2	2.1
Polygonatum verticillatum		+	+	·	+
Petasites albus		·	+.1	+	·
Hieracium murorum		+	+	·	·
Maianthemum bifolium		+	·	·	+
Dryopteris carthusiana		+	·	·	+
Mycelis muralis		+	·	·	+
Dryopteris cf. *expansa*		+	·	·	·
Athyrium filix-femina		+	·	·	·
Senecio nemorensis		·	+	·	·
Gymnocarpium dryopteris		·	+	·	·
Geranium robertianum		·	+	·	·
Soldanella carpatica		·	·	·	+
Rubus idaeus		·	·	·	r
Rubus sp.		·	r	·	·

– above a spring funnel of the orographically left branch of the Dolina ku Dziurze valley at 1170 m a.s.l. (49°16′06″N, 19°56′24″E) (Fig. 4b–e, 6). The plots were situated in the lower or middle parts of the upper montane belt. Plots could not be established in the inaccessible upper part of the ridges separating the Dolina Białego valley from the Dolina Spadowiec valley and the Dolina Spadowiec valley from the Dolina ku Dziurze valley. On plot B1, situated on a moderately steep slope, there were many dead standing young trees (43 spruces, trunk diameter up to 10 cm, 13 rowan trees) and lying trunks (24 spruces) and stumps (11). Surface irregularities influenced the development of damp sites colonized by bryophytes in hollows.

Table 4. Mycocoenological relevé of four permanent plots in the *Dentario glandulosae-Fagetum cardaminetosum trifoliae* association in the Sarnia Skała massif (see MATERIAL AND METHODS for the legend).

	No. of permanent plot	A1	A2	A3	A4
	Number of visits	42	42	42	42
	Number of species	40	45	34	27
	MYCORRHIZAL SOIL FUNGI				
♦	*Inocybe petiginosa*	4^{2-3}	5^{+-2}	3^{+-2}	3^{1-2}
◘	*Laccaria amethystina*	5^{+-2}	3^{+-1}	1^{1}	2^{2}
◊ ◘	*Hygrophorus eburneus*	1^{1}	1^{+}	4^{+-1}	3^{+-2}
◊ ◘	*Lactarius bleninius*	3^{1-2}	3^{+-3}	3^{+-1}	1^{+}
	Lactarius pallidus	3^{1-2}	1^{+}	1^{+}	4^{1-2}
◊ ◘	*Russula cyanoxantha*	6^{+-1}	5^{+-2}	·	3^{1-2}
◊	*Russula mairei*	5^{1-2}	4^{+-2}	·	1^{2}
	Inocybe rimosa	·	1^{1}	2^{1}	4^{+-1}
	Cantharellus cibarius	2^{+}	2^{+-2}	·	·
	Lactarius pterosporus	2^{1-2}	1^{2}	·	·
	Laccaria laccata	2^{+-2}	2^{1-2}	·	·
□	*Russula laurocerasi*	1^{1}	·	·	·
	Russula risigallina	1^{+}	1^{+}	·	·
	Inocybe hystrix	1^{1}	1^{1}	·	·
	Inocybe corydalina	·	3^{+-1}	3^{+-1}	·
	Lactarius salmonicolor	·	·	2^{+}	1^{1}
	Cratherellus tubaeformis	1^{1}	·	·	2^{1-3}
◊	*Lactarius piperatus*	5^{1-2}	·	·	·
◊	*Russula nigricans*	2^{1}	·	·	·
◘	*Inocybe calamistrata*	1^{+}	·	·	·
	Inocybe praetervisa	1^{+}	·	·	·
	Russula aurea	1^{+}	·	·	·
◊	*Russula fellea*	1^{2}	·	·	·
	Craterellus sinuosus	1^{1}	·	·	·
	Russula aurora	1^{1}			
	Russula romellii	1^{1}			
	Lactarius romagnesii	·	3^{1-2}	·	·
	Inocybe pelargonium	·	1^{+}	·	·
	Amanita battarae	·	1^{1}	·	·
■	*Inocybe adequata*	·	1^{+}	·	·
	Inocybe fraudans	·	1^{+}	·	·
	Inocybe mixtilis	·	1^{1}	·	·
◊	*Russula ochroleuca*	·	1^{1}	·	·
	Inocybe nitidiuscula	·	1^{+}	·	·
	Inocybe microspora			1^{1}	
	Hygrophorus unicolor	·	·	·	2^{2}
	Lactarius acris	·	·	·	2^{+-1}
	Russula veternosa				1^{1}
	SAPROTROPHIC SOIL FUNGI				
◊ ◘	*Rhodocollybia butyracea* f. *asema*	2^{+-1}	2^{+-2}	1^{1}	2^{+-2}
◘	*Entoloma rhodopolium*	·	1^{+}	1^{2}	·
	Entoloma hirtipes	·	·	1^{1}	1^{1}
	Entoloma sordidulum	·	3^{+-1}	·	2^{2}
	Lyophyllum rancidum	·	·	1^{+}	·

Table 4. *Continued.*

	No. of permanent plot	A1	A2	A3	A4
	Pseudoclitocybe cyathiformis	·	·	1^{1}	·
	Parasola plicatilis	·	·	1^{+}	·
	FUNGI OCCURRING ON LITTER				
♦ ◘	*Marasmius setosus*	3^{+-4}	3^{1-4}	1^{4}	1^{4}
♦ ◘	*Mycena capillaris*	3^{5}	3^{5}	2^{4-5}	2^{5}
◊ ◘	*Mycena pura*	5^{+-2}	8^{+-2}	3^{1}	5^{+-2}
	Mycena flavescens	1^{2}	2^{+-1}	2^{2}	2^{1-2}
◘	*Infundibulicybe gibba*	1^{+}	2^{+-1}	5^{+-2}	2^{+-1}
	Psathyrella murcida	2^{+-1}	1^{1}	1^{+}	·
	Flammulaster subincarnatus	1^{1}	·	1^{+}	1^{1}
	Gymnopus confluens	2^{+-2}	3^{1-2}	·	·
◊	*Mycena sanguinolenta*	1^{1}	2^{+-1}	·	·
◊ ◘	*Marasmius buillardii*	·	1^{2}	·	2^{1-2}
	Mycena cinerella	1^{2}	·	1^{2}	·
♦	*Gymnopus fuscopurpureus*	·	1^{+}	1^{1}	·
	Clitocybe vibecina	·	1^{2}	1^{2}	·
	Flammulaster carpophilus	·	1^{+}	1^{+}	·
	Mycena amicta	1^{+}	·	·	·
	Mycena aurantiomarginata	1^{+}	·	·	·
	Mycena galopus	·	1^{+}	·	·
■	*Marasmius wynnei*	·	·	3^{2-3}	·
	Lyophyllum cf. *murinum*	·	·	1^{1}	·
	Gymnopus aquosus	·	·	·	2^{2}
	Tubaria conspersa	·	·	·	1^{2}
	Rhodocybe nitellina	·	·	·	1^{1}
	LIGNICOLOUS SPECIES				
	Crepidotus applanatus	·	1^{2}	2^{2}	·
	Mycena renati	·	2^{3-4}	2^{4}	·
◊	*Mycena galericulata*	1^{1}	3^{+-2}	·	·
	Panellus stypticus	3^{2-3}	·	·	·
	Mycena rubromarginata	1^{+}	·	·	·
	Lichenomphalia umbelifera	1^{1}	·	·	·
	Mycena haematopus	·	4^{1-2}	·	·
◊ ◘	*Hymenopellis radicata*	·	3^{+-1}	·	·
◊	*Pluteus cervinus*	·	1^{+}	·	·
◊ ♦ ◘	*Mycetinis alliaceus*	·	1^{+}	·	·
	Hypholoma capnoides	·	·	2^{1}	·
◊	*Hypholoma fasciculare*	·	·	1^{2}	·
	Pluteus pouzarianus	·	·	1^{+}	·
	Mycena leptocephala	·	·	1^{+}	·
	Mycena viridimarginata	·	·	·	1^{2}

♦ – species characteristic of *Fagion sylvaticeae* alliance (Lisiewska 1972, 1974), ◊ – species characteristic of *Fagetalia* order (Lisiewska 1974) and preferential *Fagetalia* order (Nespiak 1968), □ – species characteristic of *Dentario glandulosae Fagetum* in the Bieszczady Mts (Nespiak 1968), ■ – species locally characteristic of *Dentario glandulosae Fagetum* in the Ojców National Park (Wojewoda 1975), ◘ – diagnostically important species differenting *Dentario glandulosae Fagetum* on the Babia Góra massif (Bujakiewicz 1987).

The cover of the herb layer and bryophytes was high at plot B2, situated on the northwest slope with a fairly steep gradient. Crown density and the amount of dead wood (a few stumps) were low. The plot, established in the lower part of the upper montane forest at about the same altitude as plot A4 in lower montane beech forest, was at a place where the upper montane forest descends to the lowest altitude on the Sarnia Skała massif. Plot B3, in the upper part of Grześkówki ridge, on the northwest slope, was characterized by high crown density, relatively small cover of the herb layer, and a small contribution of bryophytes. Twenty-three young dead standing spruces and one rowan tree, nine stumps and two overturned spruces (fallen trees), and one very decayed log 20 cm in diameter were recorded at the plot. Plot B4 was characterized by surface irregularities and a relatively high number of fallen trees, which created many damp shaded microhabitats colonized by bryophytes. The highest number of vascular plants was recorded at this plot. Twenty dry dead standing spruces, six lying spruce trunks and 13 rotten stumps were also found there.

There was large share of species of the class *Querco-Fagetea* at the plots established in the upper montane forest, as is typical of the *Polysticho-Piceetum* association. The number of vascular plant species was highest at plot B4, with 54 species, followed by B3 (44), B1 (40) and B2 (34) (Table 5).

A total of 73 species of fungi were collected at the permanent plots established in *Polysticho-Piceetum*. The number of taxa was highest at B4 (41 taxa) and B1 (36), followed by B3 (32) and B2 (25). There were fewer fungal species than vascular plants at these plots (Tables 5, 6), but the differences were not great.

Terricolous fungi, the majority of which form mycorrhizal associations with spruce, made the largest contribution at the plots. The plots differed mostly in the number of lignicolous and bryophilous species. The number of fungi occurring on mosses was lowest at B3 (one species) and no lignicolous species were recorded at B2, where the percentage of dead wood was very low (Table 6). One species characteristic of the Carpathian beech forest on the Sarnia Skała massif, *Mycena capillaris*, was found at this plot (Table 6). The fungus grew on a small amount of beech leaves under a young beech in the shrub layer at this plot. Due to the small amount of beech litter, the fungus was much less abundant here than at the plots in the lower montane forest.

Habitat factors, that is, the amount of dead wood and the cover of the moss layer, seem to have the greatest effect on the species composition and the contribution of individual ecological groups in the plots in *Polysticho-Piceetum*. The contributions of ecological groups and the composition of fungi were most similar between plots B1 and B4, which are at similar altitudes and on similarly exposed slopes. The contribution of dead wood and the general physiognomy of these plots were also similar.

The plots established in the upper montane forest differed from one another. Only six species occurred across all the plots, and exclusive species were usually recorded a few times at one plot. Eight species were recognized as characteristic of the *Polysticho-Piceetum* plant association, six of them mycorrhizal fungi, one a litter-inhabiting species, and one a fungus associated with mosses. A group of 13 species characteristic of both *Polysticho-Piceetum* and *Pinetum mugo carpaticum* was recognized, six of which are mycorrhizal species, three are saprotrophic soil fungi, one occurs on litter, and three among mosses (Table 9).

PINETUM MUGO CARPATICUM

The locally best-developed forms of the subalpine belt occur on the northern side of the massif, so three of the four permanent plots established in dwarf mountain pine shrubland were located on the north slopes of the massif (cf. Fig. 6). The three plots were set up at elevations from 1360 to 1375 m a.s.l. The gradient and floristic composition at plots C1 (1370 m a.s.l., 49°15′53″N, 19°56′38″E), C2 (1375 m a.s.l., 49°15′55″N, 19°56′32″E) and C3 (1360 m a.s.l., 49°15′57″N, 19°56′27″E) were very similar, as was the density of dwarf mountain pine shrubland, which exceeded 3 m in height and was shorter only at C1 in places

Table 5. Phytosociological relevé of four permanent plots established in the *Polysticho-Piceetum* in the Sarnia Skała massif. ChAss. – species characteristic of associations, ChAll. – species characteristic of, ChO. – species characteristic of order, ChCl. – species characteristic of class, DAll. – species differentiating of alliance.

No. of relevé		5	6	7	8
Permanent plot		B1	B2	B3	B4
Date		15 May 2001			
Area of permanent plot (m^2)		400	400	400	400
Altitude (m)		1170	1060	1160	1170
Exposition		N-NE	N-NW	N-NW	N
Slope inclination (º)		20-30	40	30	30
Cover of trees (a) (%)		60	40	70	60
Cover of shrubs (b) (%)		30	20	30	30
Cover of herbs (c) (%)		40	80	50	80
Cover of mosses (%)		30	60	20	50
No. of species in a relevé		40	34	44	54
ChAss.: *Polysticho-Piceetum*					
Huperzia selago		·	·	r	r
ChAll. and *DAll.: *Piceion abietis*					
Picea abies	a	3.3	2.2	3.4	3.3
Picea abies	c	·	·	+	+
Homogyne alpina		1.1	+	+	·
**Luzula sylvatica*		+	·	r	+
**Dryopteris dilatata*		r	·	r	r
ChO.: *Vaccinio-Piceetalia*					
Orthilia secunda		+	·	r	·
ChCl.: *Vaccinio-Piceetea*					
Vaccinium myrtillus		1.1	2.1	2.1	1.1
Abies alba	c	·	+	·	·
ChCl.: *Querco-Fagetea*					
Fagus sylvatica	b	·	r	·	·
Mercurialis perennis		1.2	2.3	+	1.1
Phyteuma spicatum		1.1	+	1.1	1.1
Prenanthes purpurea		+	+	+	+
Cardamine trifolia		+	·	·	+
Primula elatior		·	·	+	r
Paris quadrifolia		·	·	·	+.2
Daphne mezereum		·	r	r	·
Neottia nidus-avis		r	·	·	·
Lilium martagon		r	·	·	·
Sanicula europaea		·	·	r	·
Polystichum braunii		·	·	r	·
Dryopteris filix-mas		·	·	r	·
Carex digitata		·	·	r	·
Galeobdolon luteum		·	·	·	r
Others					
Acer pseudoplatanus	a	r	·	·	·
Acer pseudoplatanus	b	·	+	·	+
Acer pseudoplatanus	c	+	+	r	+
Sorbus aucuparia	a	r	·	+	·
Sorbus aucuparia	b	·	r	·	+

Table 5. *Continued.*

No. of relevé		5	6	7	8
Sorbus aucuparia	c	+	+	·	·
Sorbus aria	b	·	r	·	·
Sorbus aria	c	·	r	·	·
Lonicera nigra	b	+	·	r	+
Lonicera nigra	c	·	+	+	·
Sambucus racemosa	b	·	·	·	r
Oxalis acetosella		1.1	1.1	2.1	2.1
Hieracium bifidum		1.1	1.1	1.1	1.1
Polygonatum verticillatum		+	1.1	+	+.2
Clematis alpina		+	2.1	1.2	+
Valeriana tripteris		r	r	r	r
Aruncus sylvestris		+	+	r	r
Gentiana asclepiadea		+	1.2	+	+
Calamagrostis arundinacea		1.2	3.2	1.1	·
Maianthemum bifolium		+	1.1	+	·
Petasites albus		+	·	r	1.1
Athyrium distentifolium		r	·	r	r
Soldanella carpatica		+	·	2.1	1.1
Listera ovata		+	r	·	r
Galium sylvaticum		+	·	r	+.3
Deschampsia flexuosa		·	2.2	+	·
Calamagrostis villosa		1.1	·	·	1.2
Adenostyles alliariae		+	·	·	1.1
Veratrum lobelianum		+	·	·	+
Thalictrum aquilegiifolium		+	·	·	1
Mycelis muralis		+	·	·	r
Phegopteris connectilis		·	1.1	·	r
Hieracium murorum		·	·	r	+
Ranunculus platanifolius		+	·	·	r
Fragaria vesca		·	+	·	+
Asplenium trichomanes		·	·	+	+
Cystopteris fragilis		·	·	+	r
Cardaminopsis halleri		·	·	r	+
Senecio ovatus		·	·	r	r
Crepis paludosa		·	·	r	r
Rosa pendulina		r	r	·	·
Cirsium erisithales		·	r	r	·
Chaerophyllum hirsutum		r	·	·	r
Laserpitium latifolium		·	+	·	·
Rubus sp.		·	+	·	·
Doronicum austriacum		·	·	·	+
Cicerbita alpina		·	·	·	+
Heracleum sphondylium		r	·	·	·
Hypericum maculatum		·	r	·	·
Aconitum cf. *variegatum*		·	r	·	·
Gymnocarpium dryopteris		·	r	r	·
Leucanthemum waldsteinii		·	·	r	·
Ribes petraeum		·	·	·	r
Rubus idaeus		·	·	·	r
Actaea spicata		·	·	·	r
Melandrium rubrum		·	·	·	r
Dryopteris carthusiana		·	·	·	r
Cystopteris montana		·	·	·	r
Dryopteris cf. *affinis* (juv.)		·	·	·	r

Table 6. Mycocoenological relevé of four permanent plots in the *Polysticho-Piceetum* association in the Sarnia Skała massif (see MATERIAL AND METHODS for the legend).

	No. of permanent plot	B1	B2	B3	B4
	Number of visits	14	14	14	14
	Number of species	36	25	32	41
	MYCORRHIZAL SOIL FUNGI				
●	*Cortinarius odorifer*	7^{1-2}	3^{+-1}	3^{1}	2^{1}
○	*Russula vinosa*	2^{+-1}	1^{+}	3^{+-1}	3^{+-2}
○	*Cortinarius brunneus*	2^{2}	1^{2}	1^{1}	1^{2}
	Lactarius deterrimus	1^{1}	2^{+-1}	1^{1}	2^{1}
○	*Lactarius picinus*	3^{1-2}	3^{+-1}	·	4^{1}
●	*Lactarius scrobiculatus*	6^{+-1}	2^{+-1}	·	5^{+-2}
	Cortinarius acutus	1^{2}	1^{1}	·	1^{2}
●	*Russula firmula*	5^{+-2}	·	1^{2}	2^{1}
○ • ◦	*Hygrophorus olivaceoalbus*	2^{2}	·	1^{2}	1^{2}
•	*Lactarius aurantiacus*	1^{+}	·	1^{2}	3^{+-1}
	Cortinarius splendens	1^{1}	1^{+}	·	·
	Inocybe nitidiuscula	1^{2}	·	·	2^{1-2}
	Inocybe geophylla	1^{+}	·	·	1^{+}
• ◦	*Russula emetica*	·	4^{1-2}	·	1^{1}
	Laccaria laccata	·	·	1^{+}	1^{1}
◦ ●	*Russula queletii*	1^{+}	·	·	·
	Russula cyanoxantha	1^{+}	·	·	·
	Amanita muscaria	·	5^{+-1}	·	·
○	*Cortinarius caperatus*	·	1^{+}	·	·
	Cortinarius spilomeus	·	1^{2}	·	·
	Cratherellus tubaeformis	·	1^{2}	·	·
	Hygrophorus piceae	·	1^{1}	·	·
	Lactarius badiosanguineus	·	1^{1}	·	·
	Suillus viscidus	·	·	1^{+}	·
• ●	*Hygrophorus pustulatus*	·	·	1^{2}	·
	Amanita submembranacea	·	·	2^{+}	·
	Suillus cavipes	·	·	1^{+}	·
	Cortinarius piceae	·	·	1^{1}	·
• ○	*Lactarius lignyotus*	·	·	1^{1}	·
	Inocybe bongardii	·	·	·	4^{+-2}
	Tricholoma sulphureum	·	·	·	3^{1-2}
○	*Cortinarius camphoratus*	·	·	·	1^{1}
	Russula favrei	·	·	·	1^{2}
	Inocybe terrigena	·	·	·	1^{+}
	Lactarius acris	·	·	·	1^{+}
	SAPROTROPHIC SOIL FUNGI				
	Rhodocollybia butyracea f. *asema*	2^{1-2}	·	2^{1}	1^{1}
	Limacella glioderma	1^{+}	·	1^{1}	2^{+-1}
	Entoloma cetratum	2^{1}	·	·	·
	Hygroaster asterosporus	·	2^{1}	·	·
	Entoloma pallescens	·	·	2^{+-1}	·
●	*Cystoderma carcharias*	·	·	1^{+}	·
	FUNGI OCCURRING ON LITTER				
	Mycena galopus	1^{+}	1^{+}	2^{+-2}	2^{+-2}
◦ ¤	*Gymnopus androsaceus*	1^{3}	·	5^{3-4}	5^{3-4}

Table 6. *Continued.*

	No. of permanent plot	B1	B2	B3	B4
	Mycena pura	2^{1}	1^{+}	3^{+-2}	·
	Mycena stylobates	·	1^{1}	1^{1}	2^{+-2}
	Marasmius epiphyllus	1^{1}	·	1^{1}	1^{2}
•	*Collybia tuberosa*	·	1^{1}	·	1^{1}
	Mycena aurantiomarginata	2^{+-1}	·	1^{1}	·
	Hemimycena gracilis	1^{2}	·	2^{2}	·
	Rhodocybe nitellina	·	·	2^{+}	1^{+}
	Marasmius wettsteinii	3^{2}	·	·	·
	Mycena capillaris	·	1^{3}	·	·
	Mycena sanguinolenta	·	1^{1}	·	·
◦	*Marasmiellus perforans*	·	·	1^{2}	·
	Mycena flavoalba	·	·	4^{2}	·
	Mycena vulgaris	·	·	1^{2}	·
	Lyophyllum boudieri	·	·	·	1^{2}
	Ripartites serotina	·	·	·	1^{1}
	Mycena amicta	·	·	·	1^{+}
	FUNGI OCCURRING ON OR AMONG MOSSES				
	Galerina atkinsoniana	2^{1}	3^{1-2}	2^{1-2}	1^{1}
•	*Cystoderma jasonis*	1^{2}	1^{1}	·	2^{+}
●	*Galerina calyptrata*	2^{2}	4^{1-2}	·	·
	Roridomyces rorida	1^{+}	·	·	1^{2}
	Mycena clavicularis	1^{+}	·	·	·
	LIGNICOLOUS SPECIES				
•	*Mycena rubromarginata*	1^{+}	·	3^{+}	1^{2}
	Mycena viridimarginata	2^{1}	·	1^{1}	2^{2}
●	*Galerina marginata*	1^{+}	·	·	1^{+}
	Lichenomphalia umbelifera	3^{+-1}	·	·	1^{+}
	Tricholomopsis rutilans	3^{+-1}	·	·	·
	Mycena galericulata	1^{+}	·	·	·
◦	*Mycena maculata*	·	·	·	3^{2}
•	*Xeromphalina campanella*	·	·	·	2^{2-3}
	Mycena haematopus	·	·	·	1^{+}

• – species diagnostically important, differentiating *Plagiothecio-Piceetum* on the Babia Góra massif (Bujakiewicz 1987, 2004b), ¤ – species associated with *Vaccinio-Piceetea* class (Bujakiewicz 1993a), ◦ – species often recorded in the upper montane spruce forest in the Karkonosze Mts (Nespiak 1971), ○ – species characteristic in the acidic montane spruce forest (Moser 2004), ● – species characteristic in the calcareous montane spruce forest (Moser 2004). Latter three symbols refer to data obtained in nonmycocoenological studies.

(Fig. 4f–h). The number of vascular plants species was also comparable at the three plots: 39 at plot C1, 37 at plot C2, and 44 at plot C3. Plot C4 was on the southwest side of the massif at 1350 m a.s.l. (49°15′54″N, 19°56′30″E) and differed considerably from the other plots. The dwarf mountain pine shrubland in the patch of this association was considerably denser and shorter (up to 2.5 m), and

Table 7. Phytosociological relevé of four permanent plots established in the *Pinetum mugo carpaticum* association in the Sarnia Skała massif. ChAss. – species characteristic of association, ChAll. – species characteristic of alliance, ChO. – species characteristic of order, ChCl. – species characteristic of class, DAss. – species differentiating of association, DAll. – species differentiating of alliance.

No. of relevé		9	10	11	12
Permanent plot		C1	C2	C3	C4
Date			16 June 2001		
Area of permanent plot (m^2)		400	400	400	400
Altitude (m)		1370	1375	1360	1350
Exposition		N	N	N	S-W
Slope inclination (°)		10–20	15–20	20–30	40–45
Cover of shrubs (b) (%)		80	90	90	100
Cover of herbs (c) (%)		60	60	50	10
Cover of mosses (%)		40	50	60	30
No. of species in a relevé		39	37	44	24
ChAss. and *DAss.: *Pinetum mugo carpaticum*					
Sorbus chamaemespilus		·	·	r	·
**Leucanthemum waldsteinii*		+	+	+	·
DAll.: *Rhododendro-Vaccinienion*					
Pinus mugo	b	4.4	4.4	4.4	5.5
Sorbus aucuparia ssp. *glabrata*	b	2.1	2.1	1.1	+
Sorbus aucuparia ssp. *glabrata*	c	·	+	·	·
Salix silesiaca	b	1.1	1.1	1.1	+
Salix silesiaca	c	·	·	·	+
ChAll. and *DAll.: *Piceion abietis*					
Picea abies	b	·	·	+	+
Homogyne alpina		2.1	2.1	2.1	·
**Luzula sylvatica*		·	+	1.2	·
Listera cordata		·	r	·	r
Moneses uniflora		·	+	·	·
ChO.: *Vaccinio-Piceetalia*					
Lycopodium annotinum		·	r	1.1	·
ChCl.: *Vaccinio-Piceetea*					
Vaccinium myrtillus		2.1	2.1	2.1	·
Vaccinium vitis-idaea		·	1.1	+	·
ChCl.: *Betulo-Adenostyletea*					
Polygonatum verticillatum		+	1.1	+	1.1
Athyrium distentifolium		1.1	1.1	1.1	·
Calamagrostis villosa		2.2	·	1.2	1.1
Cicerbita alpina		1.1	+	1.2	·
Calamagrostis arundinacea		2.2	1.2	·	·
Phyteuma spicatum		1.1	+	+	·
Veratrum lobelianum		+	+	+	·
Chaerophyllum hirsutum		+	+	+	·
Thalictrum aquilegifolium		+	·	+	·
Rosa pendulina		·	·	1.1	·
Adenostyles alliariae		·	+	·	·
Ranunculus platanifolius		·	·	+	·
Others:					
Lonicera nigra	c	+	+	+	·
Sambucus racemosa	c	·	·	r	·
Oxalis acetosella		2.1	2.1	1.1	·
Gymnocarpium dryopteris		1.1	2.1	1.1	·
Hypericum maculatum		1.2	1.2	+	·
Crepis paludosa		1.1	+	+	·
Geum rivale		1.1	+	+	·
Soldanella carpatica		1.1		+	+
Hieracium murorum		1.1	+	+	·
Laserpitium latifolium		·	r	+	r
Prenanthes purpurea		·	+	+	+
Clematis alpina		+	+	+	·
Maianthemum bifolium		+	+	+	·
Valeriana tripteris		+	+	r	·
Fragaria vesca		1.1	·	·	r
Deschampsia flexuosa		·	1.2	·	+
Listera ovata		+	·	·	+
Pimpinella major var. *orientalis*		·	·	+	+
Rubus sp.		·	+	·	+
Primula elatior		+	·	r	·
Swertia perennis		+	·	r	·
Aconitum variegatum		r	·	r	·
Dryopteris filix-mas		·	1.1	·	·
Hieracium bifidum		+	·	·	·
Heracleum sphondylium		+	·	·	·
Asplenium trichomanes		+	·	·	·
Solidago virgaurea		+	·	·	·
Phyteuma orbiculare		+	·	·	·
Alchemilla cf. *straminea*		·	+	·	·
Astrantia major		·	·	+	·
Rubus idaeus		·	·	+	·
Myosotis sp.		·	·	+.2	·
Gentiana asclepiadea		·	·	+	·
Galium anisophyllon		·	·	·	+
Epipactis atrorubens		·	·	·	+
Bellidiastrum michelii		·	·	·	+
Carex digitata		·	·	·	+
Senecio ovatus		r	·	·	·
Actea spicata		r	·	·	·
Daphne mezereum		r	·	·	·
Paris quadrifolia		·	r	·	·
Aruncus sylvestris		·	·	r	·
Ranunculus oreophilus		·	·	·	r
Carlina acaulis		·	·	·	r
Carduus glaucus		·	·	·	r
Lotus corniculatus		·	·	·	r

Table 7. *Continued.*

consequently the herb layer cover is low. There were also considerably fewer vascular plant species (24 taxa) than at the other three plots. The location of the patch on the southwest side of the massif in a strongly insolated area leads to the occurrence of species characteristic of xerothermic communities, such as *Epipactis atrorubens* or *Carlina acaulis* (Table 7). The plots established in *Pinetum mugo carpaticum* were characterized by a low amounts of dead wood, occurring mostly as dead branches or single trunks of dwarf mountain pine, dwarf spruce, willow or rowan trees.

A total of 56 fungal species were collected at the permanent plots established in the *Pinetum mugo carpaticum* association. Almost identical numbers of fungal taxa were recorded at plots C1, C2 and C3 (31, 30 and 31 respectively), and about half that number at plot C4 (16 species). The number of vascular plant species recorded at the four permanent plots was in all cases slightly higher than that of fungal species (Tables 7 & 8), but the number of plant species on the south-facing slopes was also much lower than that on the north-facing slopes. The three plots on the north side of the massif (C1, C2, C3) exhibited high similarity not only in the number of fungal taxa but also in species composition (12 taxa occurring at the three plots) and the contribution of ecological groups. The species composition of higher plants (the share of thermophilous plants) and the fungi at plot C4 differed considerably from that at the other plots (Tables 7 & 8). The plot differed not only by the presence of exclusive fungal species but also by the absence of taxa that were frequent and numerous on the north side of the massif. The xerothermic character of the south slopes of the Sarnia Skała massif, reflected in the species composition of higher plants in the patch, was not matched by the presence of thermophilous fungi at the plot, but one fungal species of calciphilous xerothermic grasslands, *Entoloma excentricum*, was recorded at a locality slightly above plot C4, outside the patch of dwarf mountain pine shrubland. Differences in fungal species richness between the two sides of the massif are attributable to the difference in microclimate. As Moser (1982) pointed out, wind and temperature as well as other factors determine where a fungus can fruit. It is not surprising that the occurrence of fungi is suppressed at more exposed localities affected by xerothermic conditions.

Eleven species are considered characteristic of *Pinetum mugo carpaticum* in the study area. Four of them are mycorrhizal, one is a saprotrophic soil fungus, five are litter-inhabiting species, and one is associated with mosses (Table 9).

INDICATOR VALUE OF SELECTED SPECIES OF FUNGI ON THE SARNIA SKAŁA MASSIF

The plant associations typical of particular altitudinal vegetation belts of the Sarnia Skała massif – fertile Carpathian beech forest of the lower montane belt, calciphilous coniferous forest of the upper montane belt, and dwarf mountain pine shrubland in the subalpine belt – are characterized by their fungal species compositions. Few taxa occur in all three associations. I recorded only ten taxa at the permanent plots of all the associations: *Craterellus tubaeformis, Inocybe nitidiuscula, Laccaria laccata, Mycena amicta, M. aurantiomarginata, M. galopus, M. pura, M. rubromarginata, M. sanguinolenta* and *M. viridimarginata*. The majority of those occur throughout the study area and are not associated with any plant association on the Sarnia Skała massif. *Mycena rubromarginata* was recognized as a diagnostically important species on the Babia Góra massif (alt. 1725 m a.s.l., Western Carpathians) where it differentiates *Galio-Abietetum, Abieti-Piceetum* and *Plagiothecio-Piceetum*, but it was also recorded in all the plant associations examined on the massif, although less frequently (Bujakiewicz 1982, 1987). *Mycena pura*, on the other hand, is thought to prefer associations of the order *Fagetalia* (Nespiak 1968) and to be a diagnostically important species which differentiates *Dentario glandulosae-Fagetum, Galio-Abietetum* and *Abieti-Piceetum* on the Babia Góra massif (Bujakiewicz 1982, 1987). On the Sarnia Skała massif, *M. pura* also occurs in different habitat types outside the permanent plots and was one of the few species recorded in patches of *Pinetum mugo carpaticum* growing on the southwest side of the massif, where the

Table 8. Mycocoenological relevé of four permanent plots in the *Pinetum mugo carpaticum* association in the Sarnia Skała massif (see MATERIAL AND METHODS for the legend).

	No. of permanent plot	C1	C2	C3	C4
	Number of visits	13	13	13	13
	Number of species	31	30	31	16
	MYCORRHIZAL SOIL FUNGI				
	Cortinarius odorifer	3^{+-1}	1^{1}	3^{+-1}	·
▪▪	*Laccaria laccata*	1^{1}	1^{2}	2^{+-2}	·
	Lactarius badiosanguineus	1^{+}	1^{1}	1^{+}	·
	Inocybe terrigena	1^{+}	·	1^{+}	1^{+}
	Cortinarius percomis	1^{2}	·	1^{1}	2^{+-1}
▪▪	*Cratherellus tubaeformis*	·	2^{+}	5^{2-3}	·
	Chroogomphus rutilus	·	·	2^{+-1}	2^{+-2}
▪▪	*Lactarius aurantiacus*	·	·	1^{2}	1^{2}
	Inocybe nitidiuscula	2^{1}	·	1^{1}	·
	Cortinarius dionysae	1^{+}	·	·	·
◙	*Hygrophorus olivaceoalbus*	·	1^{+}	·	·
	Lactarius deterrimus	·	1^{1}	·	·
	Inocybe rimosa	·	·	2^{+-2}	·
	Cortinarius infractus			1^{+}	
	Russula chloroides				1^{+}
	Russula aff. *silvestris*				1^{1}
	SAPROTROPHIC SOIL FUNGI				
	Limacella glioderma	2^{+-1}	1^{+}	1^{+}	·
◙	*Entoloma cetratum*	·	3^{1-2}	2^{+-1}	1^{1}
	Hygrocybe conica	4^{+-1}	1^{+}	·	·
	Entoloma sericellum	1^{1}	1^{+}	·	·
	Entoloma serrulatum	1^{2}	·	1^{1}	·
	Melanoleuca cf. *robertiana*	1^{+}	·	·	·
	Conocybe filaris	·	1^{+}	·	·
	Entoloma pallescens	·	1^{2}	·	·
	FUNGI OCCURRING ON LITTER				
◙	*Mycena aciculata*	1^{+}	4^{+-2}	3^{1-3}	3^{+-2}
	Mycena amicta	1^{+}	5^{+-2}	3^{1-2}	3^{+-1}
	Mycena galopus	4^{+-2}	5^{1-2}	5^{+-4}	3^{2}
	Marasmius epiphyllus	2^{2}	2^{1-4}	2^{2-3}	·
¤	*Gymnopus androsaceus*	2^{+-2}	4^{1-3}	1^{1}	·
	Mycena pura	·	·	2^{+-2}	3^{+}
	Baeospora myosura	1^{1}	·	1^{+}	1^{+}
	Mycena rosella	2^{+-2}	4^{1-4}	·	·
	Pseudobaeospora pillodii	1^{+}	2^{1}	·	·
	Strobilurus stephanocystis	·	1^{+}	1^{+}	·
	Entoloma winterhoffii	1^{+}	·	·	·
	Mycena oregonensis	5^{2}	·	·	·
	Mycena epipterygia	·	1^{1}	·	·
	Mycena aurantiomarginata	·	·	1^{+}	·
	Mycena sanguinolenta	·	·	2^{1}	·
	FUNGI OCCURRING ON OR AMONG MOSSES				
	Roridomyces rorida	5^{+-2}	5^{1-3}	5^{+-2}	1^{1}
	Galerina atkinsoniana	1^{1}	1^{1}	3^{+-1}	2^{2}
	Mycena clavicularis	1^{1}	2^{1-3}	1^{2}	·
	Mycena clavata	4^{1-2}	·	·	·
	Galerina cephalotricha	·	1^{+}	1^{2}	·
	Entoloma juncinum	1^{1}	·	·	·
	Rimbachia neckerae	1^{2}	·	·	·
	Cystoderma jasonis	·	1^{+}	·	·
	Galerina vittiformis	·	·	·	1^{+}
	LIGNICOLOUS SPECIES				
	Mycena cyanorrhiza	1^{1}	·	·	·
¤ ◙	*Pholiota scamba*	·	1^{1}	·	·
	Stropharia aeruginosa	·	2^{1}	·	·
	Mycena speirea f. *candida*	·	·	1^{2}	·
	Galerina marginata	1^{1}	·	·	·
	Galerina pruinatipes	1^{+}	·	·	·
	Mycena rubromarginata	·	3^{2}	5^{1-2}	3^{+-2}
	Mycena viridimarginata	·	4^{+-2}	2^{1}	·

Table 8. *Continued.*

◙ – diagnostically important species for *Pinetum mugo carpaticum* in the Babia Góra massif (Bujakiewicz 1993a, 2004b), ¤ – species associated with *Vaccinio-Piceetea* class (Bujakiewicz 1993a), ▪▪ – species reported from dwarf mountain-pine shrubland in granitic High Tatra (Dominik & Nespiak 1953; Frejlak 1973).

vegetation showed some xerothermic features (plot C4). Thus, the ecological amplitude of the species seems very broad and its indicator value is low, at least in the study area.

The Carpathian beech forest, where many exclusive species (63 taxa – data based only on permanent plots) were recorded, is the most differentiated association in the study area. These species often form symbiotic, usually specific relationships with beech or colonize dead wood or fallen beech leaves. I recorded eight taxa in both Carpathian beech forest and coniferous forest of the upper montane belt (data from the research plots): *Lactarius acris, Lichenomphalia umbelifera, Mycena capillaris, M. galericulata, M. haematopus, Rhodocollybia butyracea* f. *asema, Rhodocybe nitellina* and *Russula cyanoxantha*. However, the majority of the localities of almost all of these species were in only one of the two associations, their occurrence in the other association being sporadic. Despite the high contribution of fir and spruce in the tree stand, the Carpathian beech forest association clearly differed and the number of locally characteristic species was high (42 taxa). Soil pH may influence species composition. Unlike areas where upper montane coniferous forest or

Table 9. Species locally characteristic of three plant associations typical of individual belts in the Sarnia Skała massif

Plant association	*DgF*	*PP*	*Pmc*
Number of visits	42	42	41
Number of permanent plots	4	4	4
Permanent plots	A1–4	B1–4	C1–4
MYCORRHIZAL SOIL FUNGI			
◊ ◘ *Hygrophorus eburneus*	4		
◊ ◘ *Lactarius bleninius*	4		
Lactarius pallidus	4		
♦ *Inocybe petiginosa*	4		
◘ *Laccaria amethystina*	4		
◊ ◘ *Russula cyanoxantha*	3	1	
◊ *Russula mairei*	3		
Cantharellus cibarius	2		
Russula risigallina	2		
Inocybe hystrix	2		
Lactarius pterosporus	2		
Inocybe corydalina	2		
Lactarius salmonicolor	2		
◊ *Russula fellea*	1(8)		
Hygrophorus discoxanthus	(9)		
Hebeloma sinapizans	(5)		
Craterellus cornucopioides	(5)		
○ *Cortinarius brunneus*		4	
○ *Russula vinosa*		4	
Cortinarius acutus		3	
● *Russula firmula*		3	
• ◦ *Russula emetica*		2	
○ *Cortinarius camphoratus*		1(3)	
Cortinarius percomis			3
Chroogomphus rutilus			2
Suillus granulatus			(1)
Suillus luteus			(1)
● *Cortinarius odorifer*		4	3
• ▪ *Lactarius aurantiacus*		3	2
◙ *Hygrophorus olivaceoalbus*		3	1
Inocybe terrigena		1	3
Lactarius badiosanguineus		1	3
Inocybe nitidiuscula	1	2	2
SAPROTROPHIC SOIL FUNGI			
◘ *Entoloma rhodopolium*	2		
Entoloma sordidulum	2		
■ *Gymnopus hariolorum*	(15)		
Clitopilus prunulus	(5)		
Clitocybe nebularis	(5)		
Gymnopus peronatus	(5)		
Entoloma sericellum			2
Limacella glioderma		3	3
◙ *Entoloma cetratum*		1	3
Entoloma pallescens		1	1

Table 9. *Continued.*

Plant association	*DgF*	*PP*	*Pmc*
FUNGI OCCURRING ON LITTER			
Mycena flavescens	4		
♦ ◘ *Marasmius setosus*	4		
◘ *Infundibulicybe gibba*	4		
♦ ◘ *Mycena capillaris*	4	1	
Psathyrella murcida	3		
Flammulaster subincarnatus	3		
Gymnopus confluens	2		
◊ ◘ *Marasmius buillardii*	2		
♦ *Gymnopus fuscopurpureus*	2		
Clitocybe vibecina	2		
Flammulaster carpophilus	2		
◘ *Pholiota lenta*	(8)		
Hemimycena gracilis		2	
◙ *Mycena aciculata*			4
Mycena amicta	1	1	4
Baeospora myosura			3
Strobilurus stephanocystis			2
Pseudobaeospora pillodii			2
Mycena rosella		(1)	2
FUNGI OCCURRING ON OR AMONG MOSSES			
● *Galerina calyptrata*		2	
Galerina cephalotricha			2
Galerina atkinsoniana		4	4
• *Cystoderma jasonis*		3	1
Mycena clavicularis		1	3
LIGNICOLOUS SPECIES			
♦ ◘ *Mycetinis alliaceus*	1(19)		
Crepidotus applanatus	2		
Mycena renati	2		
Mycena haematopus	1(15)	1	
◘ *Hymenopellis radicata*	1(9)		
Tricholomopsis decora	(9)	(1)	
Pluteus cervinus	(5)		

DgF – Dentario glandulosae-Fagetum, *PP – Polysticho-Piceetum*, *Pmc – Pinetum mugo carpaticum*; for explanasion of symbols see Tables 4, 6 and 8. Figures inform about number of permanent plots in which a species occured, while figures in parentheses inform about number of localities of a given species recorded outside permanent plots (cf. MATERIAL AND METHODS chapter).

dwarf mountain pine shrubland have developed and the upper soil layers are acidic, soil pH is either neutral or alkaline across its entire profile in the Carpathian beech forest, which creates different ecological conditions for the occurrence of fungi in this plant association. *Amanita battarae,*

A. muscaria, *Lactarius deterrimus, L. lignyotus, L. picinus* and *L. scrobiculatus* were some of the species forming symbiotic relationships with the spruce in the beech forest. There were fewer taxa inhabiting coniferous litter (*Gymnopus androsaceus, Marasmius wettsteini*) and occurring on wood of coniferous trees (*Mycena viridimarginata, Xeromphalina campanella*).

Except for sharing some species which occur in all the associations, there are no similarities between the fungal species of the Carpathian beech forest and the *Pinetum mugo carpaticum* association. Only one species, *Inocybe rimosa*, was recorded in patches of both the Carpathian beech forest and dwarf mountain pine shrubland at permanent plots, and it was not found in the upper montane coniferous forest.

The associations typically occurring in the upper montane belt and subalpine belt are the most similar. Unlike areas where beech forest is developed and the soil is neutral or alkaline across its entire profile, the upper soil layers become acidic in the upper montane coniferous forest and the patches of dwarf mountain pine shrubland, providing similar ecological conditions for the growth of fungi. As many as 15 species occurred in both associations (*Cortinarius odorifer, Cystoderma jasonis, Entoloma pallescens, Galerina atkinsoniana, G. marginata, Gymnopus androsaceus, Hygrophorus olivaceoalbus, Inocybe terrigena, Lactarius aurantiacus, L. badiosanguineus, L. deterrimus, Limacella glioderma, Marasmius epiphyllus, Mycena clavicularis, Roridomyces rorida*). With very few exceptions they occurred exclusively in the two plant associations (permanent plots) on the Sarnia Skała massif, and the majority of them are considered characteristic of the two associations (Table 9).

Despite their similarities, both *Polysticho-Piceetum* and *Pinetum mugo carpaticum* yielded records of many exclusive species (39 and 30 taxa respectively), but these taxa did not seem to be closely associated with either association. They were usually very rare, species, recorded only once in the study area, and their habitat preferences may be difficult to specify. However, I identified eight species locally characteristic of *Polysticho-Piceetum*, the majority of them thought to be species typical of upper montane coniferous forest (Moser 2004).

In the group of eleven taxa locally characteristic of *Pinetum mugo carpaticum* on the Sarnia Skała massif were two *Suillus* species associated with Scotch pine in the lowland and forming mycorrhizae with dwarf mountain pine in the subalpine belt. *Suillus luteus* and *S. granulatus* were recorded in dwarf pine shrubland outside the research plots only once. Due to their specific association with the symbiotic partner, they may also be treated as diagnostically important and characteristic of *Pinetum mugo carpaticum*, and are included in the summary table (Table 9).

Identification of species characteristic of individual plant associations is problematic and requires long-term observations. The results also depend on the size of the study area and the number of plant associations. The results of the above comparative analysis (Table 9) probably would be different had all plant associations occurring on the Sarnia Skała massif been investigated or had the study area comprised the neighboring Krokiew or Łysanki massifs. The species composition of individual research plots in one plant association may also differ, as it depends on the composition of microhabitats in the plot (e.g., the amount of dead wood, the presence of moist sites with a large number of bryophytes).

The analysis of species characteristic of individual plant associations on the Sarnia Skała massif shows that some of the species are considered to be diagnostically important in similar plant associations in other areas, or else typical of them. Generally though not always, species treated as locally characteristic of a plant association either form mycorrhizal symbiosis with a specific tree species composing the plant association or are associated with the wood of a specific tree species. The relationship between a specific fungal species and a particular plant association is evident in such cases, as it arises from the ecological preferences of the species. On the other hand, some species thought to be diagnostically important in other regions were not observed on the Sarnia Skała massif, or their indicator value there is low.

Only five species recognized by Lisiewska (1972) as characteristic of the *Fagion sylvaticeae* alliance were recorded at the permanent plots on the Sarnia Skała masssif. Three of them, *Marasmius setosus, Mycena capillaris* and *Gymnopus fuscopurpureus*, are closely associated with beech litter. Only two species, *Marasmius wynnei* and *Inocybe adequata*, recognized by Wojewoda (1975) to be locally characteristic of *Dentario glandulosae-Fagetum* in Ojców National Park (a calcareous area near Kraków), occur on the Sarnia Skała massif. Another species characteristic of Carpathian beech forest in Ojców National Park, *Gymnopus hariolorum*, was often recorded in beech forest on the Sarnia Skała massif, but outside the permanent plots. *Russula laurocerasi* was the only species treated by Nespiak (1968) as characteristic of the *Dentario glandulosae-Fagetum* association in the Bieszczady Mts (Eastern Carpathians) to be recorded at the plots. *Clitopilus prunulus*, recognized by Nespiak (1968) to be characteristic of Carpathian beech forest in the Beskidy Mts (Western Carpathians), occurred in *Dentario glandulosae-Fagetum* outside the plots on the Sarnia Skała massif. Other species reported by Nespiak as characteristic of *Dentario glandulosae-Fagetum* either were not found on the Sarnia Skała massif or also occurred in other associations of the lower montane forest (e.g., *Abieti-Piceetum*), upper montane forest or subalpine belt. Sixteen taxa found in the study area are considered characteristic or preferential, of the order *Fagetalia* (Nespiak 1968), and 14 species are diagnostically important taxa which differentiate Carpathian beech forests in the Babia Góra massif (Bujakiewicz 1982, 1987) (Table 4). In a study that did not involve mycocoenological research, Pilát (1969) reported several species associated with mountain beech forests (e.g., *Mycena capillaris, M. renati*). Those two were also recorded in the study area. On the other hand, some important fungi occurring in mountain beech forests have not been recorded from the Sarnia Skała massif to date [e.g., *Mycena crocata* (Schrad.) P. Kumm., and *M. pelianthina* (Fr.) Quél.]. Wojewoda (1975) also noted the absence of *M. crocata* in Carpathian beech forest on calcareous substrate in Ojców National Park. *Mucidula* (= *Oudemansiella*) *mucida* (Schrad.: Fr.) Pat. is associated with beech wood and recognized as an important element of mountain beech forests. It has been reported from Ojców National Park (Wojewoda 1974, 1975) and numerous mountain beech forests (e.g., Domański *et al.* 1960; Domański 1963; Wojewoda 1964; Gumińska 1969; Bujakiewicz 1979) but it does not occur in the Tatra Mts and was not recorded in the study area. On the other hand, *Mycetinis alliaceus*, believed to be one of the most important species in mountain beech forests (Pilát 1969), and is common on the Sarnia Skała massif. *Lactarius lignyotus, Cortinarius sanguineus* and *Amanita excelsa*, mentioned as important in mountain beech forests (Pilát 1969), were noted on the Sarnia Skała massif both in the upper montane belt and in beech forests of the lower montane belt.

Terricolous species forming symbiotic relationships with spruce on the Sarnia Skała massif formed the most numerous group of species that are typical of upper montane forests in other areas (cf. Table 6). Some of them occur on the Sarnia Skała massif only in upper montane forest but others also grow in beech forest (where spruce and fir are important elements of the stand along with beeches), although sporadically. A few species associated with upper montane forests according to Moser (2004) were recorded outside the permanent plots in the *Polysticho-Piceetum* association: *Cortinarius varius* and *C. sanguineus*. The latter also occurred in the lower montane belt. Other species listed as associated with coniferous forests (Moser 2004) were recorded in the study area either in the lower montane belt or in dwarf mountain pine shrubland, where spruce also occurs as an admixture (e.g., *Cortinarius infractus*, *Cystoderma carcharias, Hygrophorus erubescens, Russula integra*). Some species recognized as characteristic of the *Plagiothecio-Piceetum* (*Piceetum excelsae carpaticum*) association or a group of the *Galio-Abietetum, Abieti-Piceetum* and *Plagiothecio-Piceetum* associations on the Babia Góra massif (Bujakiewicz 1982, 2004b) were also observed on the Sarnia Skała massif (Table 6), but only a few of them are diagnostically important in the study area (cf. Table 9).

A few species were recorded exclusively and repeatedly at permanent plots in *Pinetum mugo carpaticum* at Sarnia Skała (Table 9). They can be considered locally characteristic of this plant association. Some of them are mycorrhizal with *Pinus mugo* (e.g., *Chroogomphus rutilus*). As typical symbiotic partners of another two-needle pine, *Pinus sylvestris*, in the lowlands, they could be treated as locally characteristic of *Pinetum mugo carpaticum* only because *P. sylvestris* occurs rarely in the Tatra Mts, where it grows in small natural relict populations (Łysek 1974) or as planted alien trees (as in the beech forest of Sarnia Skała), and not because of any host-specific mycorrhizal relationship with *Pinus mugo*. Saprotrophic *Entoloma sericellum*, *Galerina cephalotricha, Mycena aciculata* and *Pseudobaeospora pilodii* were recorded only in the dwarf mountain pine community of the Sarnia Skała massif, and they are considered locally characteristic of *Pinetum mugo carpaticum*; they are also often found in upper montane spruce forest or green alder stands in other regions (e.g., Favre 1960; Kubička 1963b; Bresinsky & Schmid-Heckel 1982; Brunner & Horak 1990; Noordeloos & Gulden 1992). *Mycena aciculata* was classified as an important fungus distinguishing the *Athyrio-Sorbetum* association on the Babia Góra massif (Bujakiewicz 2004b).

In the Carpathians, non-mycocoenological studies in the subalpine belt were conducted by Dominik and Nespiak (1953) and Frejlak (1973) in the granite Tatra Mts. Only a few species occur both on the Sarnia Skała massif and in the areas they examined (Table 8). *Suillus granulatus*, reported also from the granite Tatra Mts (Frejlak 1973), was recorded in dwarf mountain pine shrubland outside the permanent plots. Only a few of the species recorded in *Pinetum mugo carpaticum* on the noncalcareous Babia Góra massif (Bujakiewicz 1993a, 2004b) were present in patches of *Pinetum mugo carpaticum* on the Sarnia Skała massif. This is probably due to differences in geological substrate. Species often recorded in the subalpine belt on granitic substrate, such as *Hygrophorus hypothejus*, *Lactarius rufus* or *Suillus variegatus* (Dominik & Nespiak 1953; Frejlak 1973; Bujakiewicz 1993a), were not observed in the study area. Pilát (1969) reported a number of species associated with various types of mountain vegetation and listed species commonly occurring in the dwarf mountain pine shrubland belt, but did not find any species strictly associated with dwarf mountain pine. The majority of species occurring in the subalpine belt of the Sarnia Skała massif are common in lowlands. Those include fungi that are mycorrhizal with Scotch pine (e.g., *Suillus granulatus, S. luteus*), lignicolous species occurring on coniferous wood (e.g., *Mycena aurantiomarginata, M. citrinomarginata, Gymnopus androsaceus*), or rare fungi not associated with *Pinetum mugo carpaticum* (see also Ronikier 2009). The species composition of fungi recorded in dwarf mountain pine communities on different bedrock or in different regions confirms that no fungi can be considered characteristic of the subalpine *Pinetum mugo carpaticum* association.

The results of the present study and a comparative analysis of data reported from other regions show that fungi characteristic of individual associations can be found on a local scale. Unfortunately, different species are locally characteristic of the same plant association in other areas, even in the same geographic region (the Carpathians and their foothills) and it is difficult if not impossible to identify fungi characteristic of a specific association.

SEASONALITY OF THE OCCURRENCE OF FUNGI ON THE SARNIA SKAŁA MASSIF

The observations from this work on the Sarnia Skała massif over several entire vegetative seasons were used to examine fungal phenology. Dominant species in individual thermal seasons were identified. Seasons were defined by mean monthly temperatures for the observation period at the permanent plots (cf. Table 1).

Xeromphalina campanella, forming basidiomes on stumps, occurred in March and was the first species to be recorded. It occurred in early spring until early summer and at the end of the vegetative season. The next species appeared in May or June. These were spring taxa such as *Entoloma hirtipes* and *E. pallescens*, and species that occur in both early spring and late autumn,

including *Strobilurus esculentus, Flammulina velutipes* and *Mycena maculata*. Very common and numerous occurrence of *Mycena renati* and *Gymnopus hariolorum*, which formed a characteristic spring season aspect, was recorded in the Carpathian beech forest at that time. *Strobilurus stephanocystis* formed the spring season aspect in the subalpine belt. *Galerina calyptrata* occurred in the upper montane belt slightly later, at the end of June and the beginning of July. The occurrence of *Mycena rubromarginata, M. stylobates, Russula mairei* and *M. viridimarginata* peaked in summer (July–August). The latter also contributed to the summer season aspect. *Mycena sanguinolenta, Russula cyanoxantha* and *Tricholomopsis decora* formed the summer season aspect in the lower montane belt. The occurrence of species associated with larch, *Suillus viscidus, S. cavipes* and *S. grevillei*, also peaked in summer.

The greatest number of species was recorded in the second half of summer and in autumn (August–September). *Inocybe bongardii, Laccaria amethystina*, *Gymnopus conflues, Inocybe corydalina, I. petiginosa, Lactarius blennius, L. pallidus* and *Rhodocybe nitellina* formed the summer-autumn season aspect in the beech forest, and *Craterellus tubaeformis* and *Cortinarius odorifer* in the upper montane belt and subalpine belt. The abundance of *Mycena aciculata* and *M. rosella* was greatest in the dwarf mountain pine belt at the end of summer and the beginning of autumn.

Late-autumn species such as *Hebeloma sinapizans, Lactarius aurantiacus, Marasmius epiphyllus, Rhodocollybia butyracea* f. *asema* or *Stropharia aeruginosa* were recorded in late autumn and early winter (October–November). *Hygrophorus eburneus, Marasmius setosus, Mycena capillaris, Pholiota lenta* and *Psathyrella murcida*, which formed the latest seasonal aspect, were often observed in beech forest from mid October until December.

Nespiak (1971, 1985) noted delayed occurrence of fungi in the upper montane belt in the Karkonosze Mts (1100–1250 m a.s.l.) and shortening of the vegetative season. The period of occurrence of the greatest number of species did not differ between individual vegetation belts of the Sarnia Skała massif. The numbers of species were highest in the same periods in the lower and upper montane belts as well as in the subalpine belt. Shifts in fungal phenology linked to the altitudinal gradient might be observed in other parts of the Tatra Mts where the altitudinal differences between vegetation belts are greater. Only the time of emergence of the first species in the subalpine belt differed, and more species were observed in this belt than in other belts in June. The length of the vegetative season depends not only on altitude but also on climatic factors through the year. The longest vegetative period in the study was in 2001, when late-autumn fungi were collected as late as in December.

COMPARISON OF THE FUNGI IN THE STUDY AREA AND IN OTHER MOUNTAINOUS REGIONS OF EUROPE: BOREAL-MOUNTAIN SPECIES.

It is usually difficult to discuss biogeographical trends in fungi, and the data on fungal geography are still too sparse to fully assess the distribution patterns of taxa. Typical lowland species enter montane, subalpine or even alpine belts, further obscuring the altitudinal distribution. Arctic-alpine fungi that occur solely above the timberline in the mountains and/or (sub)arctic zone in the north are the most distinctive geographic element (Gulden *et al.* 1985). Even though the Sarnia Skała massif is too low for arctic-alpine fungi, four species often dwelling in the arctic zone and the alpine belt of mountains were recorded in the study area: *Entoloma serrulatum, Galerina stordalii*, *Hygrocybe acutoconica* and *Mycena citrinomarginata*. None, however, is a typical arctic-alpine species. Note that although *Dryas octopetala*, a typical arctic-alpine plant species and one of the most important mycorrhizal partners of fungi in the alpine belt, occurs in summit parts of the Sarnia Skała massif, no fungus associated with this plant was recorded.

Taxa occurring only in the mountains or disjunctly in the mountains and boreal zone are another important geographic element of the mountain fungi. In some cases their distribution center is in the mountains and boreal regions; they rarely occur also outside these zones. There have been some attempts in the literature to define this

group, described as a mountain or boreal-mountain element, but studies on the geographism of fungi are sparse. Dörfelt (1973) and Dörfelt & Conrad (1980) analyzed the mountain element occurring in the Hercynian mountains in Germany. Other authors have sometimes classified individual species as mountain elements (e.g., Kotlaba & Pouzar 1951, 1962; Bujakiewicz 1979; Klán 1984). Distribution maps (e.g., Krieglsteiner 1991a, b) can also be used to identify distribution patterns indirectly.

The aim of this part of the study was to identify a group of mountain or boreal-mountain species among those recorded on the Sarnia Skała massif. The distribution of these species in Europe was analyzed using Kotlaba and Pouzar (1951, 1962), Dörfelt (1969, 1973), Dörfelt and Conrad (1980), Bujakiewicz (1979), Klán (1984), Krieglsteiner (1991a, b) and other publications such as monographs of individual genera. Ninety-four mountain or boreal-mountain taxa were identified (Table 10). Species that represent a distinctive mountain or boreal-mountain distribution range (see also Dörfelt 1969, 1973; Dörfelt & Cornrad 1980; Krieglsteiner 1991a, 1991b) are given in bold in Table 10. Other species occur considerably more often either in the mountains or in the boreal zone, but they may descend to lowland where they usually have a few localities, or are rare taxa whose only localities (or the majority of them) are reported from mountainous regions in Europe. Twenty-eight calciphilous species of boreal-mountain fungi (out of 55 calciphilous species in total) were also recognized (Table 10). The list of species recorded at Sarnia Skała was compared with the lists of species of the following mountain regions of Europe, for which relatively large mycological data sets are available: Swiss National Park and vicinity (Alps, Switzerland), alt. up to 3173 m a.s.l., mostly calcareous massif; Berchtesgaden National Park (Alps, Germany), alt. up to 2713 m a.s.l., calcareous (dolomite) massif; Babia Góra National Park (Western Carpathians, Poland/Slovakia), alt. up to 1725 m a.s.l., non-calcareous massif built of flysch; Bieszczady Mts (including the Bukovské Vrhy Mts on the Slovak side; Eastern Carpathians, Poland/Slovakia/Ukraine), alt. up to 1408 m a.s.l., non-calcareous massif built of flysch; Gorce Mts (Western Carpathians, Poland), alt. up to 1314 m a.s.l., non-calcareous massif built of flysch; Beskid Sądecki Mts (Western Carpathians, Poland), alt. up to 1262 m a.s.l., non-calcareous massif built of flysch; Pieniny Mts (Western Carpathians, Poland, Slovakia), alt. up to 1050 m a.s.l., calcareous massif.

Mainly the mountain and boreal-mountain elements were compared, but the lists were also analyzed in full, and all species occurring in the study area and in other regions were counted. The similarity is greatest between the fungi of the Sarnia Skała massif and Swiss National Park and vicinity (196 species recorded in both areas, including 63 boreal-mountain species) as well as Berchtesgaden National Park (192 species recorded in both areas, including 72 boreal-mountain species) (Table 10). Swiss National Park and Berchtesgaden National Park are built entirely or partly of calcareous rock and they are high-mountain regions. Over 30 of the 55 calciphilous species recorded on the Sarnia Skała massif also occur in both national parks. Fifteen belong to the boreal-mountain element (Table 10).

The Bieszczady Mts and the Sarnia Skała massif have the most similar fungi in the Carpathians (205 taxa recorded in both areas, including 53 boreal-mountain species). The Babia Góra massif (168 taxa in common), and the Pieniny Mts (152 taxa in common) are also similar to the study area. Interestingly, the similarity between the study area and the Babia Góra massif is mostly due to the presence of mountain species and species associated with the upper montane and subalpine belts. In turn, the similarity between the study area and the much lower Pieniny Mts is based mostly on the group of shared calciphilous species. The fungi recorded in other Carpathian massifs, that is, the Gorce Mts and Beskid Sądecki Mts, are less similar to those of the Sarnia Skała massif. This may be due in part to the lower elevation of the Gorce Mts and Beskid Sądecki Mts and their noncalcareous bedrock, but may also be due to differences in the design of the mycological studies, which were considerably less extensive on those two massifs.

Table 10. Presence of mountain and boreal-mountain species recorded in the Sarnia Skała massif in other mountain areas of Europe.

Species	Mountain area						
	BNP	SNP	B	BG	P	G	BS
**Amanita battarae*	.	+	+	.	.	.	.
**Amanita submembranacea*	+	.	.	+	+	.	.
Arrhenia epichysium	+	+	+	+	+	.	.
Boletus luridiformis	+	.	+	+	+	+	+
**Chroogomphus helveticus* subsp. *tatrensis*	+	+	.	+	.	.	.
Chrysomphalina chrysophylla	.	.	+	+	.	.	.
Cortinarius acutus	+	+	.	+	.	.	.
Cortinarius brunneus	+	+	+	+	.	.	.
Cortinarius camphoratus	+	+	.	+	.	.	.
**Cortinarius dionysae* c	+	+	.	.	.	.	.
**Cortinarius illibatus*	+	.	.	.	.	.	.
Cortinarius infractus c	+	+	.	.	+	.	.
**Cortinarius mussivis*	.	+	.	.	.	.	.
**Cortinarius odorifer* c	+	+	.	.	+	+	.
**Cortinarius percomis* c	.	+	.	.	+	.	.
**Cortinarius salor* c	+	+	.	.	.	.	.
Cortinarius sanguineus	+	+	+	+	+	+	.
Cortinarius spilomeus	+	+	+	.	.	.	.
Cortinarius splendens c	.	.	.	.	.	.	.
Cortinarius stillatitius	.	.	+	.	.	.	.
**Cortinarius varius* c	+	+	.	.	.	.	.
**Craterellus lutescens*	+	+	+	+	.	+	.
Crepidotus applanatus	+	+	+	+	.	.	.
Crepidotus cesatii var. *subsphaeosporus*	+	+	+	+	.	.	.
Cystoderma carcharias	+	+	+	+	+	+	+
Cystoderma jasonis	+	+	+	+	.	.	.
Entoloma cetratum	+	+	+	+	.	+	.
Entoloma hirtipes	+	+	+	+	+	.	.
Entoloma nitidum	+	.	+	.	.	.	.
Entoloma pallescens	.	.	.	.	.	.	.
Entoloma serrulatum	+	+	.	.	.	+	.
Galerina atkinsoniana	.	.	.	+	.	.	.
Galerina cephalotricha	.	.	.	.	.	.	.
Galerina calyptrata	+	.	+	+	.	.	.
**Galerina stordalii*	.	.	.	.	.	.	.
**Gymnopilus bellulus*	+	+	+	+	+	.	.
Gymnopus hariolorum c	+	.	+	.	+	.	.
Hemimycena gracilis	+	+	+	+	+	.	.
Hydropus subalpinus	+	.	+	+	+	.	.
Hygrocybe acutoconica c	.	.	+	.	+	.	.
**Hygrophorus agathosmus* c	+	+	.	+	+	.	.
**Hygrophorus camarophyllus*	.	+	.	.	.	.	.
Hygrophorus chrysodon	+	+	+	+	+	+	.
Hygrophorus discoxanthus c	+	.	+	.	.	.	.
**Hygrophorus erubescens* c	+	+	.	.	.	.	.
Hygrophorus olivaceoalbus	+	+	+	+		+	
**Hygrophorus piceae*	+	+	+	.	.	.	.

Table 10. *Continued.*

Species	Mountain area						
	BNP	SNP	B	BG	P	G	BS
Hygrophorus pustulatus	+	+	.	+	+	.	.
**Hygrophorus lucorum* var. *speciosus*	+	+	.	.	.	.	.
Hygrophorus unicolor c	+	.	.	.	.	.	.
Inocybe corydalina c	.	.	+	.	+	.	.
Inocybe hystrix c	.	+	.	+	.	.	.
Inocybe nitidiuscula	+	+	.	+	.	.	.
**Inocybe terrigena*	+	+	.	.	+	.	.
Lactarius acris c	+	.	+	.	+	.	+
**Lactarius badiosanguineus* c	+	+	.	.	.	.	.
**Lactarius lignyotus*	+	+	+	+	.	+	.
**Lactarius picinus*	+	+	+	+	+	.	+
Lactarius porninsis	+	+	.	+	+	.	+
**Lactarius salmonicolor*	+	+	+	+	+	+	.
**Lactarius scrobiculatus* c	+	+	+	+	+	.	+
Limacella glioderma c	+	+	+	+	+	.	.
Marasmius cohaerens	+	.	+	.	+	.	.
Marasmius wettsteinii	+	.	+	.	.	.	.
Mycena aurantiomarginata	+	+	+	+	+	.	+
Mycena cinerella	+	+	+	+	+	.	+
Mycena citrinomarginata	+	+	+	+	.	.	.
**Mycena laevigata*	+	+	+	+	.	.	.
Mycena oregonensis	.	.	.	.	.	.	.
**Mycena renati* c	+	.	+	+	+	.	.
Mycena rosella	+	+	+	+	+	+	+
Mycena rubromarginata	+	+	+	+	+	.	+
**Mycena viridimarginata*	+	+	+	+	.	.	.
Pholiota scamba	+	+	+	+	.	+	.
Phyllotopsis nidulans	.	.	.	.	.	.	.
**Pleurocybella porrigens*	+	.	+	+	.	.	.
**Porphyrellus porphyrosporus*	.	+	+	+	+	+	+
**Rhodocybe nitellina* c	+	+	.	+	+	.	.
Rimbachia neckerae c	.	.	.	.	.	.	.
Russula favrei	.	+	.	.	.	.	.
**Russula firmula* c	+	+	.	.	.	.	.
Russula integra c	+	+	+	+	+	.	.
**Russula postiana*	+	+	+	.	.	.	.
Russula queletii c	+	+	+	+	+	.	+
Russula vinosa	+	+	.	+	.	.	.
Suillus viscidus c	+	+	+	+	+	.	.
Suillus cavipes c	+	+	.	.	.	.	.
Tricholoma vaccinum	+	+	+	+	+	+	+
**Tricholomopsis decora*	+	+	+	+	.	.	.
**Tubaria confragosa*	.	.	.	.	.	.	.
Xeromphalina campanella	+	+	+	+	+	.	+
Xerula melanotricha c	.	.	.	.	+	.	.
Total	72	63	53	52	41	14	14
Number of all species in common with those from the study area	192	196	205	168	152	92	96

Table 10. *Continued.*

BNP – Berchtesgaden National Park (Schmid-Heckel 1985); SNP – Swiss National Park and its vicinity (Favre 1960; Horak 1963; Horak 1985); B – Bieszczady Mts (Moser 1960; Domański S. *et al*. 1960, 1963, 1967, 1970; Kuthan *et al.* 1999; Gierczyk *et al.* 2009); BG –Babia Góra massif (Wojewoda 1965; Bujakiewicz 1979, 1993a, 1993b, 2004a); P – Pieniny Mts (Gumińska 1969, 1972, 1976a, 1976b, 1981, 1990, 1994, 1999; Gumińska & Wojewoda 2004); G – Gorce Mts (Wojewoda 1964; Domański Z. 1965; Ronikier npbl.); BS – Beskid Sądecki (Gumińska 1962a, 1962b, 1966; Lisiewska *et al*. 1977); $_c$ – calciphilous species. * – species clearly representing mountain or boreal-mountain element.

Although the research done on different massifs varies in form and scope, and comparisons cannot be complete, certain similarities between regions emerge. They can be attributed to terrain, geology, or the type of mountainous region. All compared Carpathian massifs represent continuous distribution ranges of many mountain or boreal-mountain species. The Sarnia Skała massif does not exceed 1377 m a.s.l. but can be classified as a typical mountain region.

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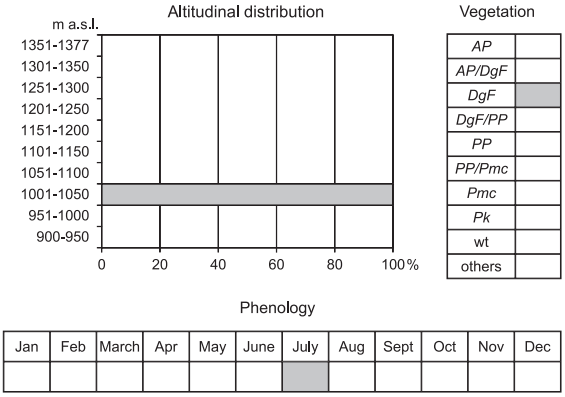
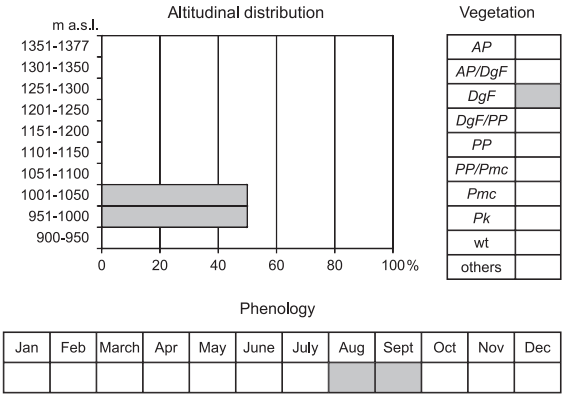
Ecodiagrams and distribution maps of species

Agrocybe praecox



Amanita argentea



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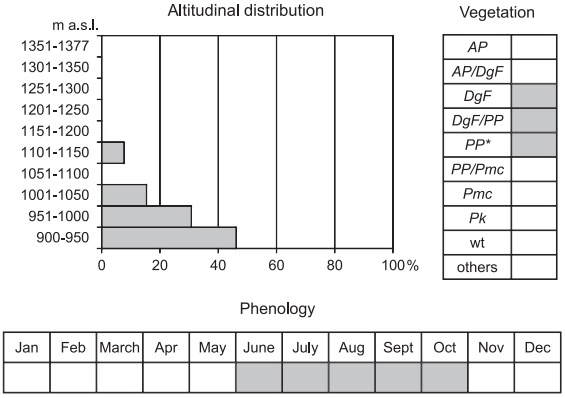
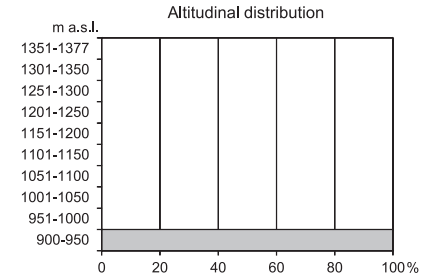


Amanita excelsa



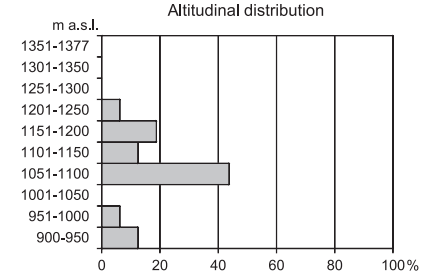
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

Amanita muscaria



Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	■
*PP**	■
PP/Pmc	
Pmc	
Pk	
wt	■
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
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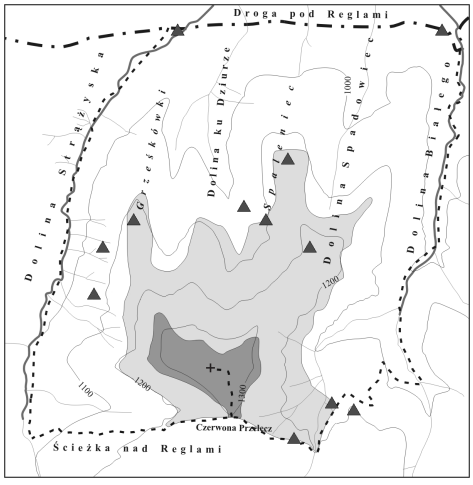

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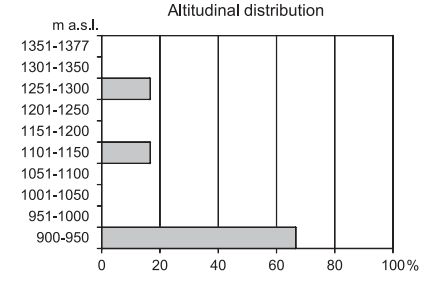

Vegetation

AP	
AP/DgF	■
*DgF**	■
DgF/PP	■
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■	■			

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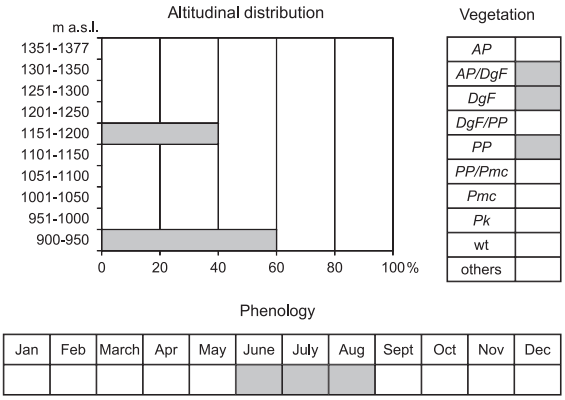

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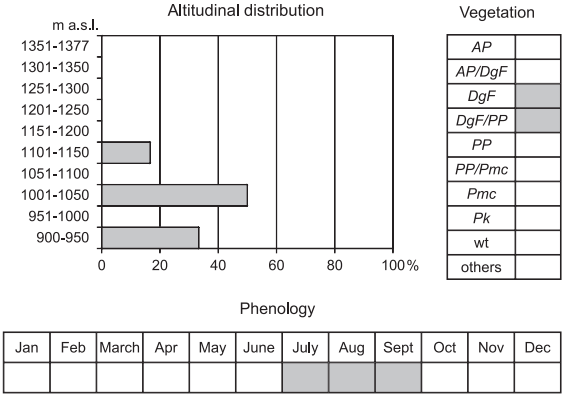
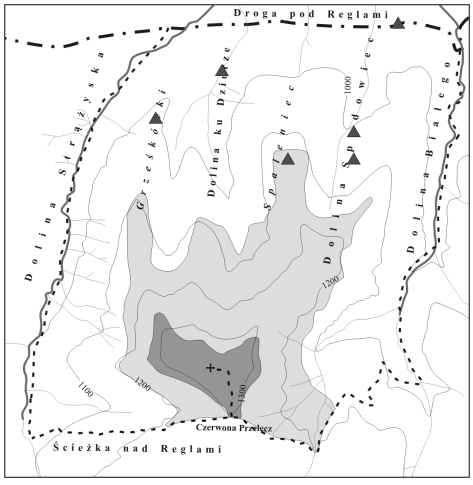
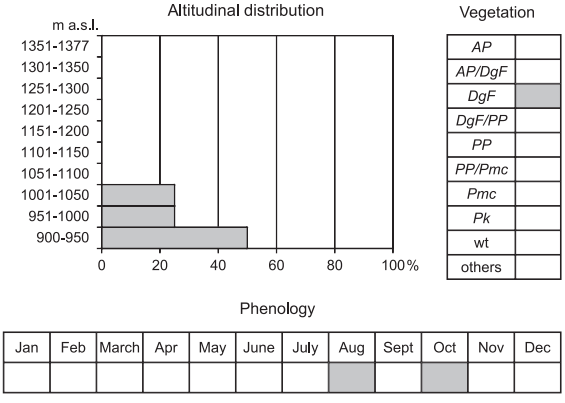




Armillaria lutea



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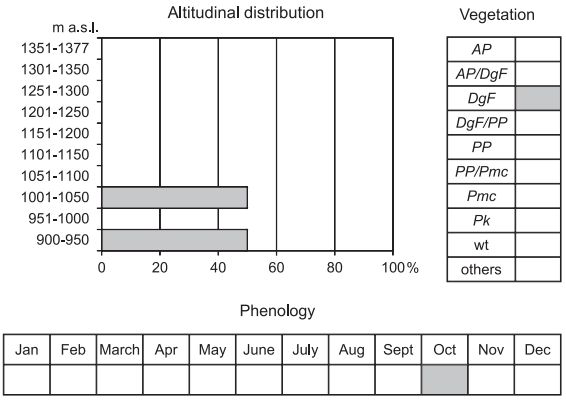
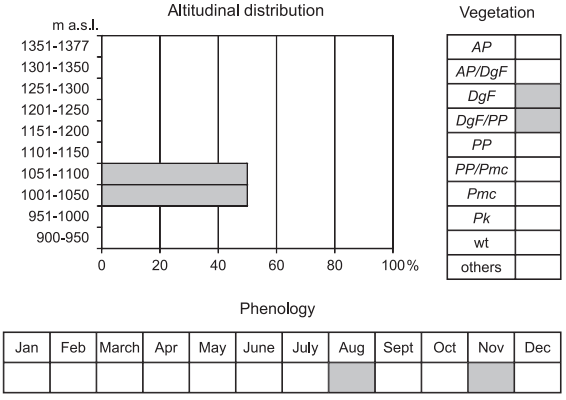
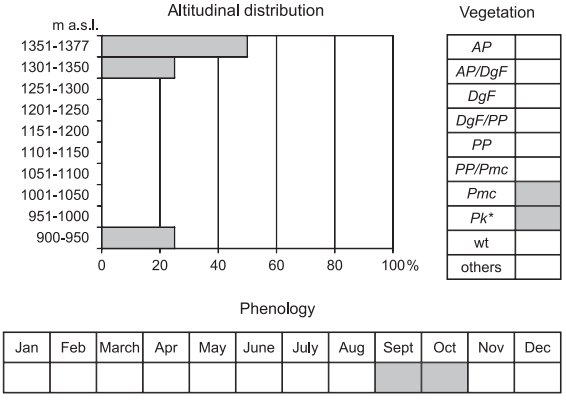


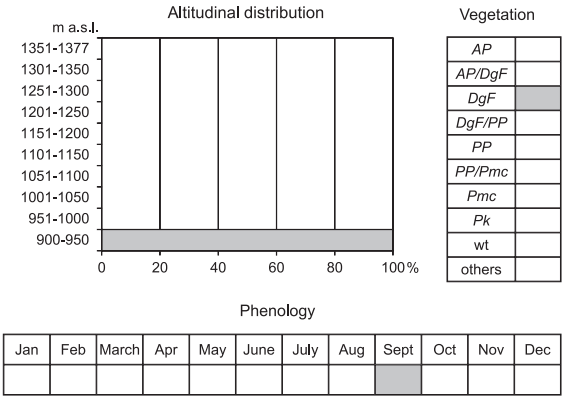
Arrhenia epichysium



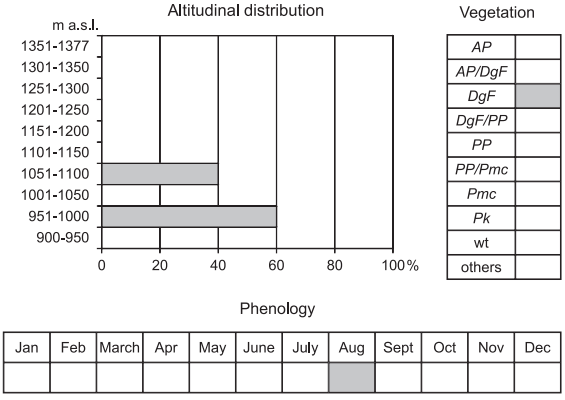
Baeospora myosura



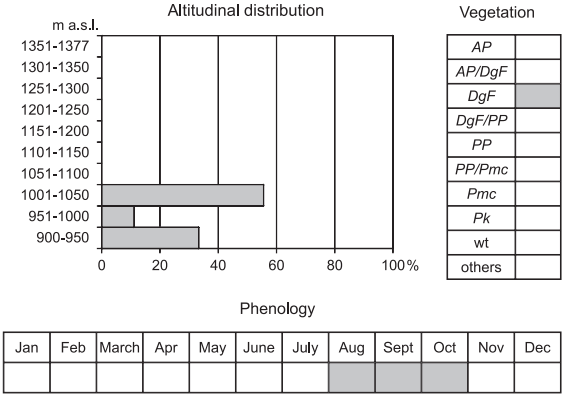
Boletus luridiformis



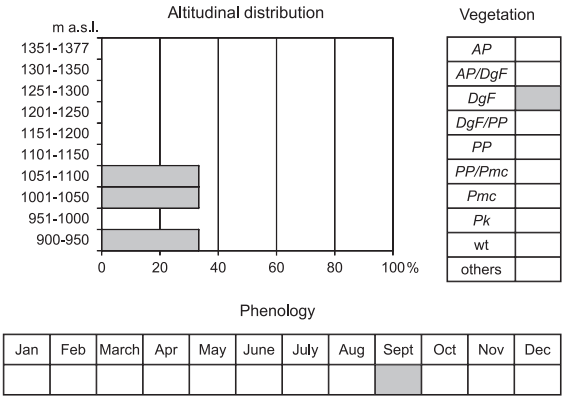
Boletus luridus



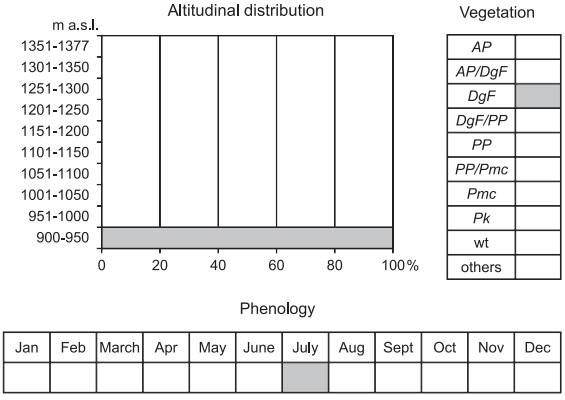
Cantharellus cibarius



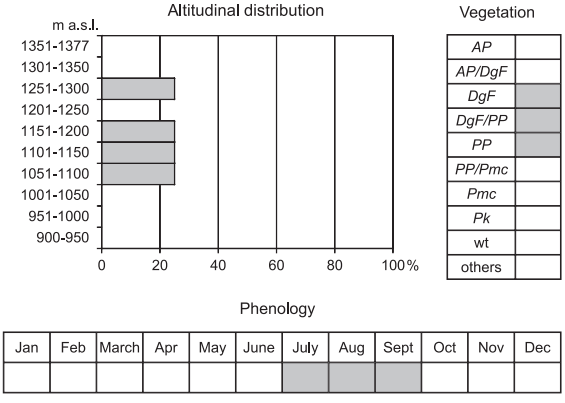
Cantharellus cibarius var. *amethysteus*



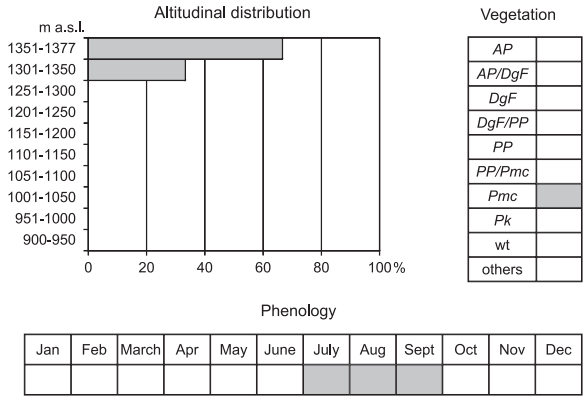
Chalciporus piperatus



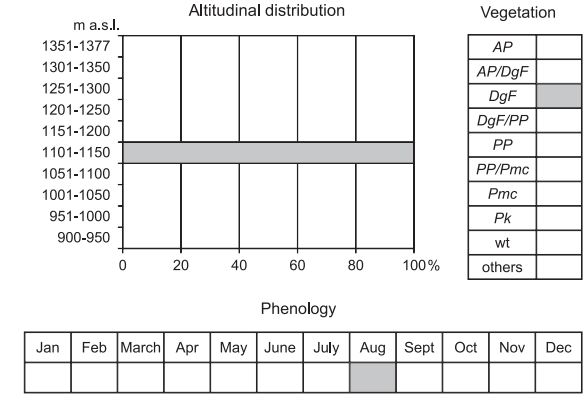
Chroogomphus helveticus ssp. *tatrensis*



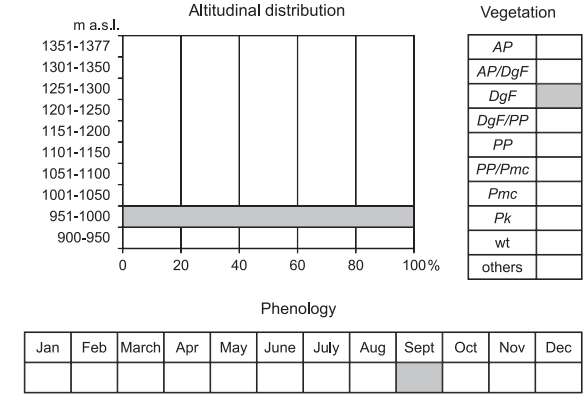
Chroogomphus rutilus



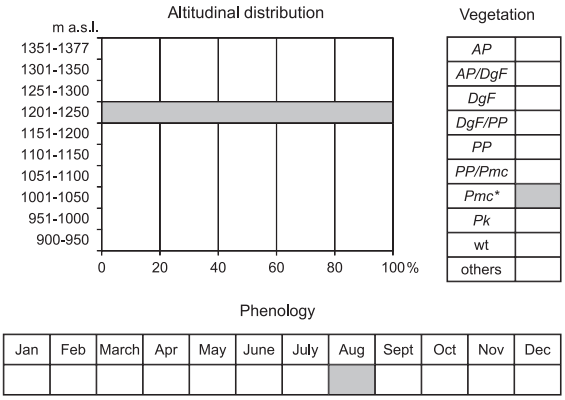
Chrysomphalina chrysophylla



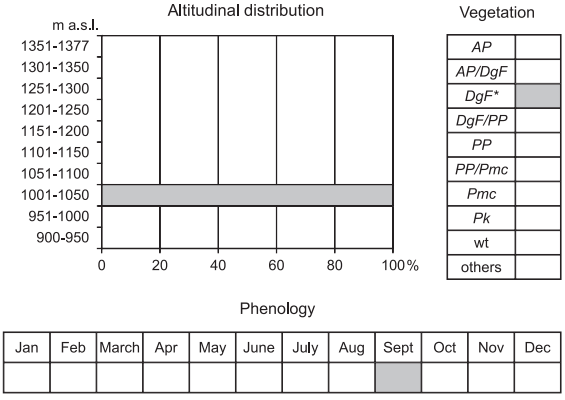
Clitocybe candicans

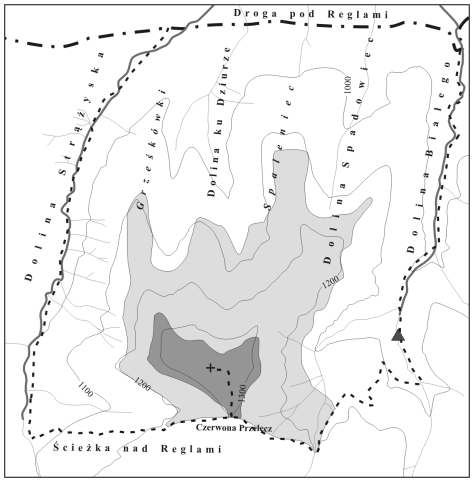


Clitocybe cf. *concava*

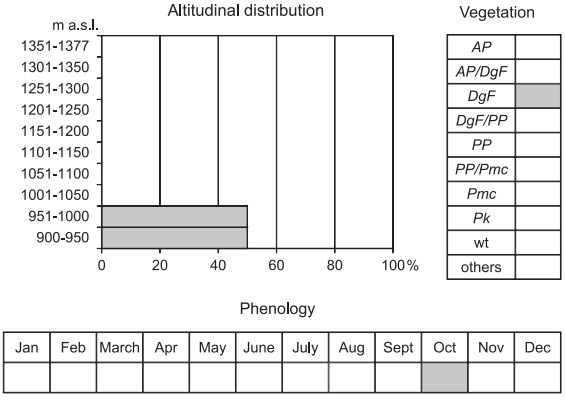


Clitocybe ditopa

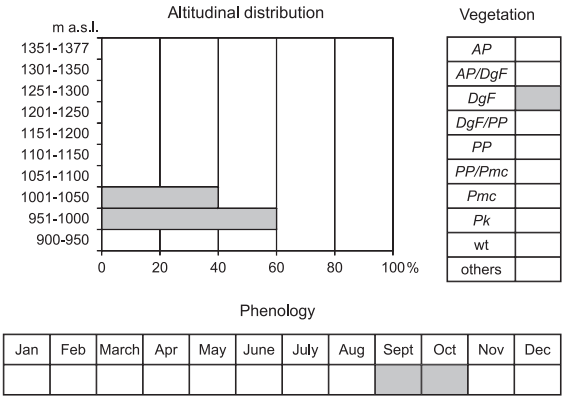




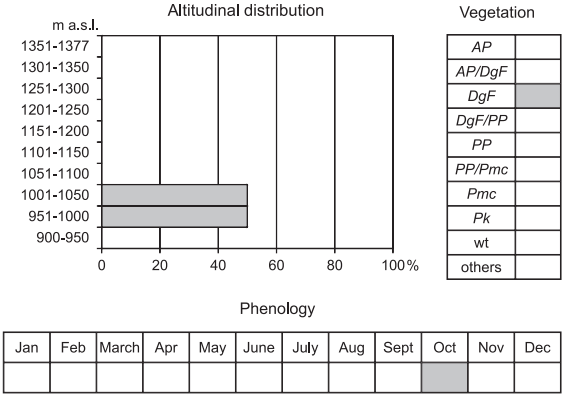
Clitocybe fragrans



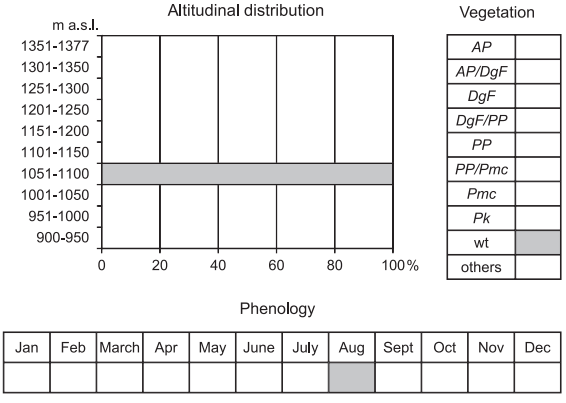
Clitocybe nebularis



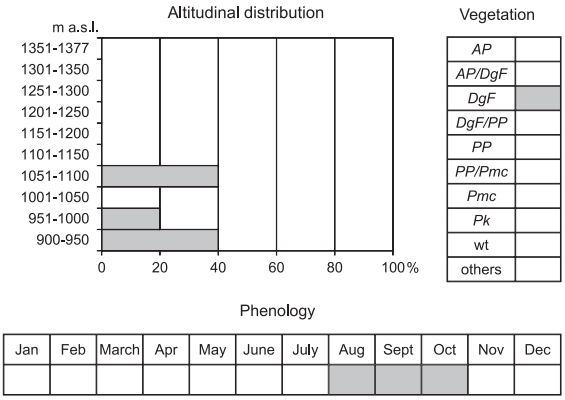
Clitocybe vibecina



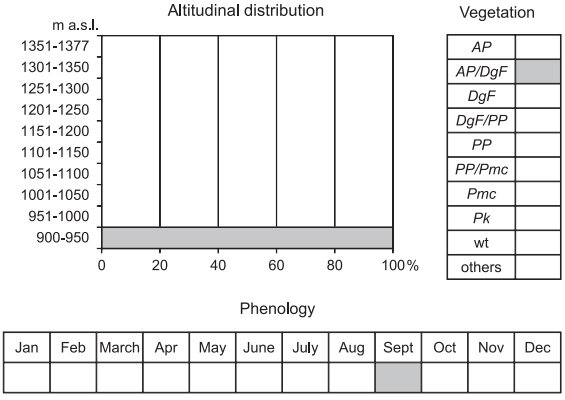
Clitopilus hobsonii



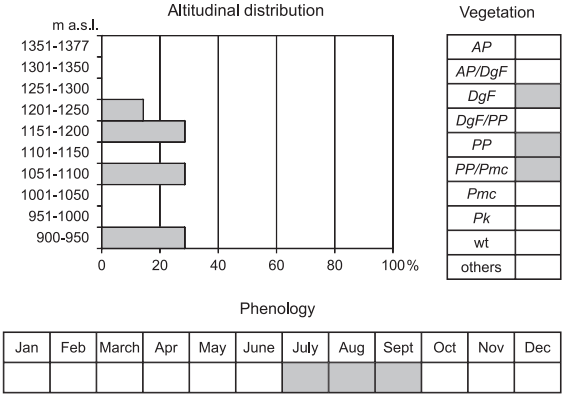
Clitopilus prunulus



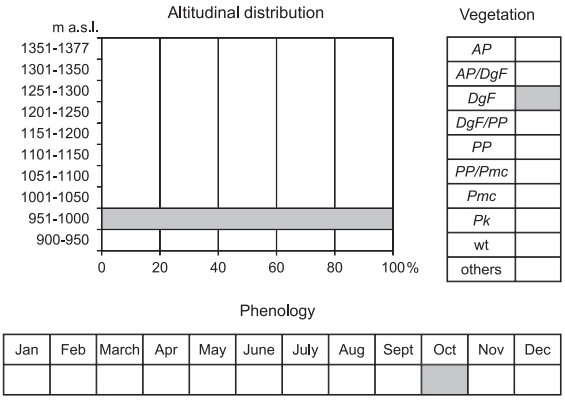
Clitopilus sp.



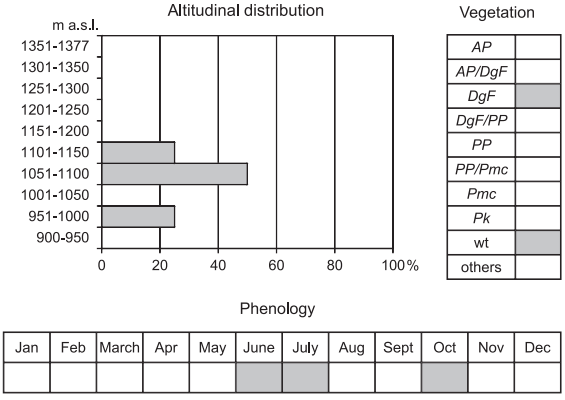
Collybia tuberosa



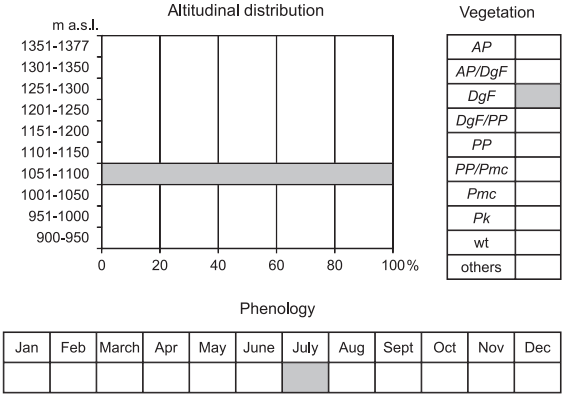
Conocybe rickeniana



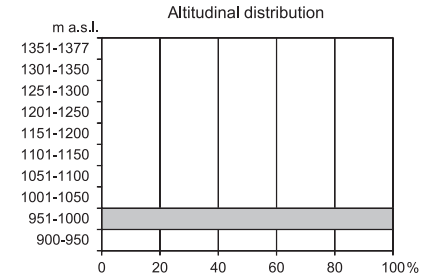
Coprinellus micaceus



Coprinellus xanthothrix



Coprinopsis cf. *narcotica*



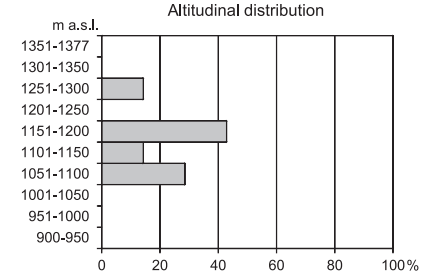
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■					

Cortinarius acutus



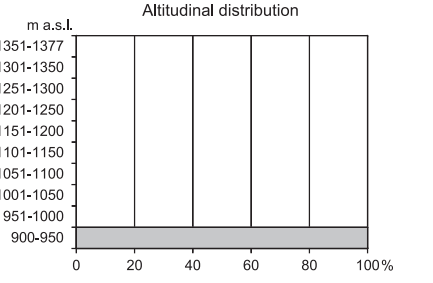
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	■
*PP**	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■		■		

Cortinarius azureus



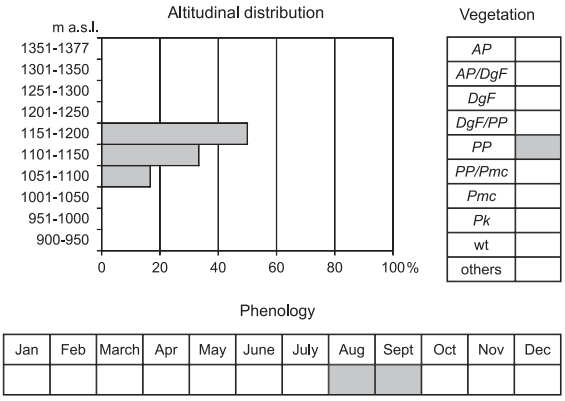
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

Cortinarius brunneus



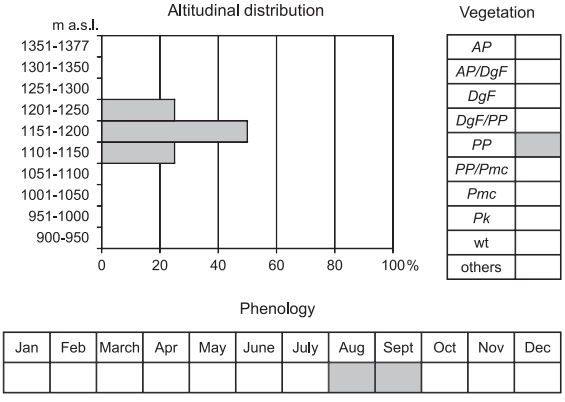
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			

Cortinarius camphoratus



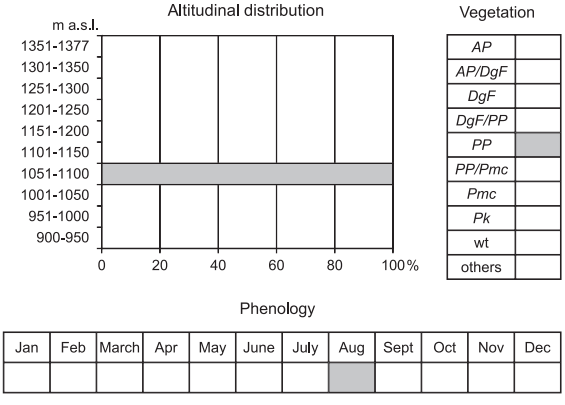
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			

Cortinarius caperatus



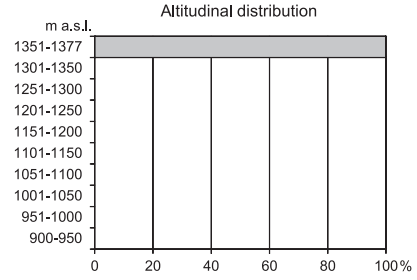
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				

Cortinarius dionysae



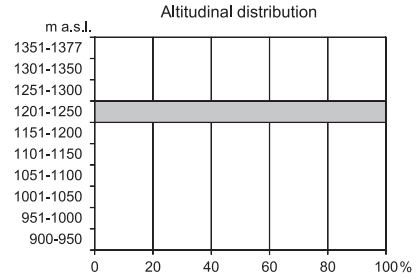
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

Cortinarius flexipes

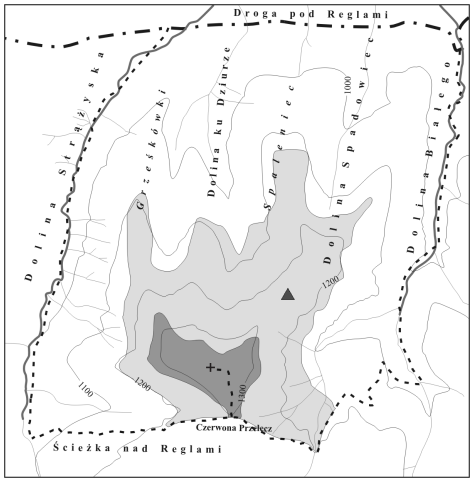


Vegetation

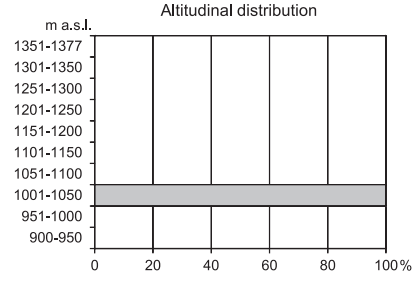
AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				



Cortinarius illibatus



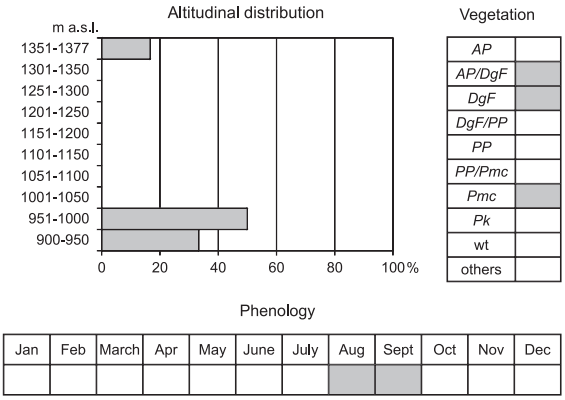
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

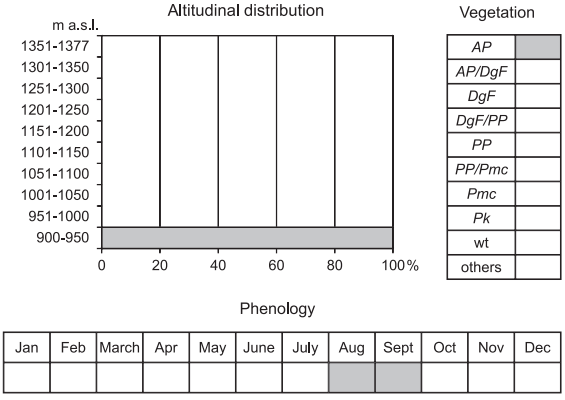
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

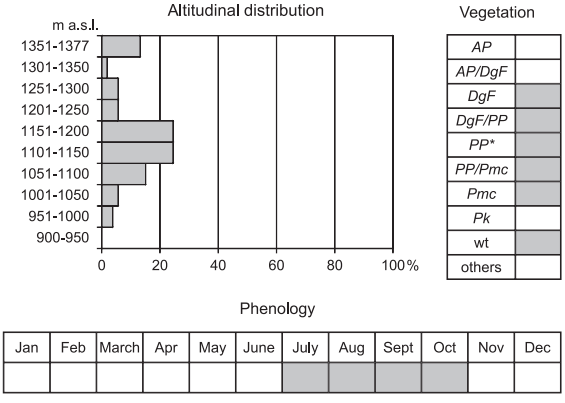
Cortinarius infractus



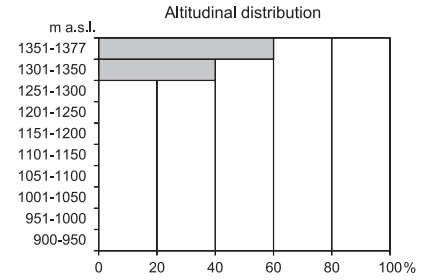
Cortinarius largus



Cortinarius odorifer



Cortinarius percomis



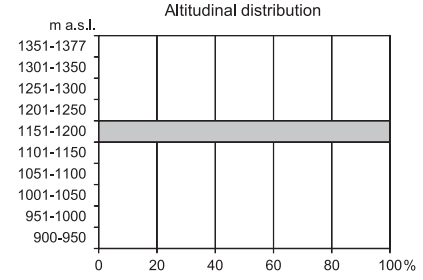
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■		■		

Cortinarius piceae



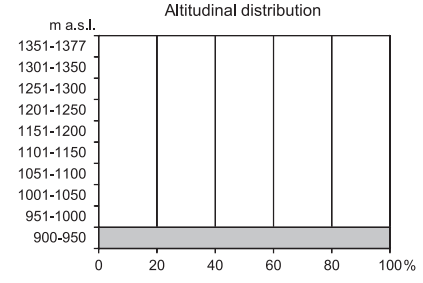
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				

Cortinarius salor



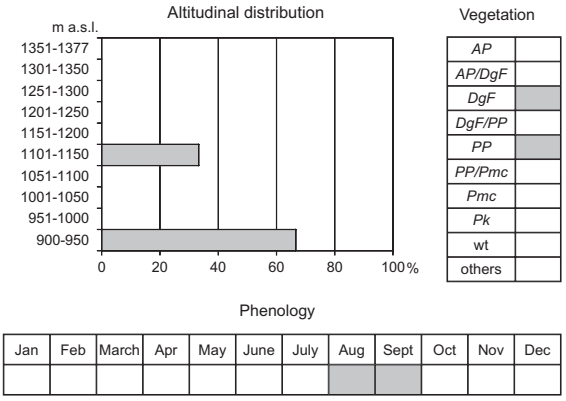
Vegetation

AP	
AP/DgF	■
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

Cortinarius sanguineus



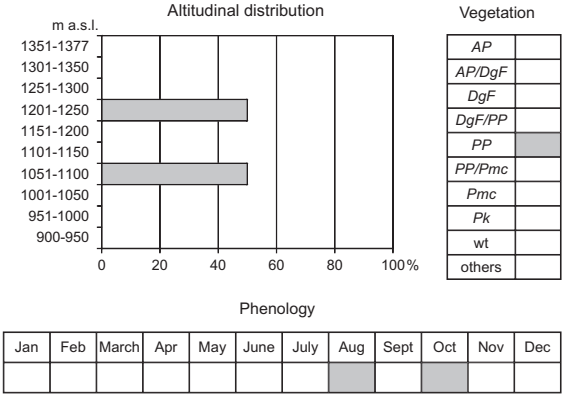
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			

Cortinarius spilomeus



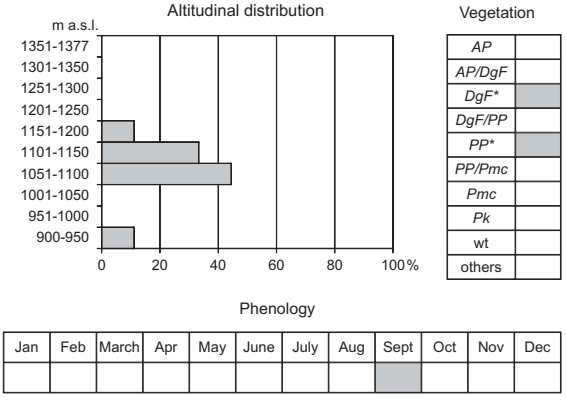
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■		■		

Cortinarius splendens



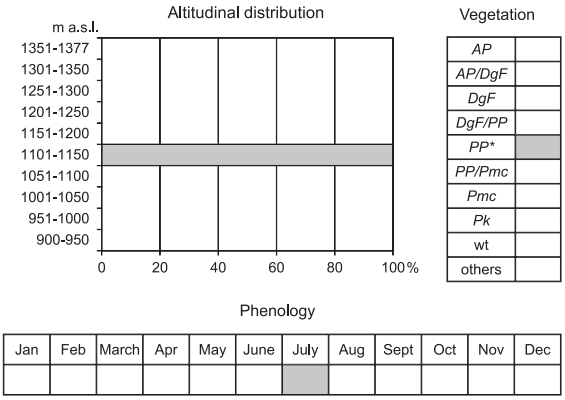
Vegetation

AP	
AP/DgF	
*DgF**	■
DgF/PP	
*PP**	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

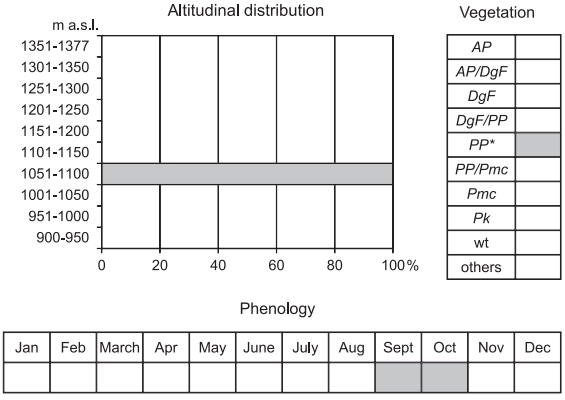
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

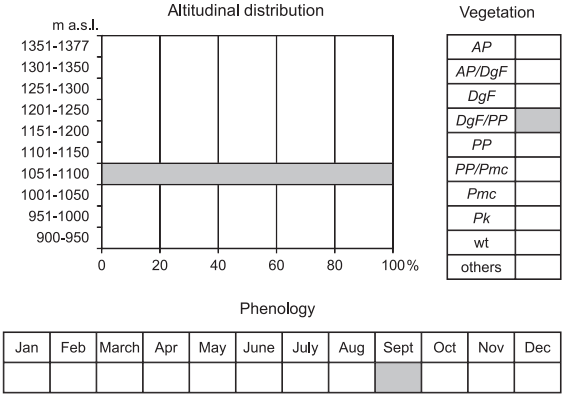
Cortinarius stillatitius



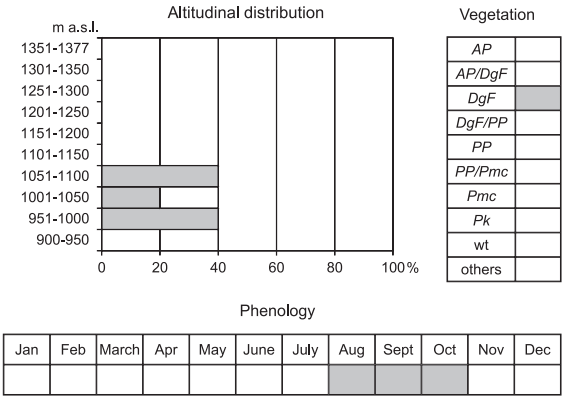
Cortinarius varius



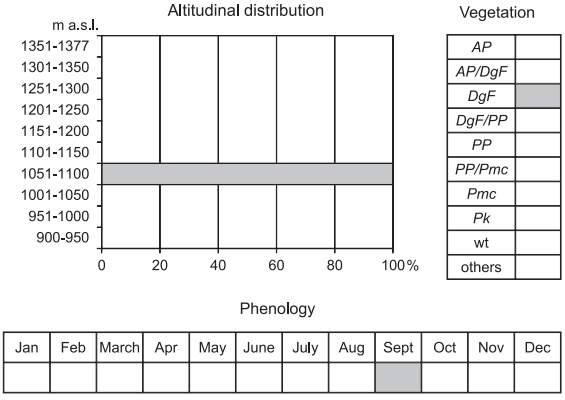
Cortinarius vibratilis



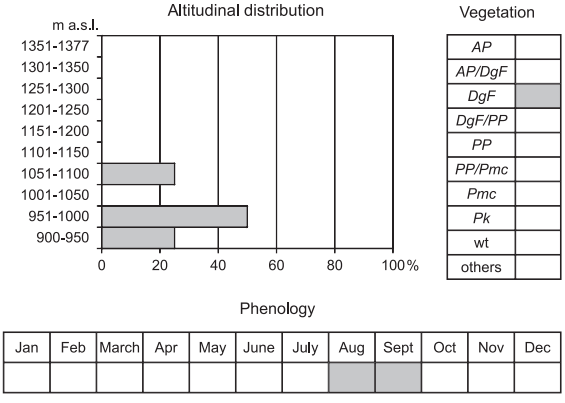
Craterellus cornucopioides



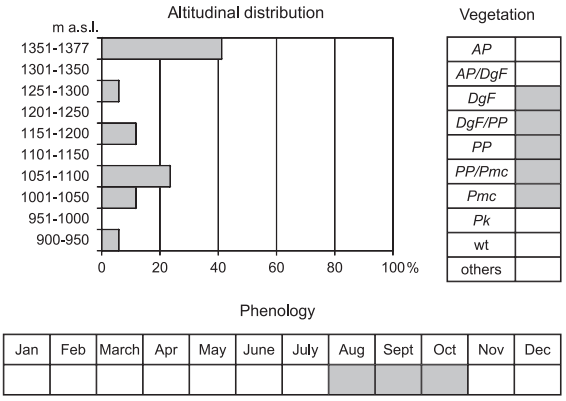
Craterellus lutescens



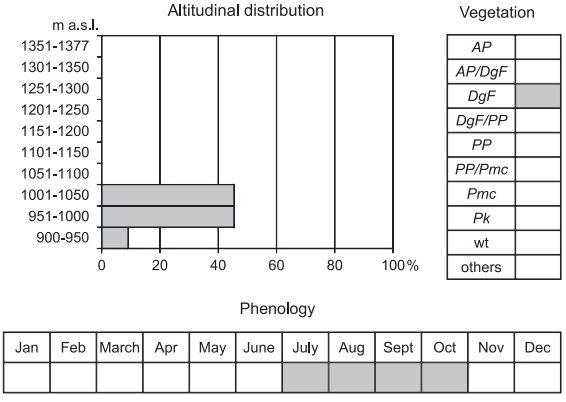
Craterellus sinuosus



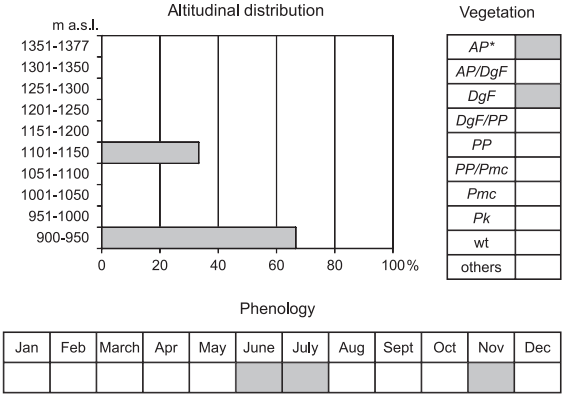
Craterellus tubaeformis



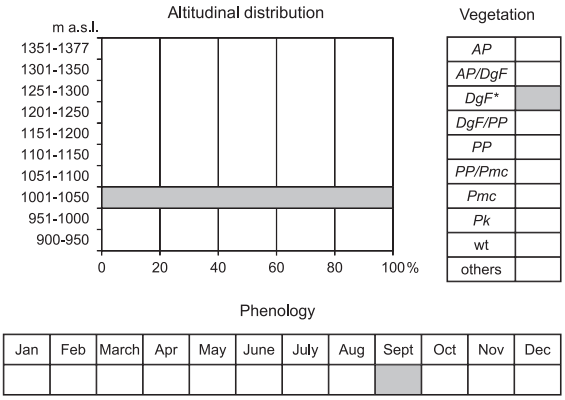
Crepidotus applanatus



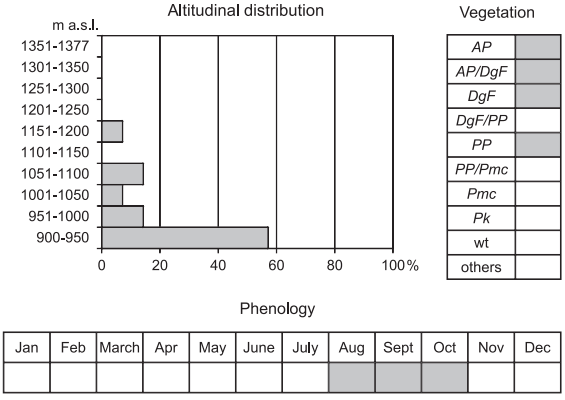
Crepidotus cesatii var. *subsphaerosporus*



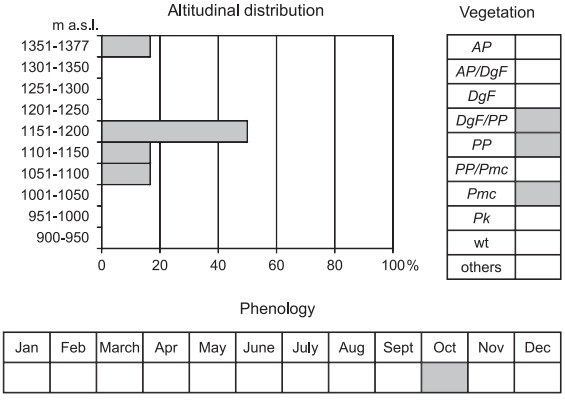
Crepidotus epibryus



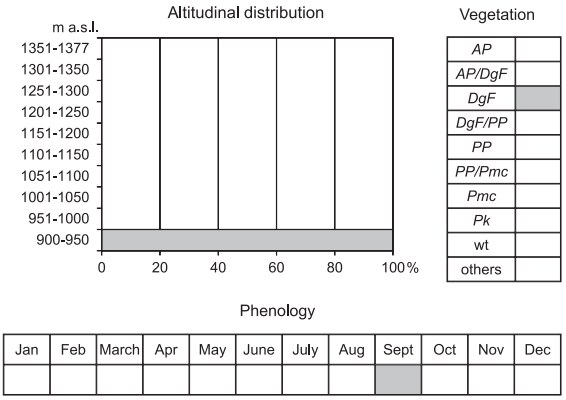
Cystoderma carcharias



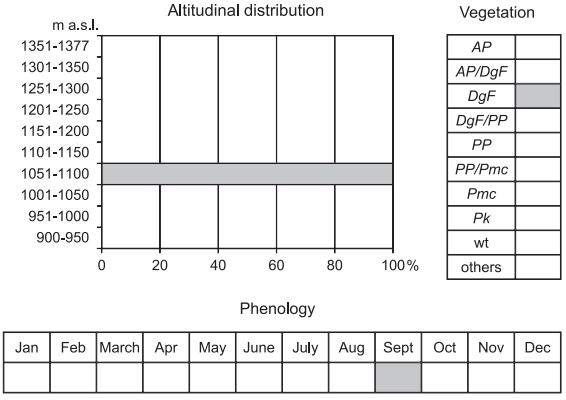
Cystoderma jasonis



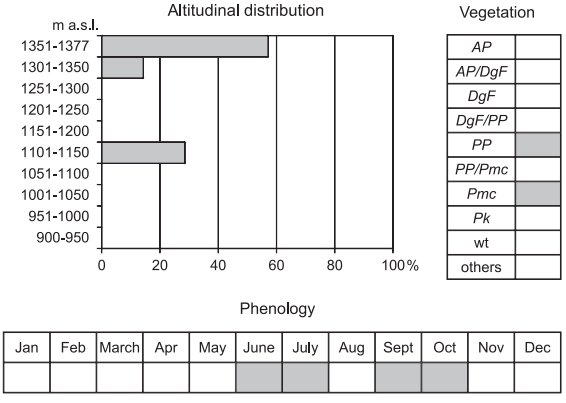
Cystolepiota seminuda



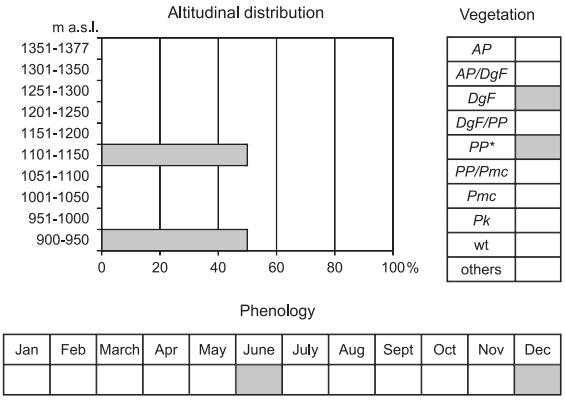
Entoloma byssisedum



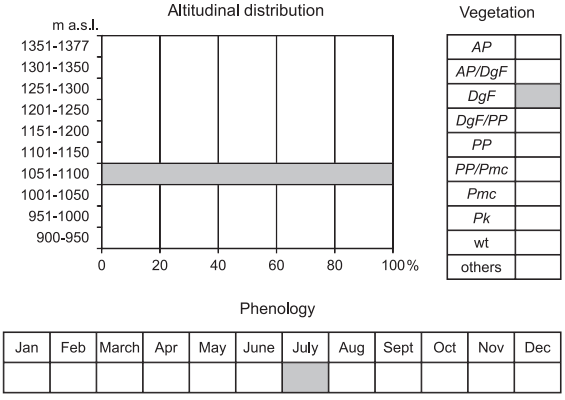
Entoloma cetratum



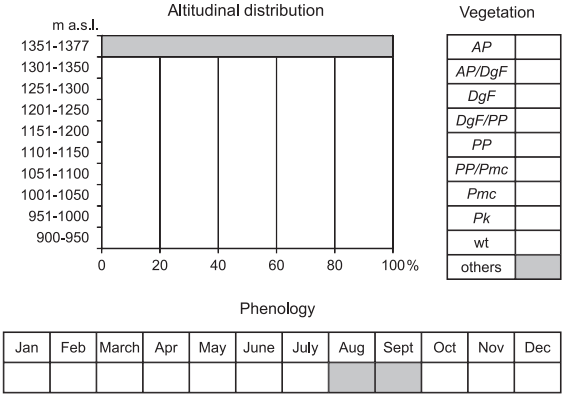
Entoloma conferendum



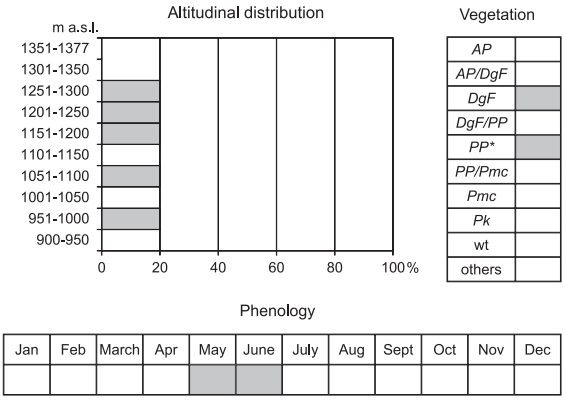
Entoloma cf. *dichroum*



Entoloma excentricum

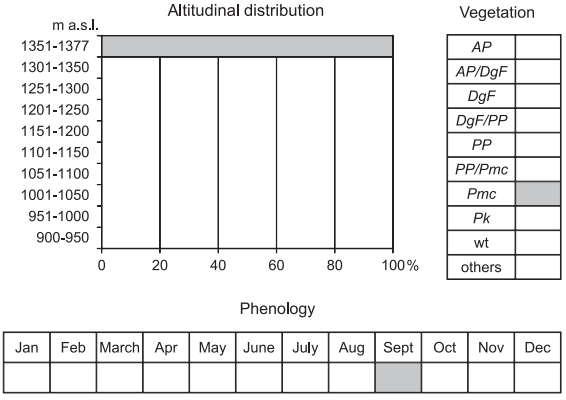


Entoloma hirtipes



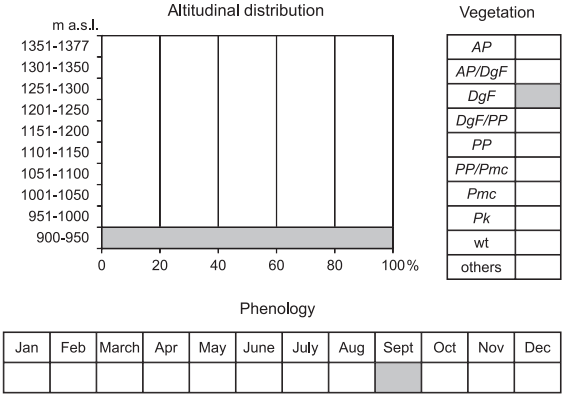
Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
*PP**	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Entoloma juncinum



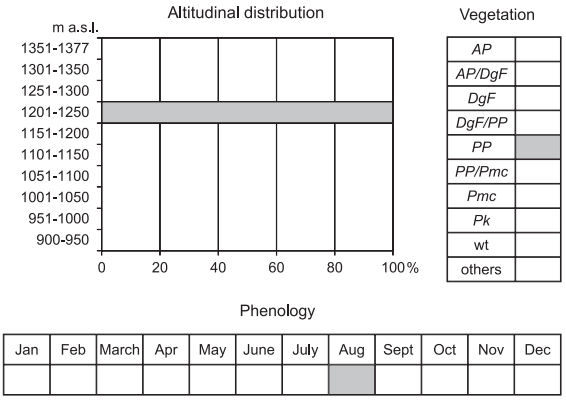
Vegetation	
AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Entoloma myrmecophilum

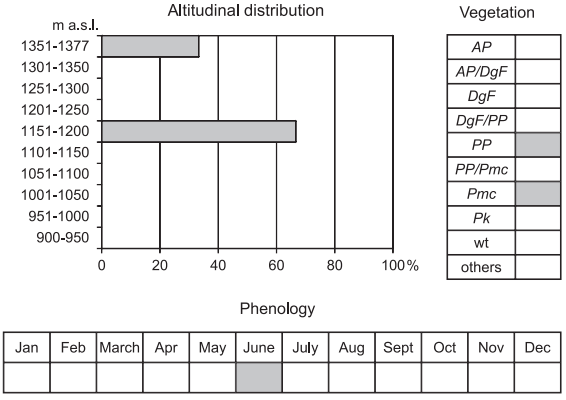


Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

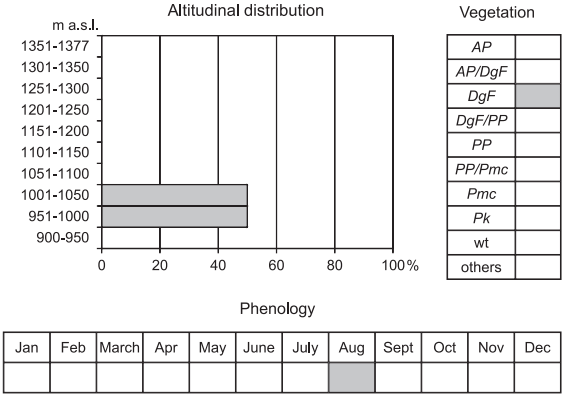
Entoloma nitidum



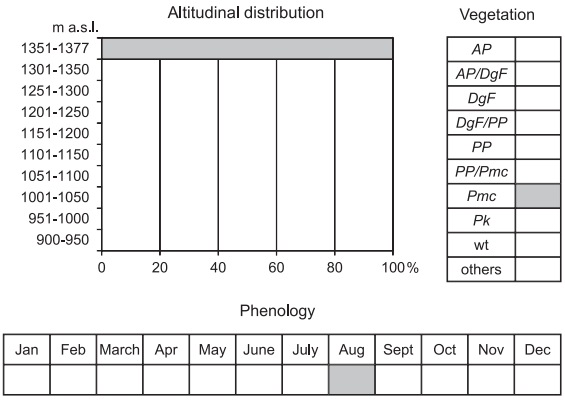
Entoloma pallescens



Entoloma rhodopolium

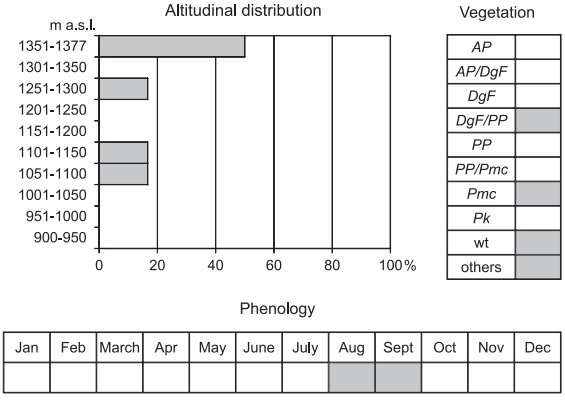


Entoloma sericellum



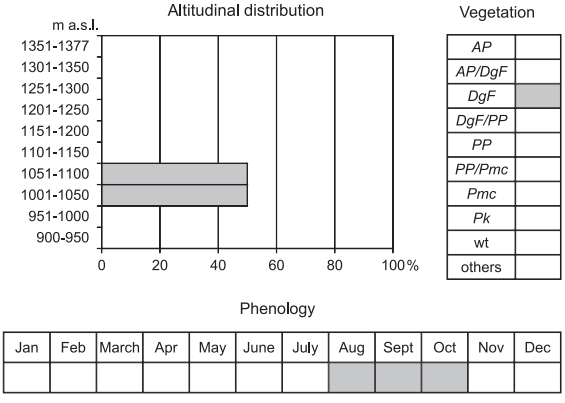
Vegetation	
AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Entoloma serrulatum



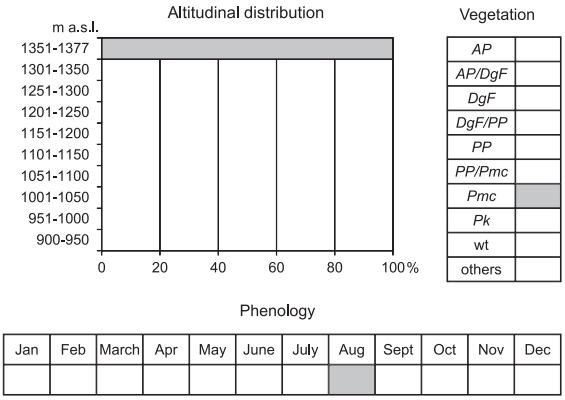
Vegetation	
AP	
AP/DgF	
DgF	
DgF/PP	■
PP	
PP/Pmc	
Pmc	■
Pk	
wt	■
others	■

Entoloma sordidulum



Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Entoloma winterhoffii



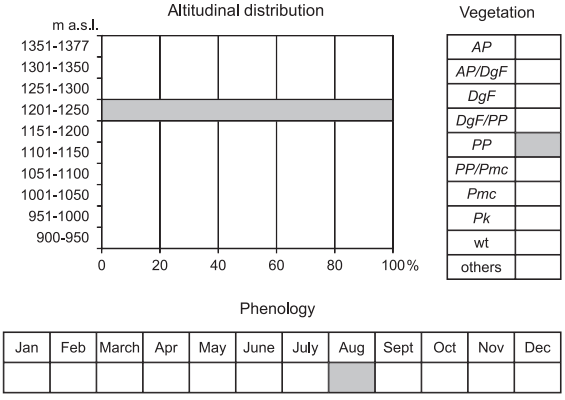
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				

Entoloma sp.

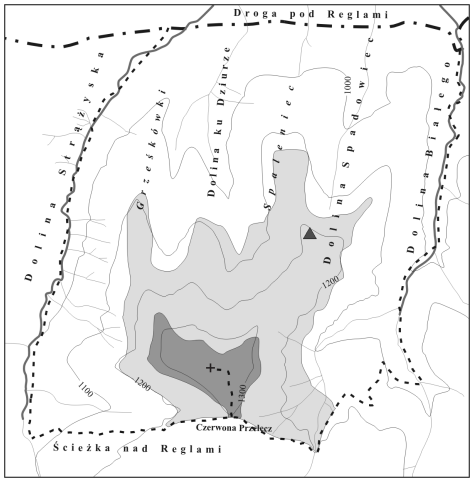


Vegetation

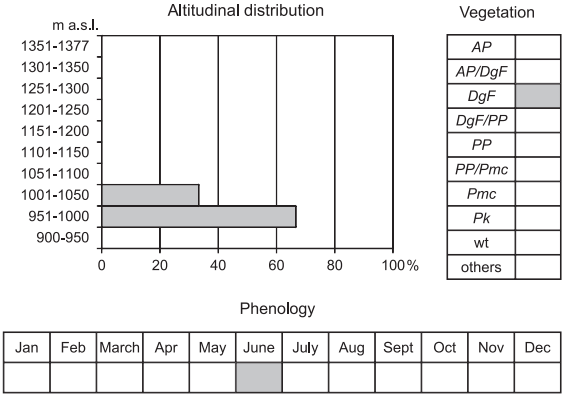
AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				



Flammulaster carpophilus



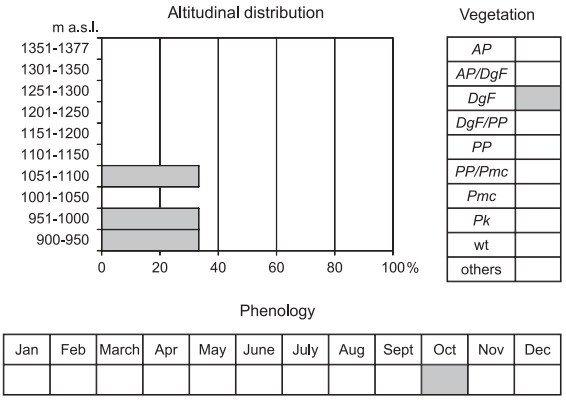
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

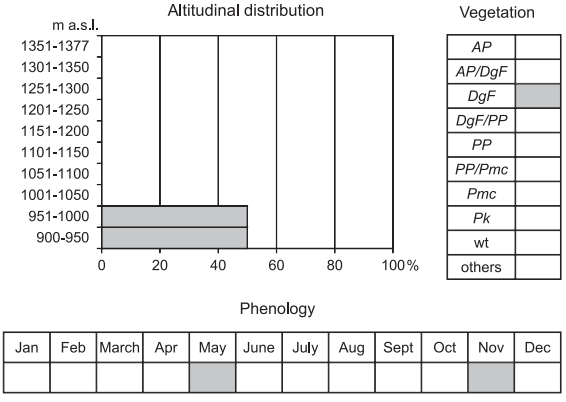
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■						

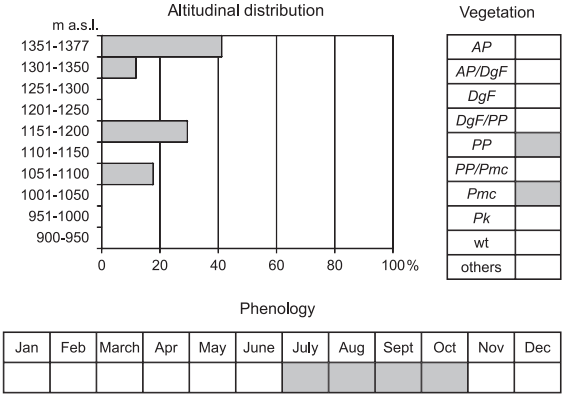
Flammulaster subincarnatus



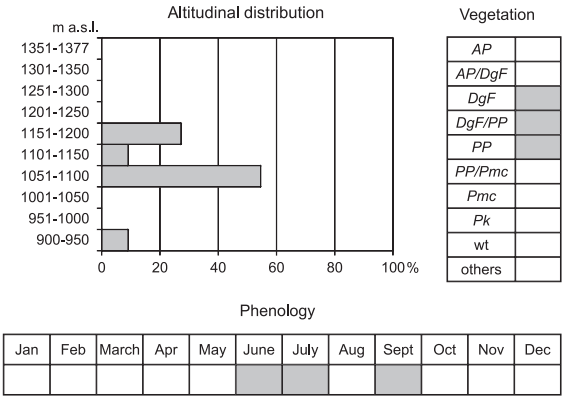
Flammulina velutipes



Galerina atkinsoniana



Galerina calyptrata

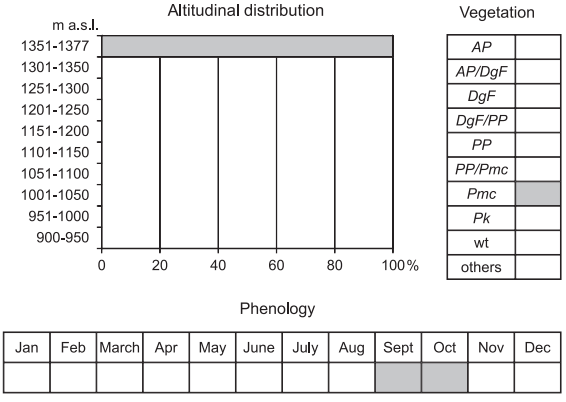


Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	■
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■	■		■			

Galerina cephalotricha

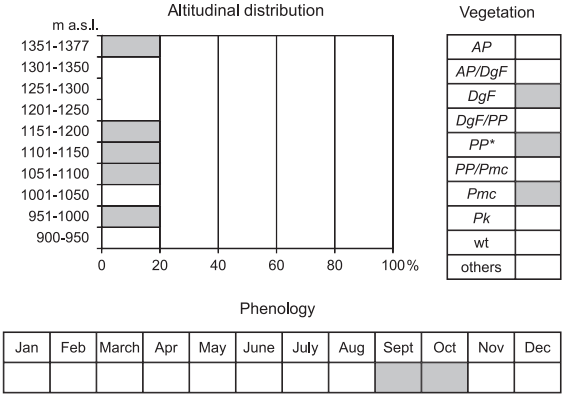


Vegetation	
AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■	■		

Galerina marginata

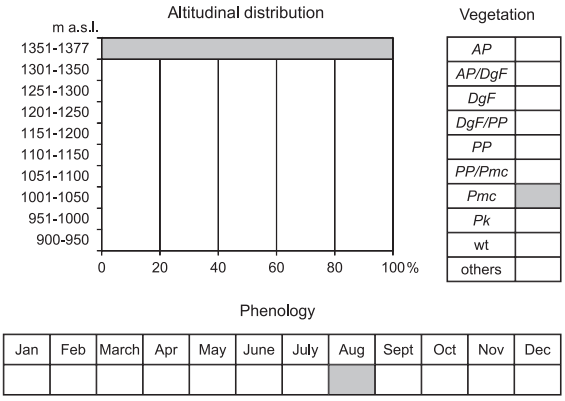


Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP*	■
PP/Pmc	
Pmc	■
Pk	
wt	
others	

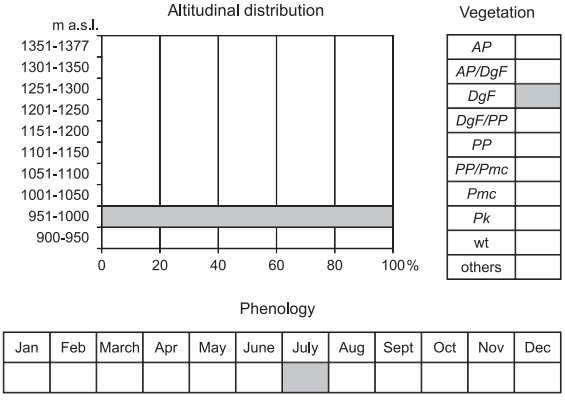
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■	■		

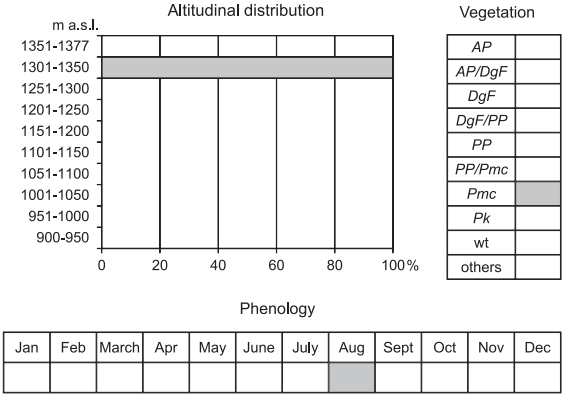
Galerina pruinatipes



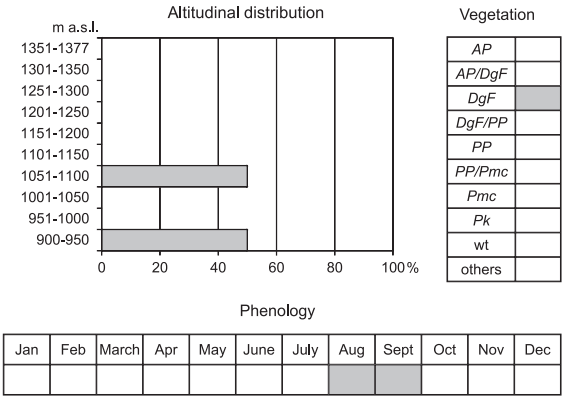
Galerina stordalii



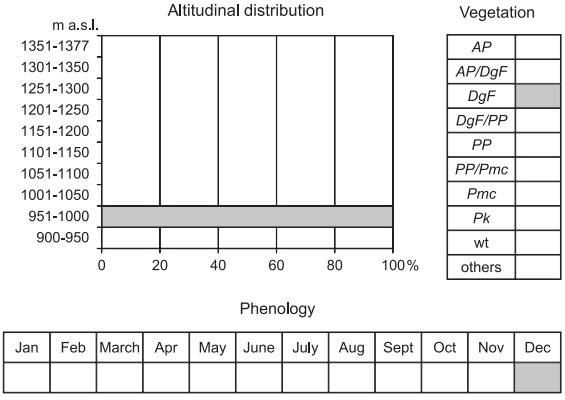
Galerina vittiformis



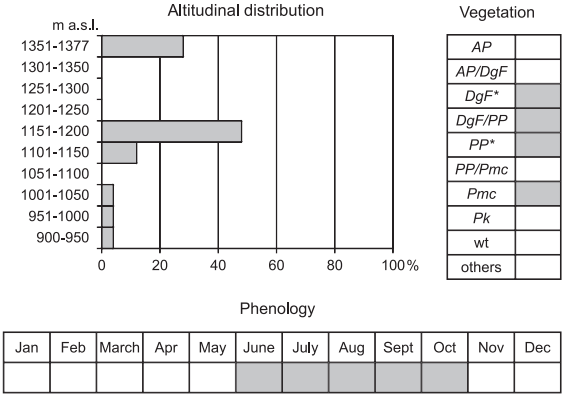
Gymnopilus bellulus



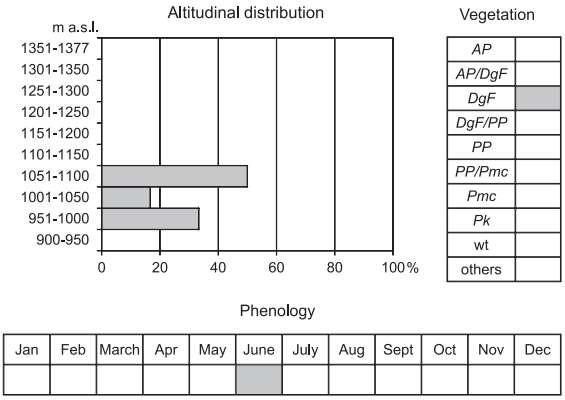
Gymnopilus penetrans



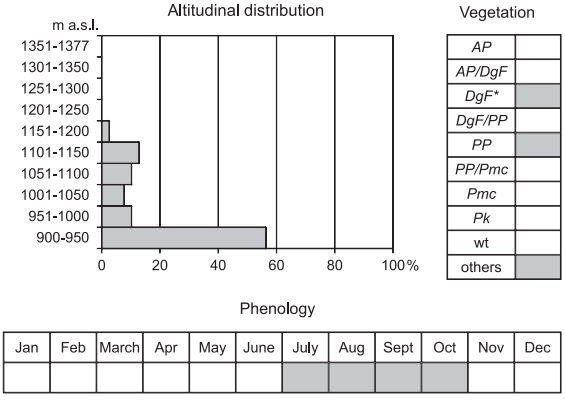
Gymnopus androsaceus

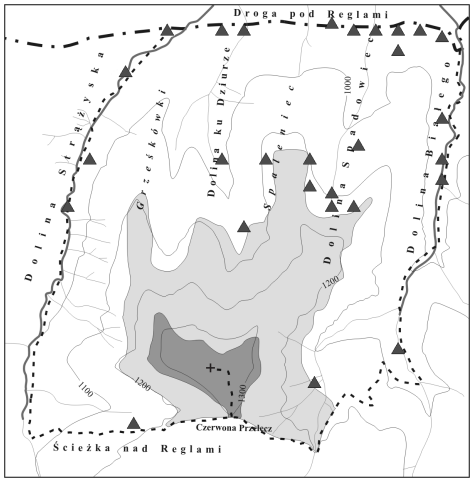


Gymnopus aquosus

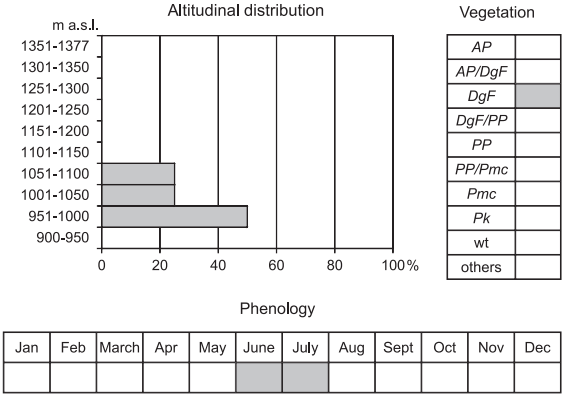


Gymnopus confluens

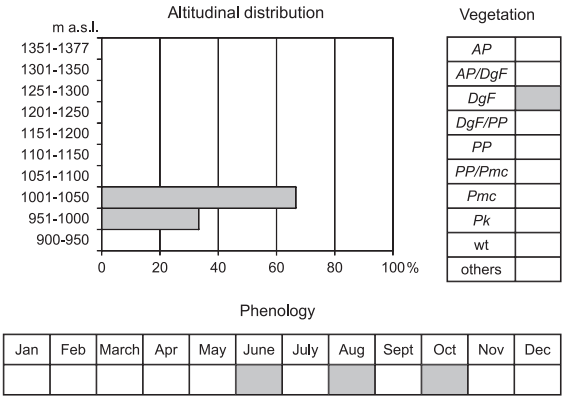




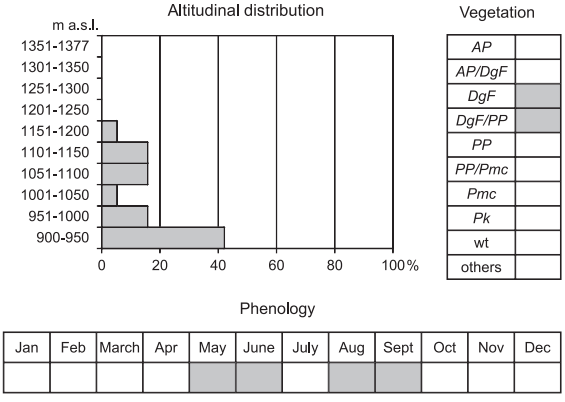
Gymnopus dryophilus



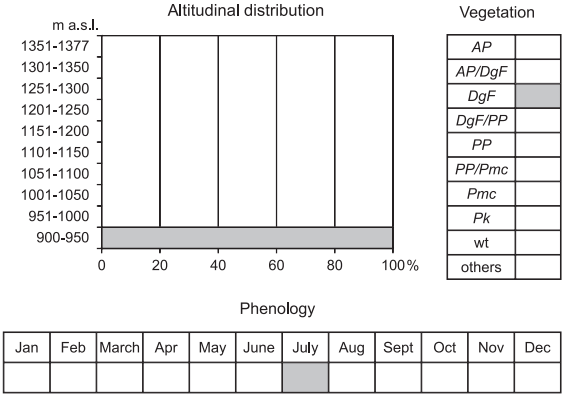
Gymnopus fuscopurpureus



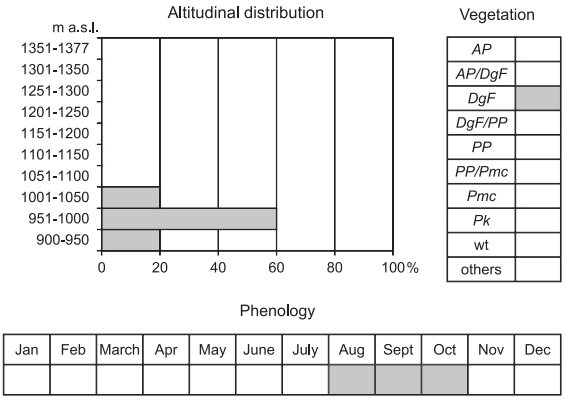
Gymnopus hariolorum



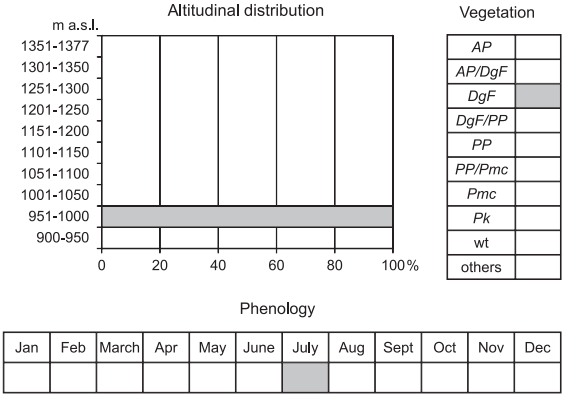
Gymnopus ocior



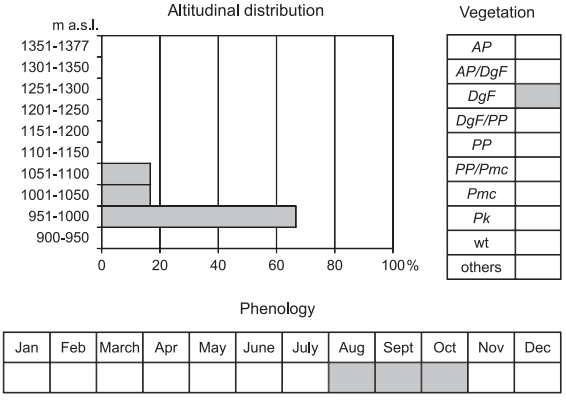
Gymnopus peronatus



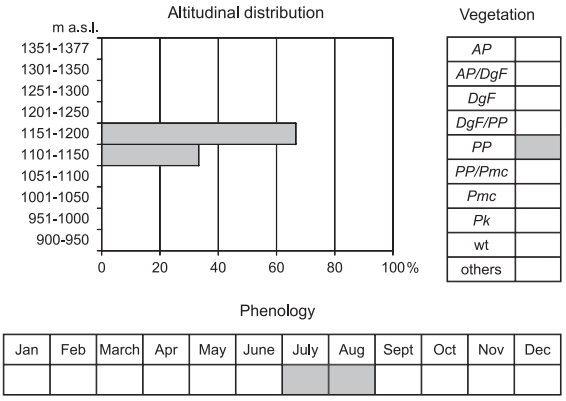
Hebeloma radicosum



Hebeloma sinapizans



Hemimycena gracilis



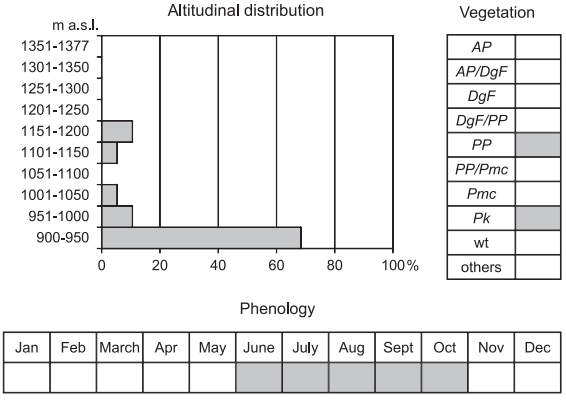
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■				

Hemimycena pseudocrispula

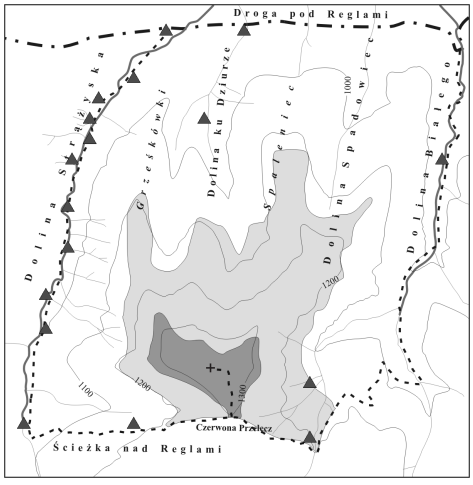


Vegetation

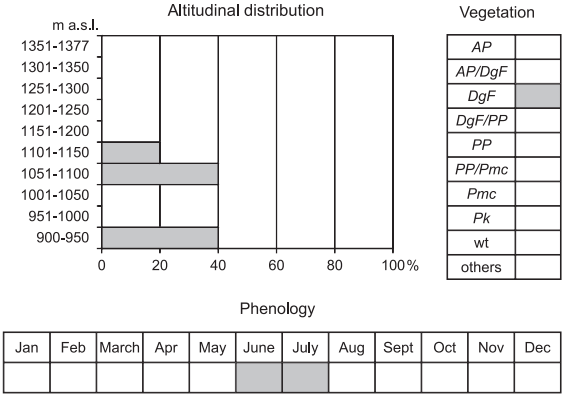
AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	■
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■	■	■	■	■		



Hydropus subalpinus



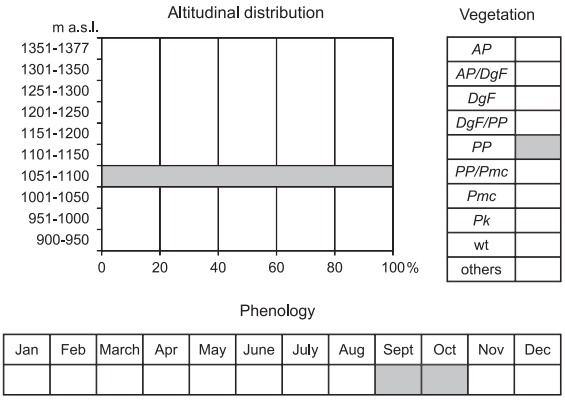
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

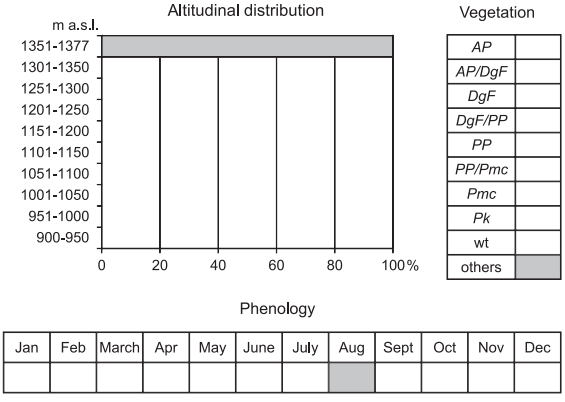
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■	■					

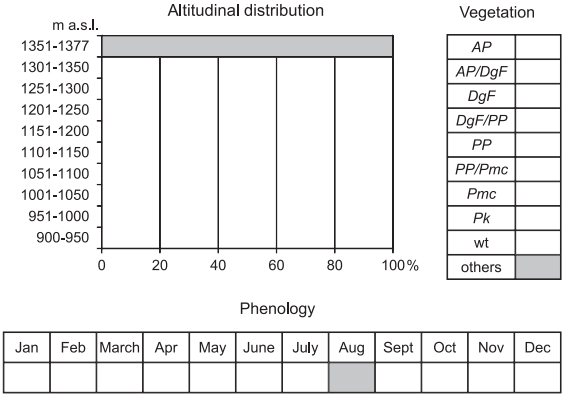
Hygroaster asterosporus



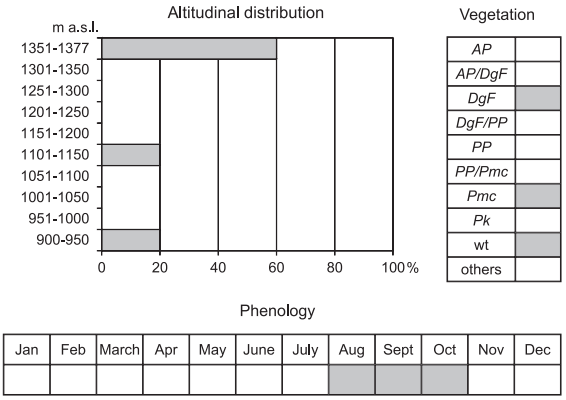
Hygrocybe acutoconica var. *acutoconica*



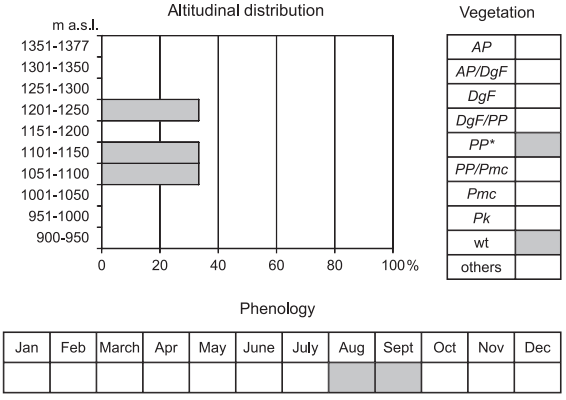
Hygrocybe calciphila



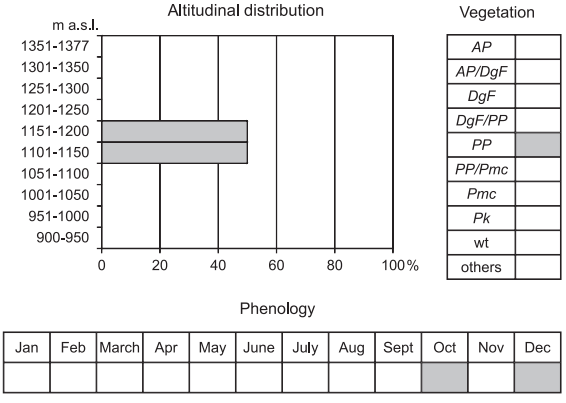
Hygrocybe conica



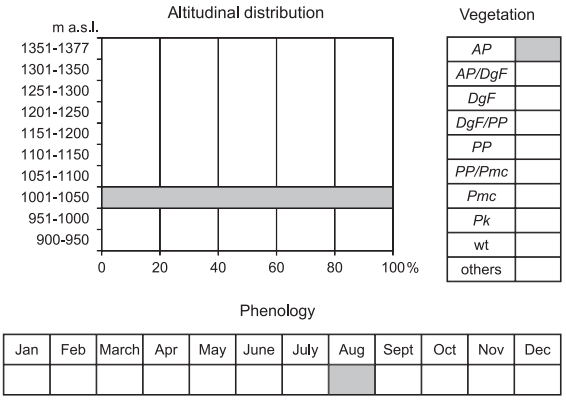
Hygrocybe miniata



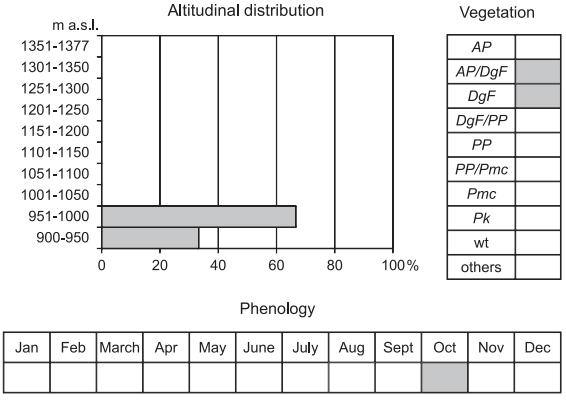
Hygrophorus agathosmus



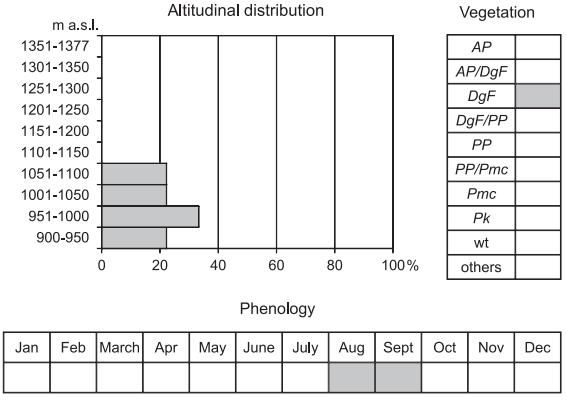
Hygrophorus camarophyllus



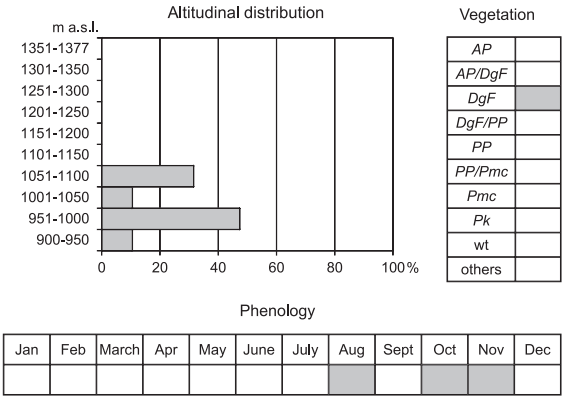
Hygrophorus chrysodon



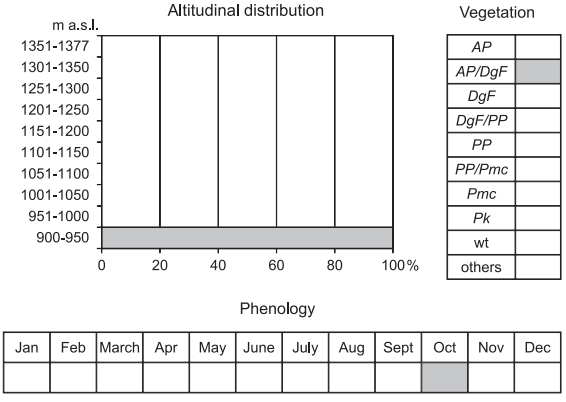
Hygrophorus discoxanthus



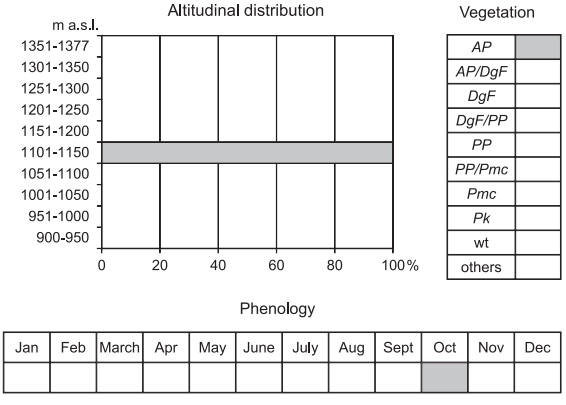
Hygrophorus eburneus



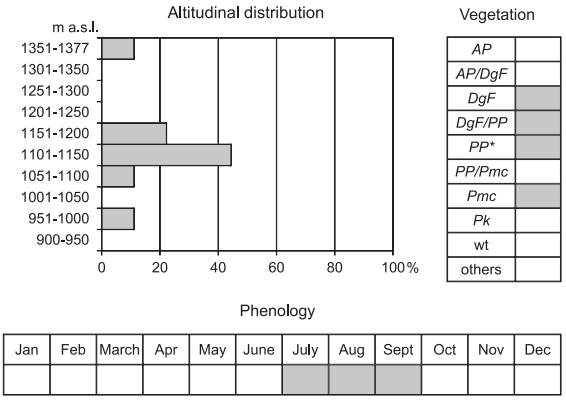
Hygrophorus erubescens



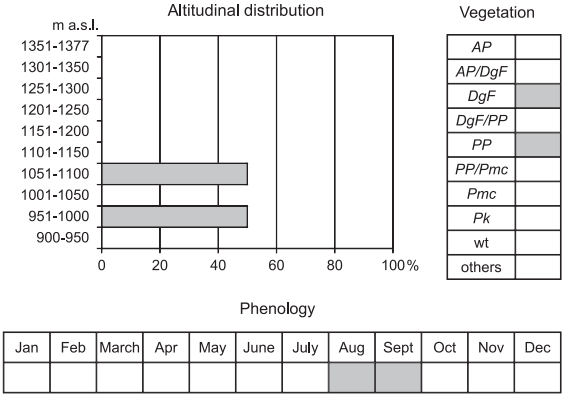
Hygrophorus lucorum var. *speciosus*



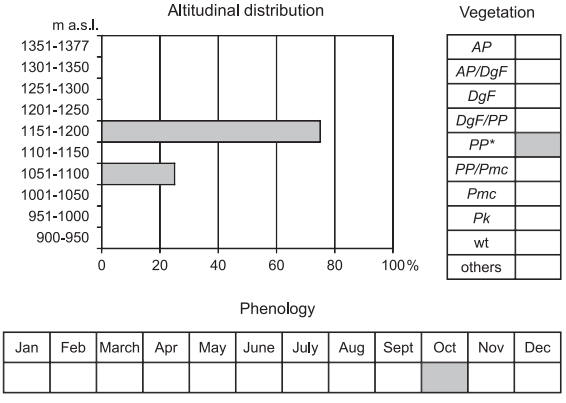
Hygrophorus olivaceoalbus



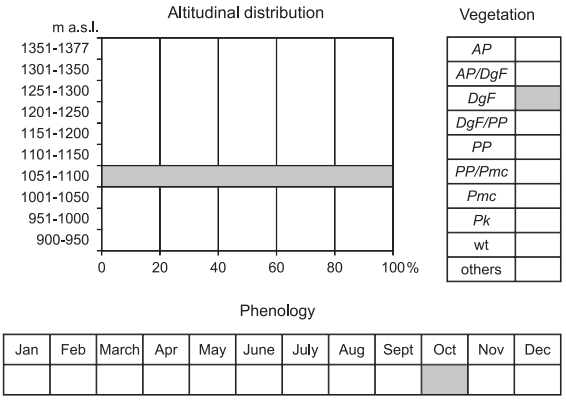
Hygrophorus piceae



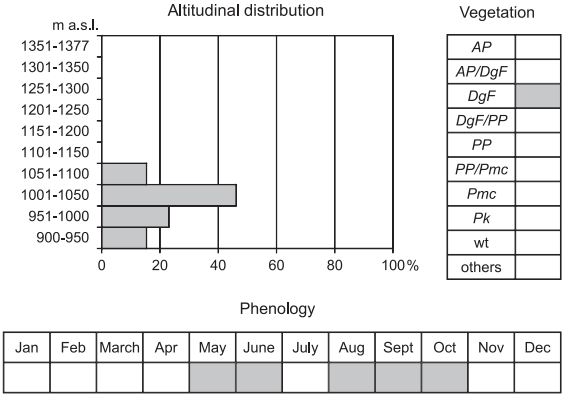
Hygrophorus pustulatus



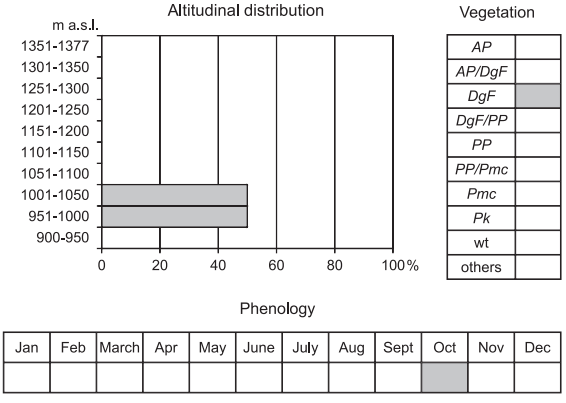
Hygrophorus unicolor



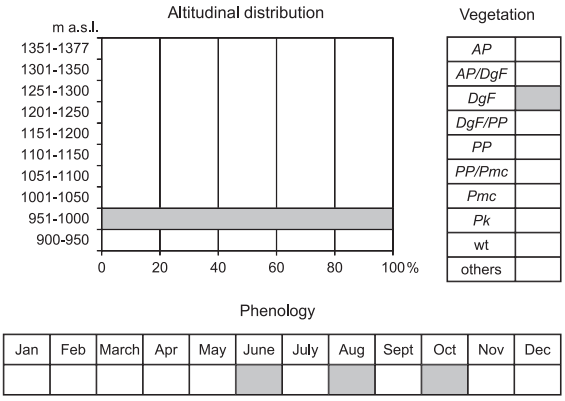
Hymenopellis radicata



Hypholoma capnoides



Hypholoma fasciculare



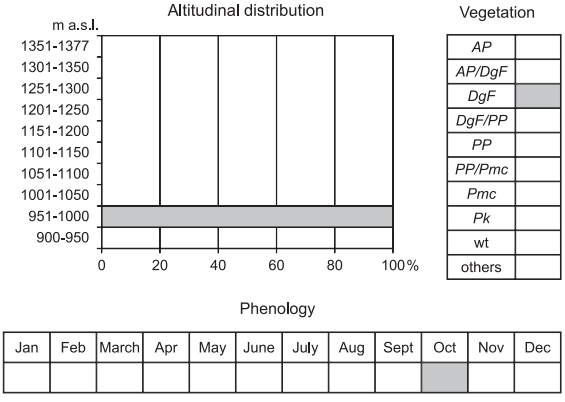
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■		■		■		

Hypholoma lateritium



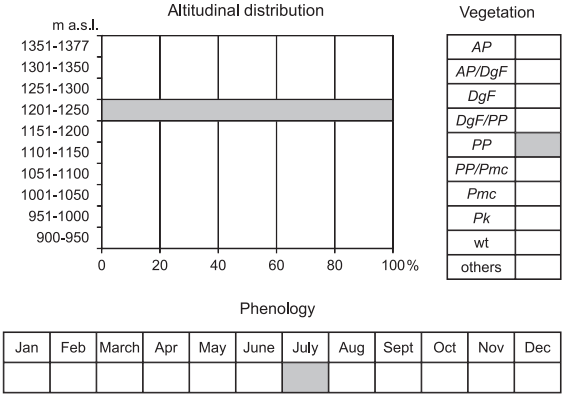
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
									■		

Hypholoma radicosum



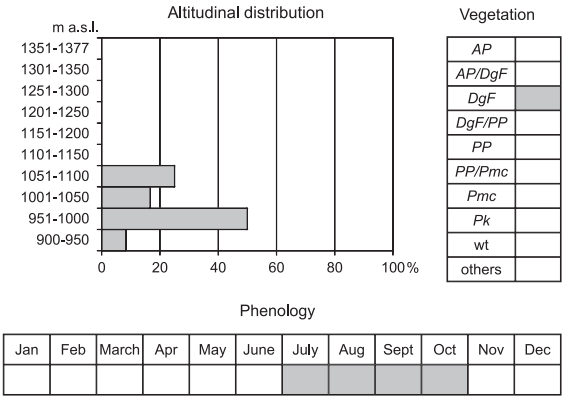
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■					

Infundibulicybe gibba



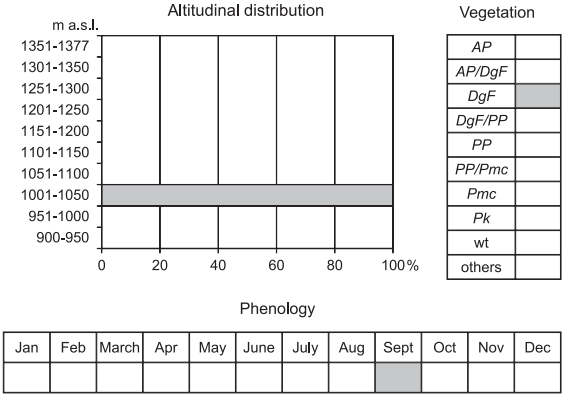
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■	■	■		

Inocybe adequata

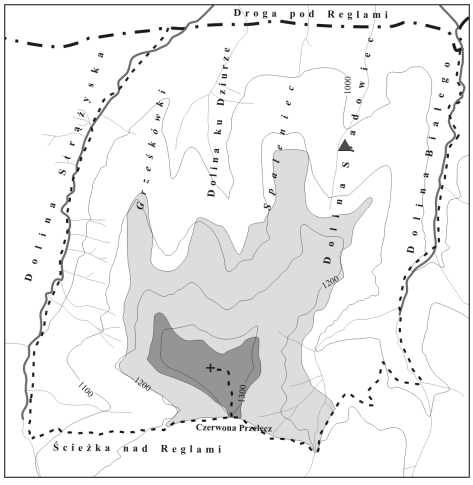


Vegetation

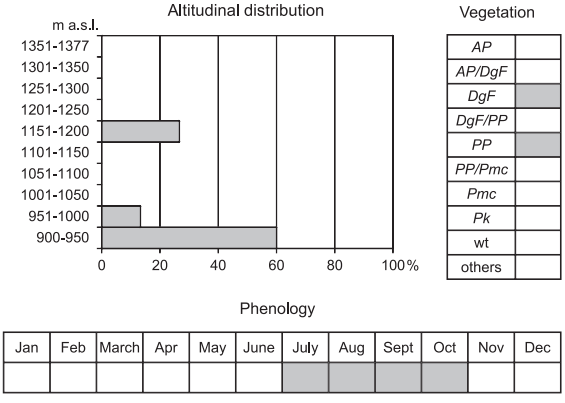
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			



Inocybe bongardii



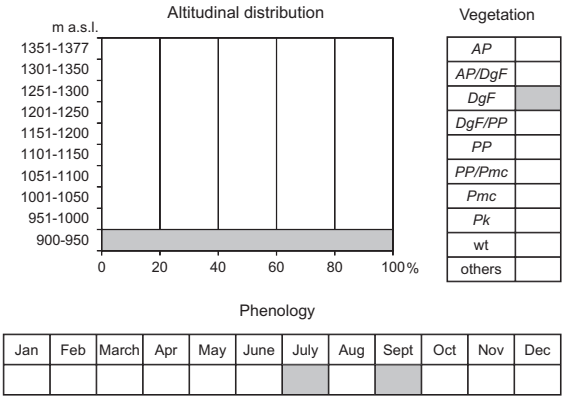
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

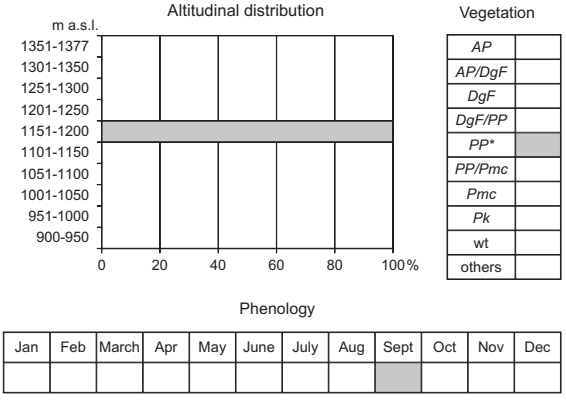
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■	■	■		

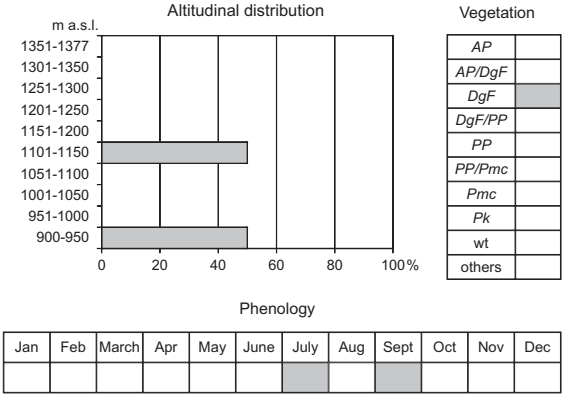
Inocybe calamistrata



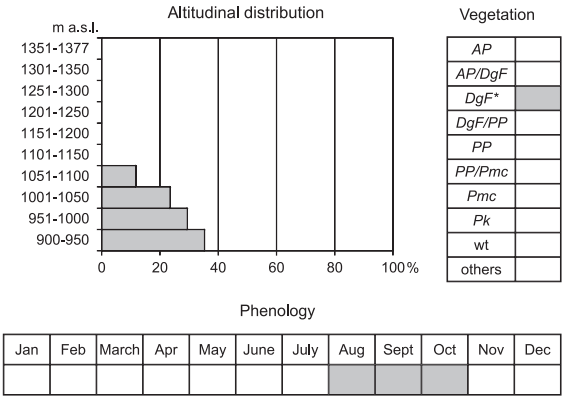
Inocybe calospora



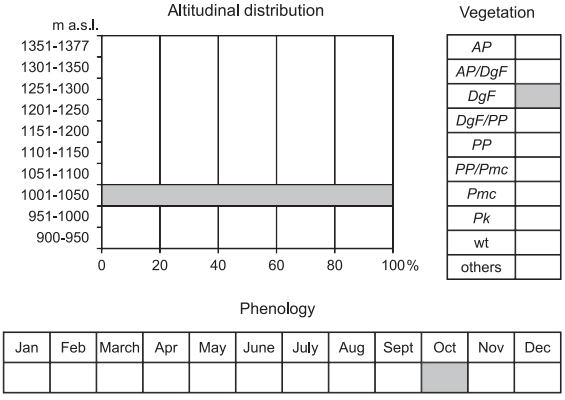
Inocybe cincinata



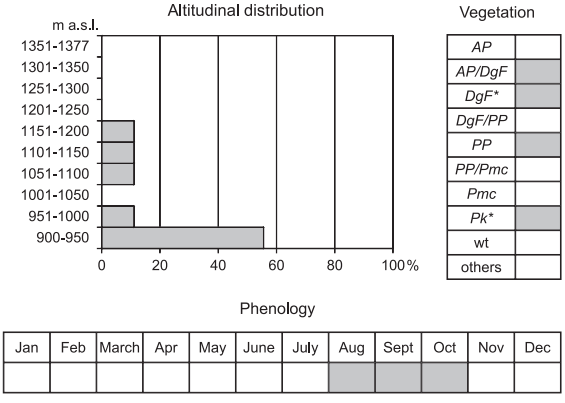
Inocybe corydalina



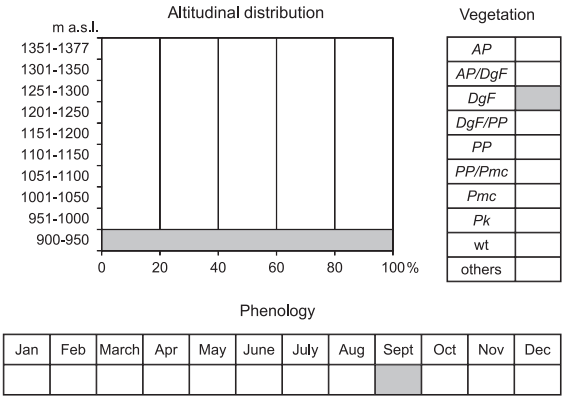
Inocybe fraudans



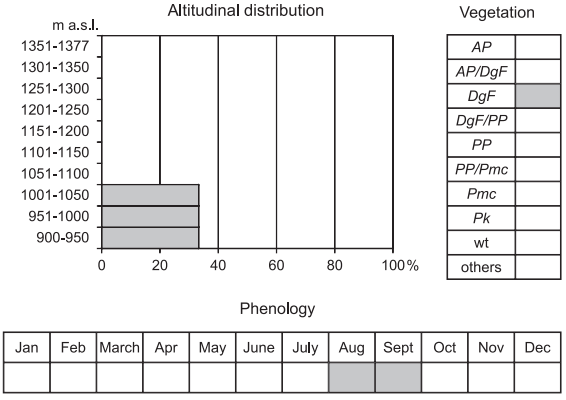
Inocybe geophylla



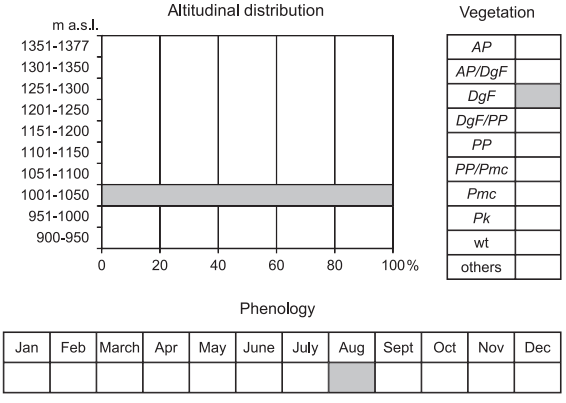
Inocybe griseolilacina



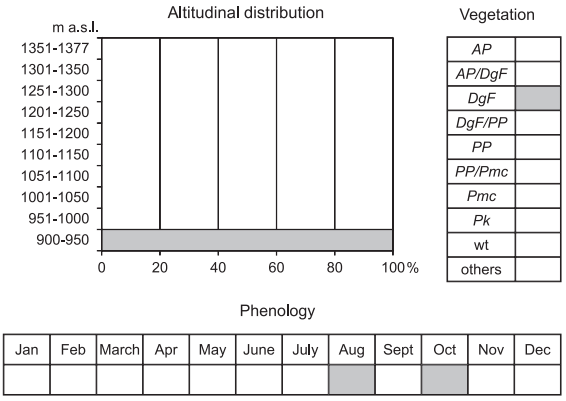
Inocybe hystrix



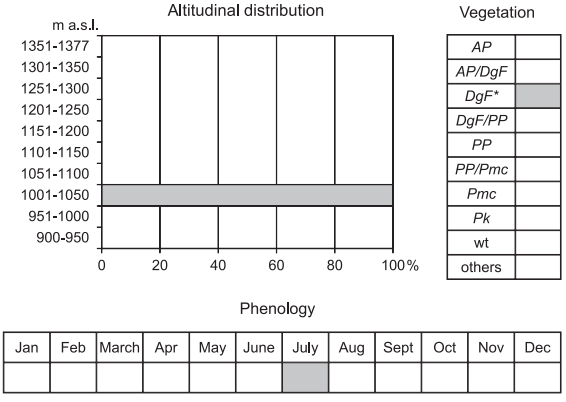
Inocybe leptophylla

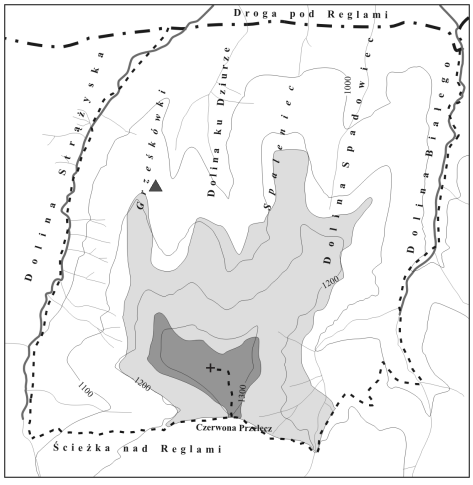


Inocybe lilacina

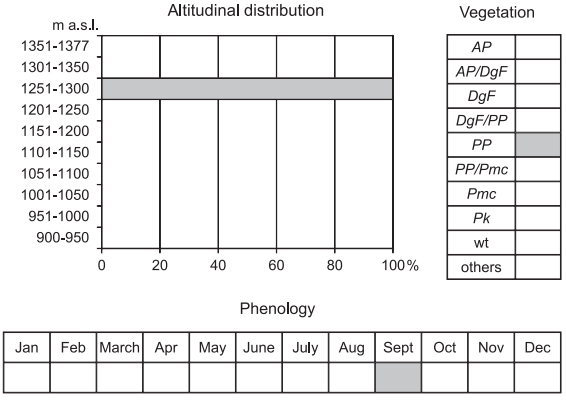


Inocybe lutescens

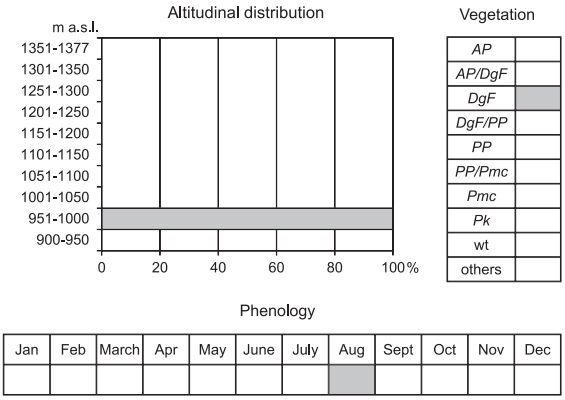




Inocybe cf. *maculata*



Inocybe microspora



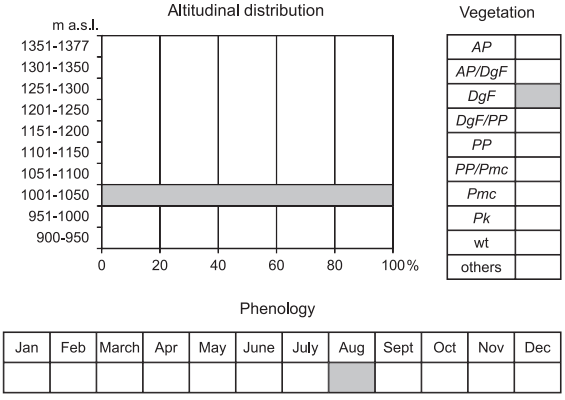
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				

Inocybe mixtilis



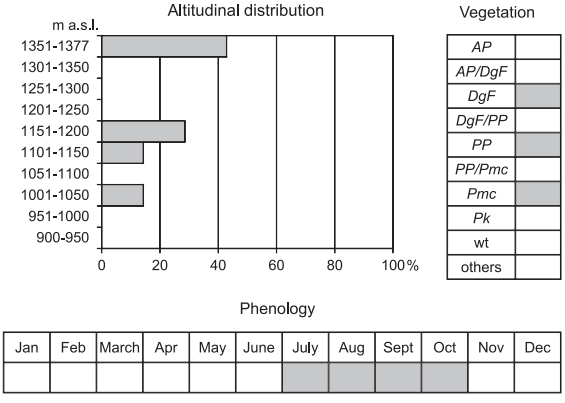
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				

Inocybe nitidiuscula



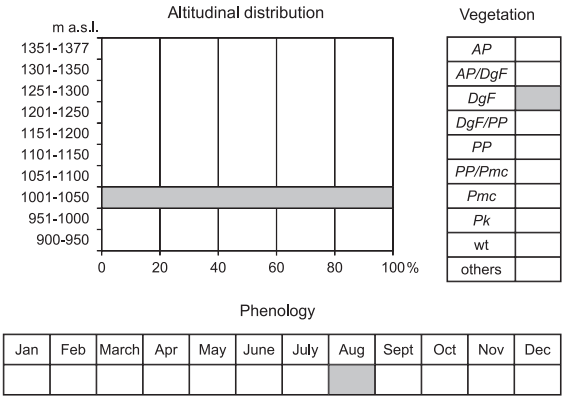
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	■
PP/Pmc	
Pmc	■
Pk	
wt	
others	

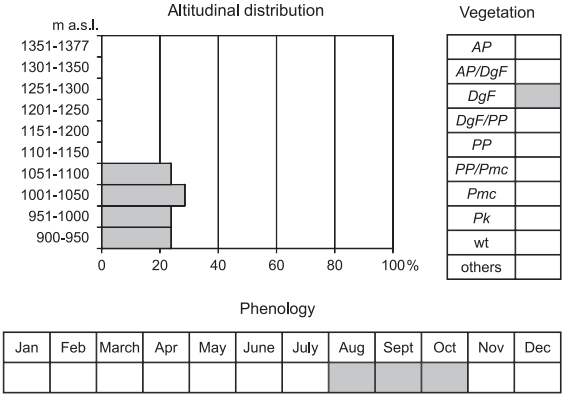
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■	■	■		

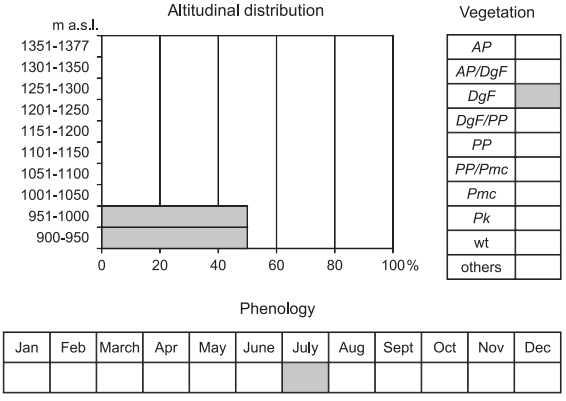
Inocybe pelargonium



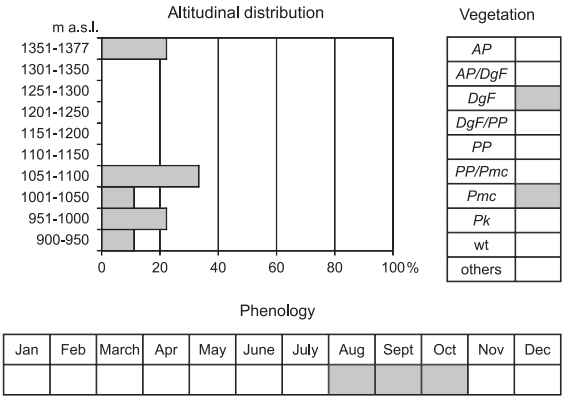
Inocybe petiginosa



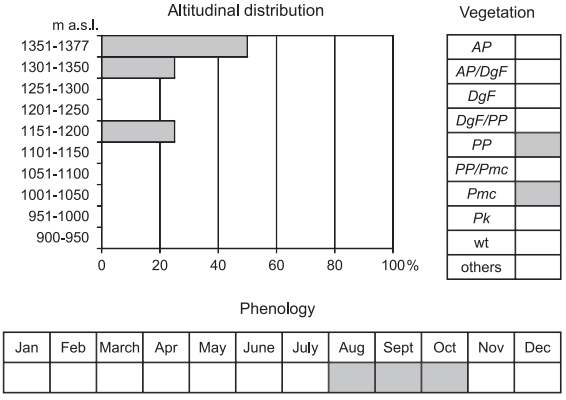
Inocybe praetervisa



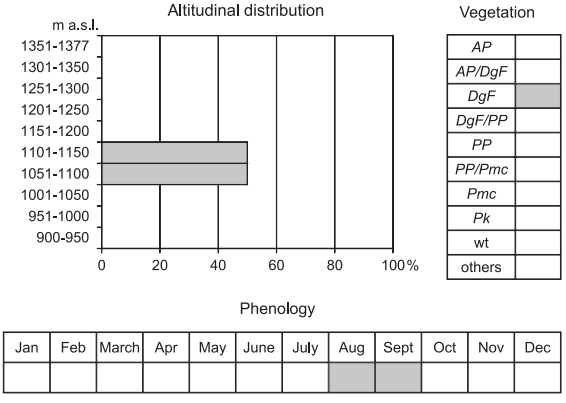
Inocybe rimosa



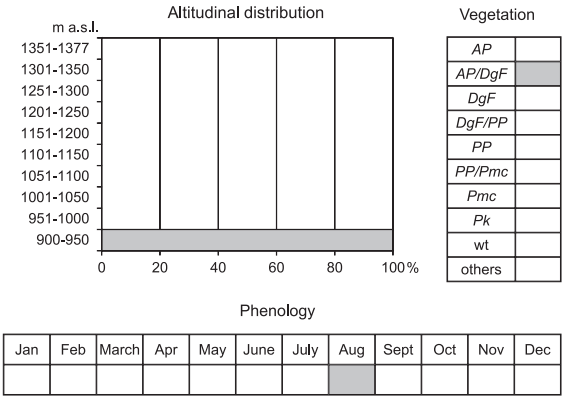
Inocybe terrigena



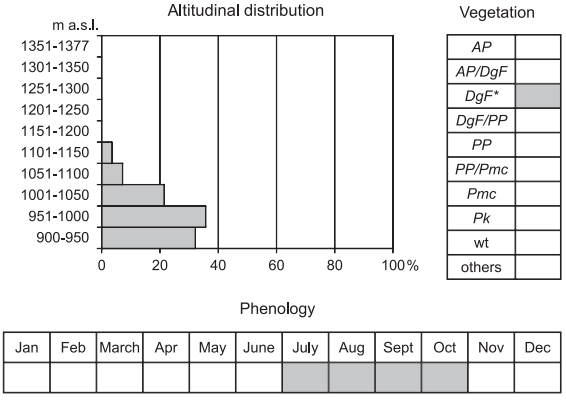
Inocybe tricolor

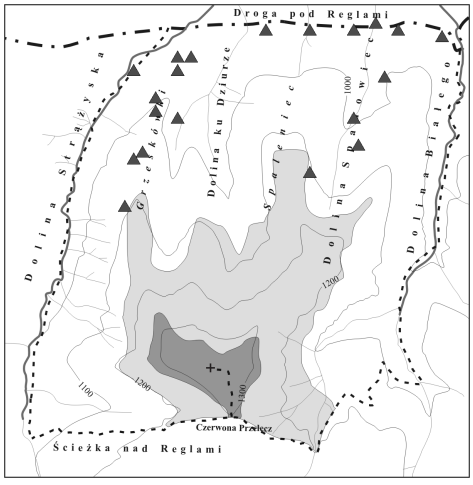


Inocybe umbratica

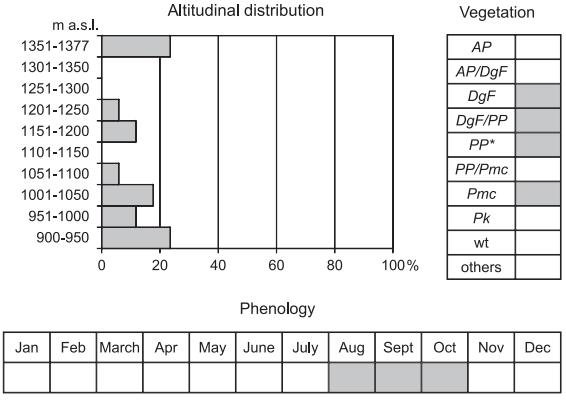


Laccaria amethystina

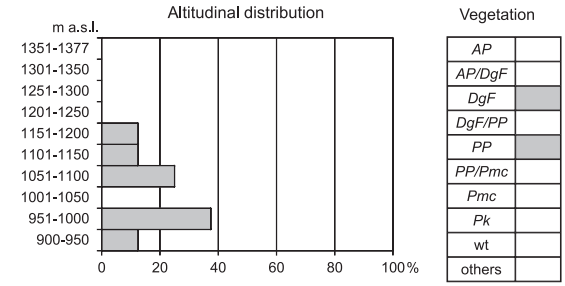




Laccaria laccata



Lactarius acris



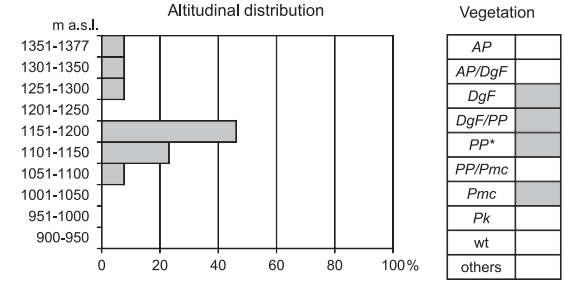
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			

Lactarius aurantiacus



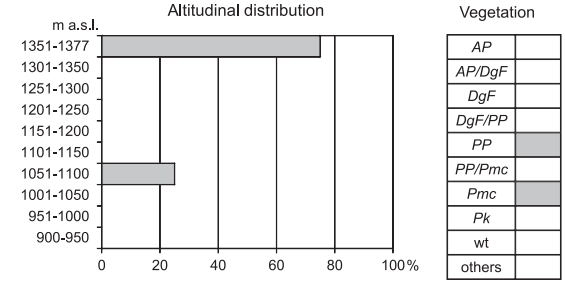
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	■
*PP**	■
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■		■		

Lactarius badiosanguineus



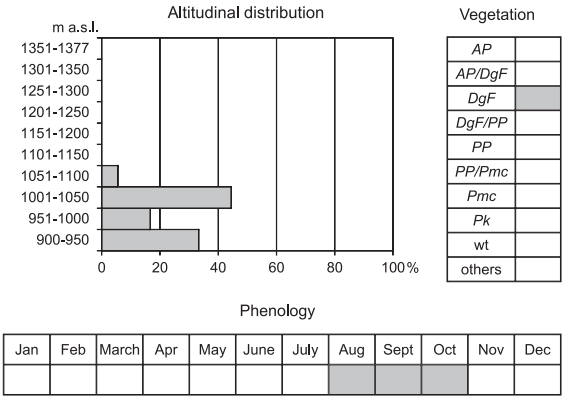
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	■
Pk	
wt	
others	

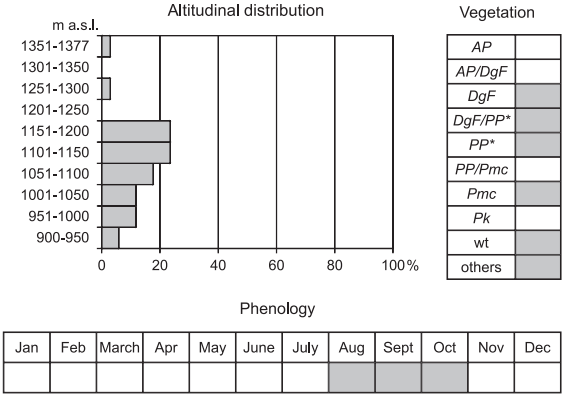
Phenology

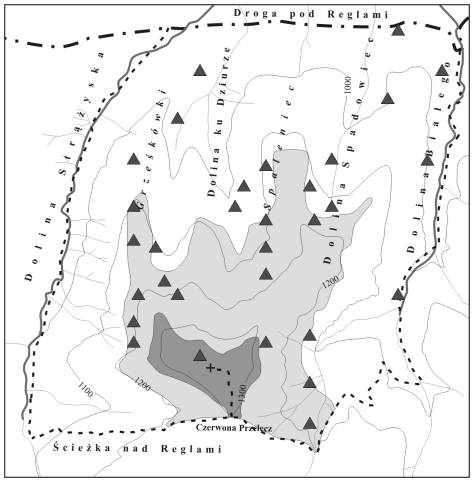
Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■	■		

Lactarius blennius

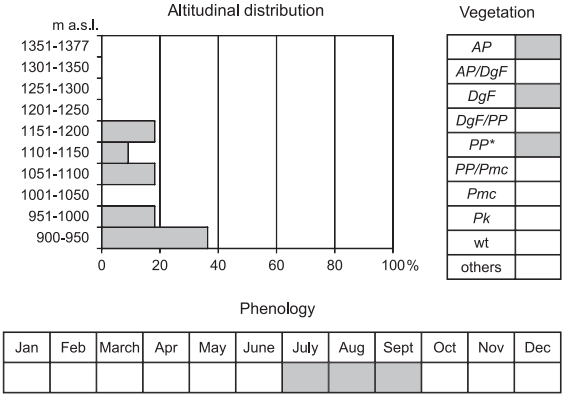


Lactarius deterrimus

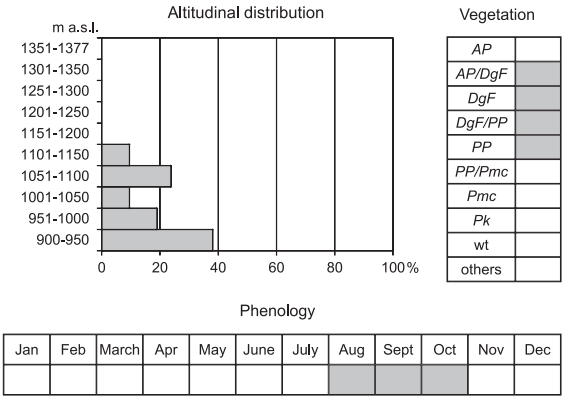




Lactarius lignyotus

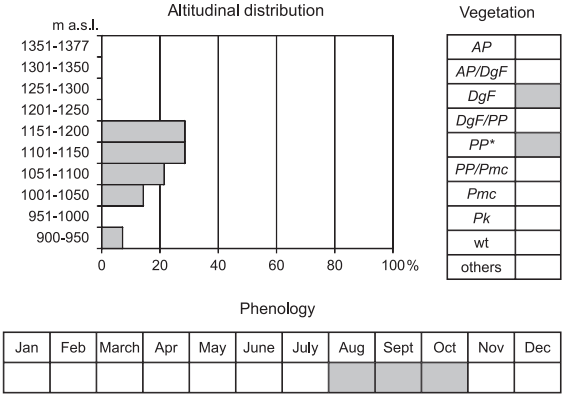


Lactarius pallidus



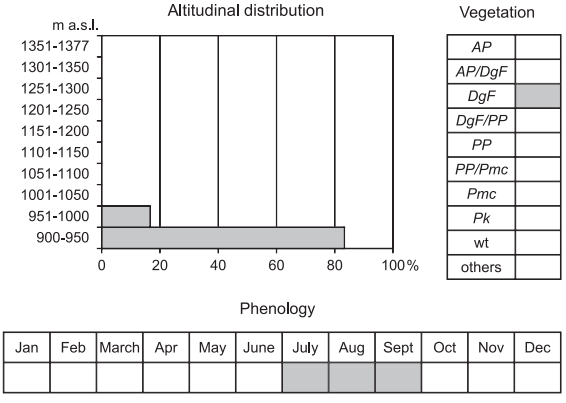
Vegetation	
AP	
AP/DgF	■
DgF	■
DgF/PP	■
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Lactarius picinus



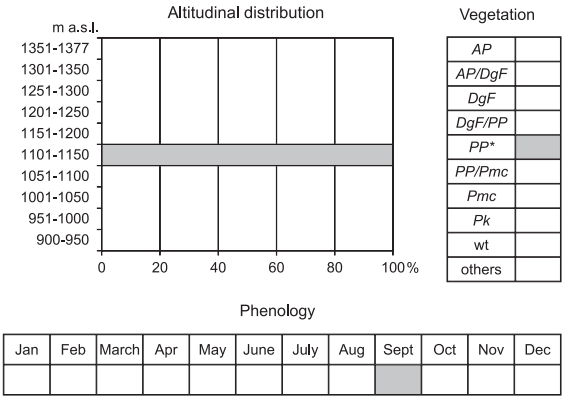
Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP*	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Lactarius piperatus

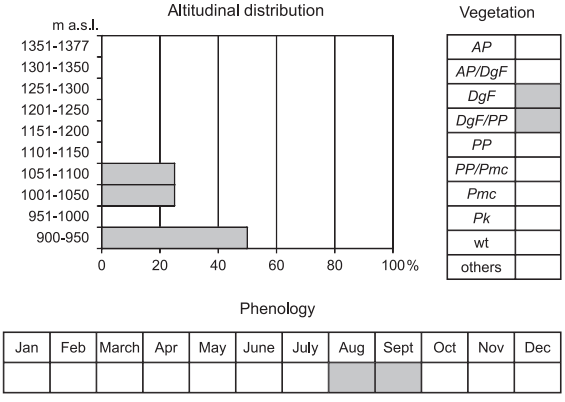


Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

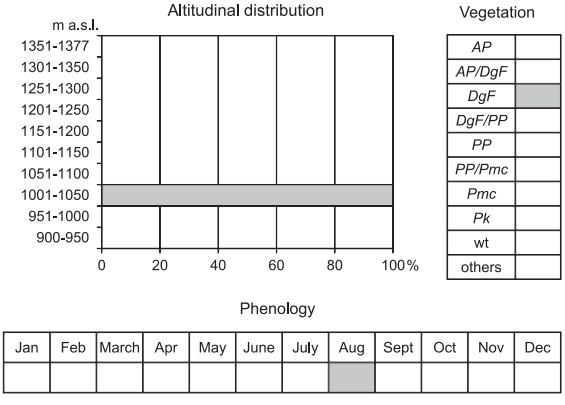
Lactarius porninsis



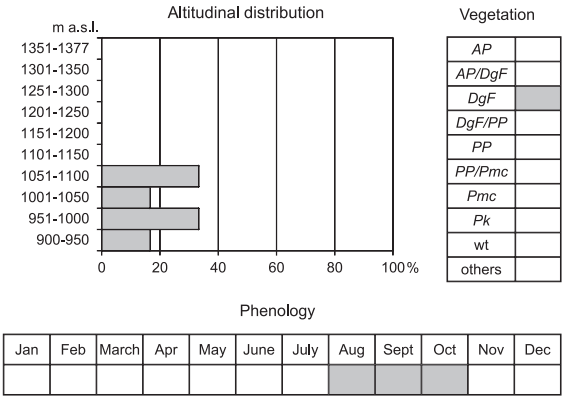
Lactarius pterosporus

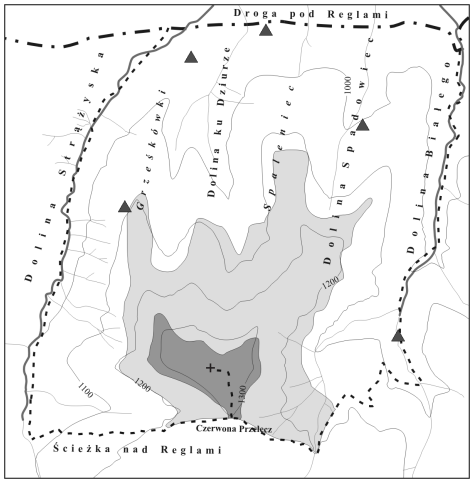


Lactarius romagnesii

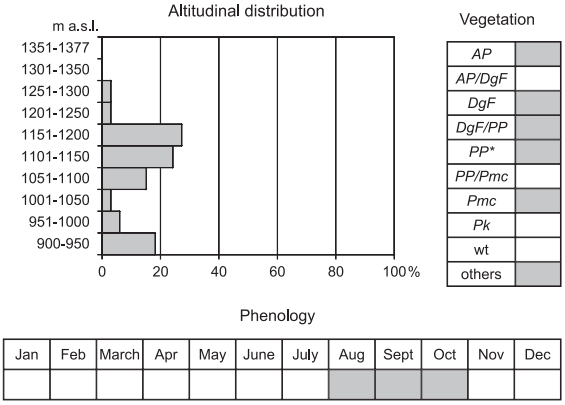


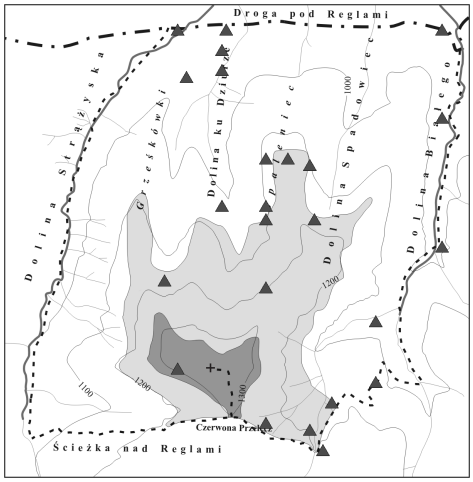
Lactarius salmonicolor



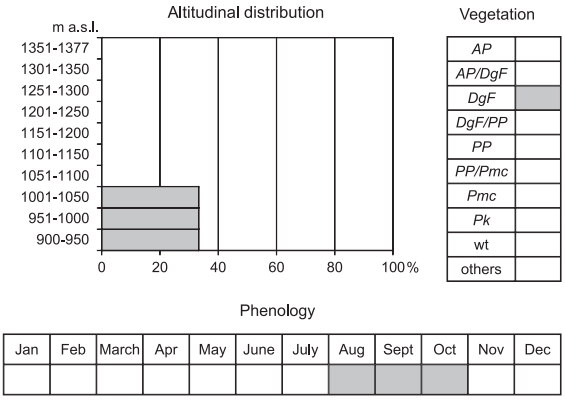


Lactarius scrobiculatus

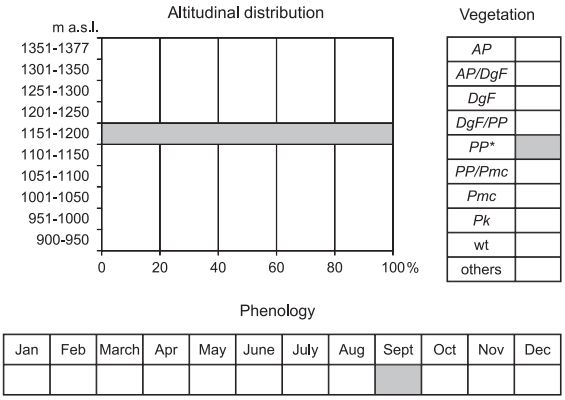




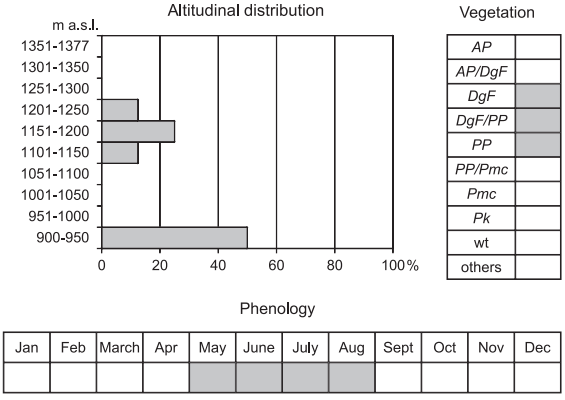
Lactarius vellereus



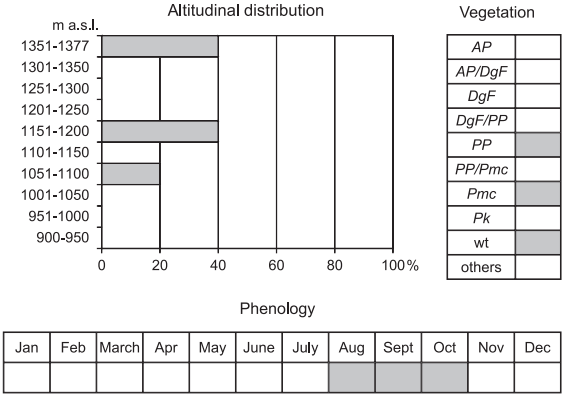
Lentinellus flabelliformis



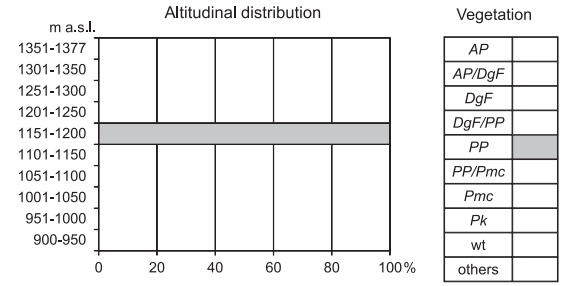
Lichenomphalia umbellifera



Limacella glioderma



Lyophyllum boudieri



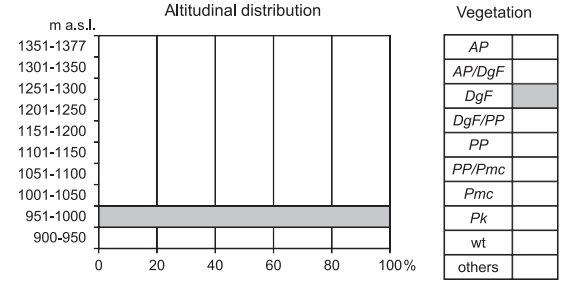
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
									■		

Lyophyllum cf. *murinum*



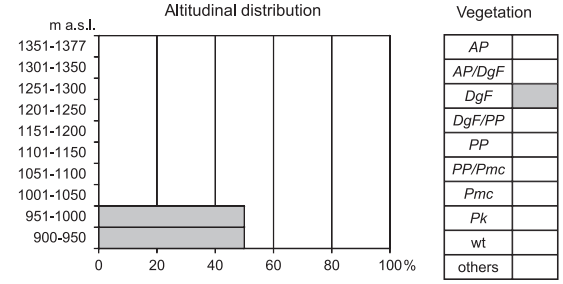
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
									■		

Lyophyllum rancidum



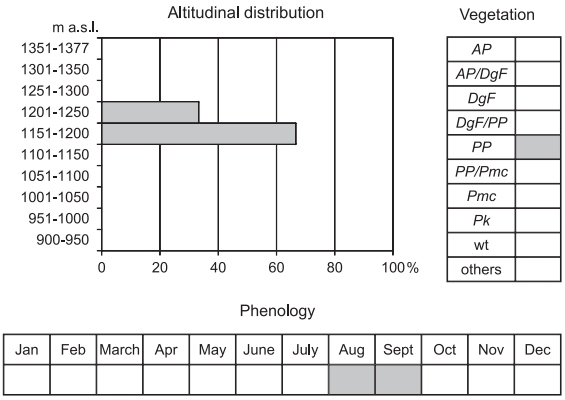
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

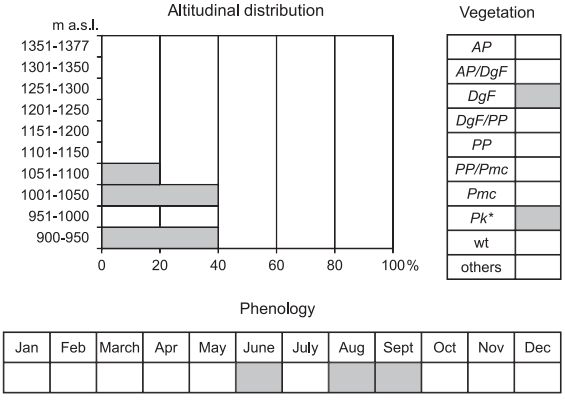
Phenology

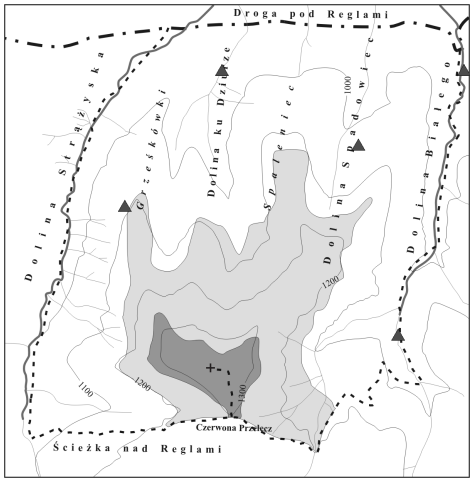
Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
									■		

Marasmiellus perforans

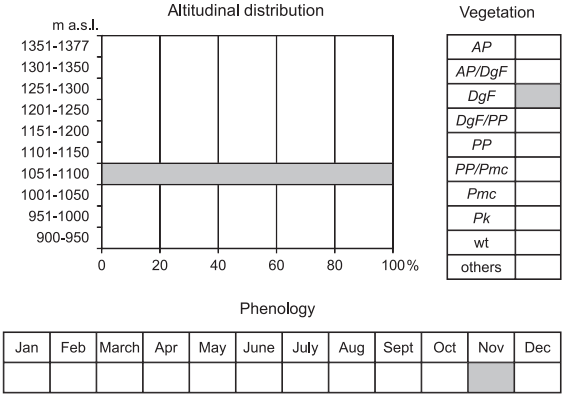


Marasmius bulliardii

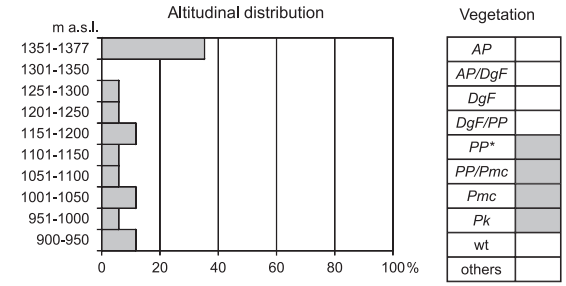




Marasmius cohaerens



Marasmius epiphyllus



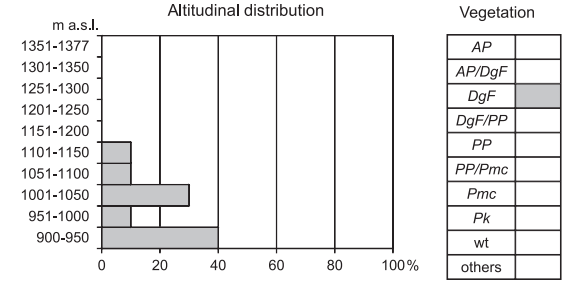
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP*	■
PP/Pmc	■
Pmc	■
Pk	■
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■	■		

Marasmius setosus



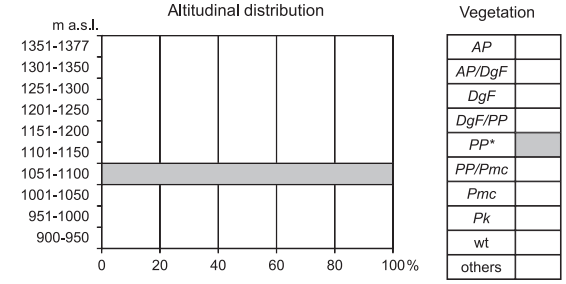
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
									■		

Marasmius torquescens



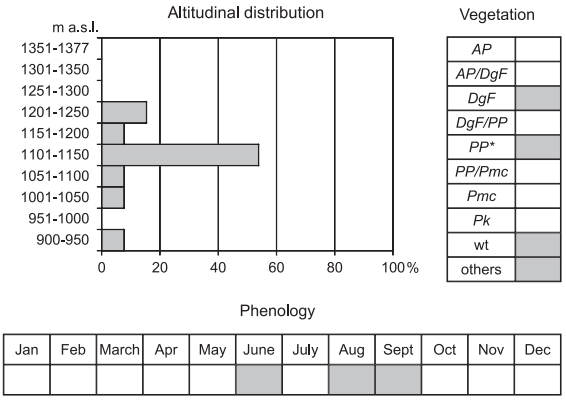
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP*	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

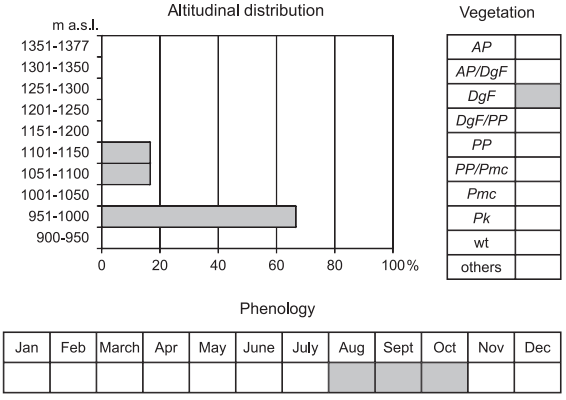
Phenology

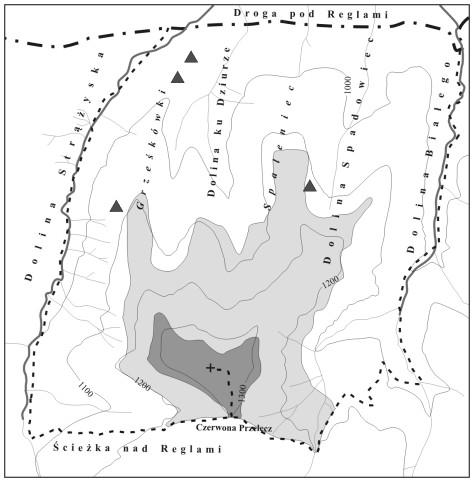
Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
								■			

Marasmius wettsteinii

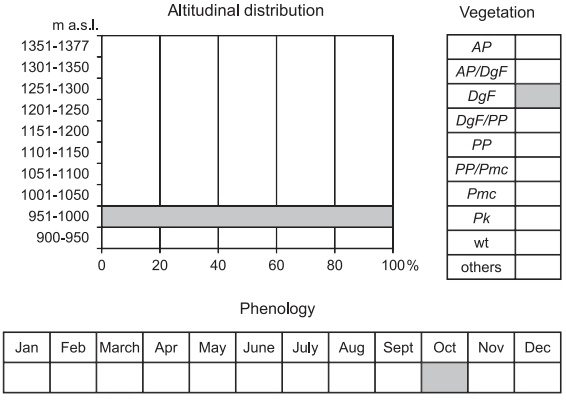


Marasmius wynnei

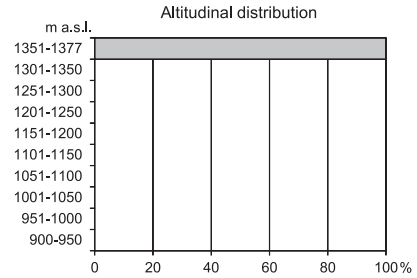




Melanoleuca cf. *polioleuca*



Melanoleuca cf. *robertiana*



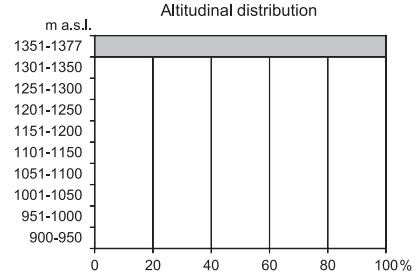
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■					

Melanoleuca stridula

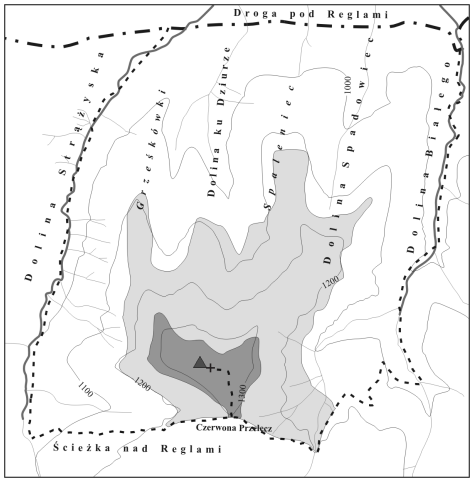


Vegetation

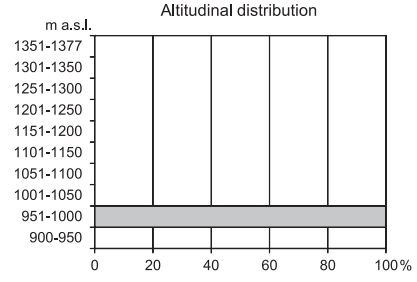
AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	■

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				



Mycena acicula



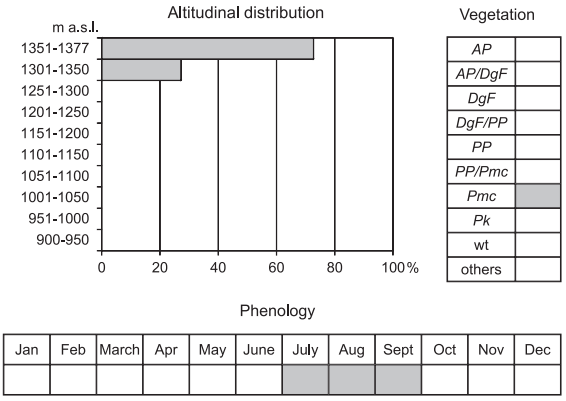
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

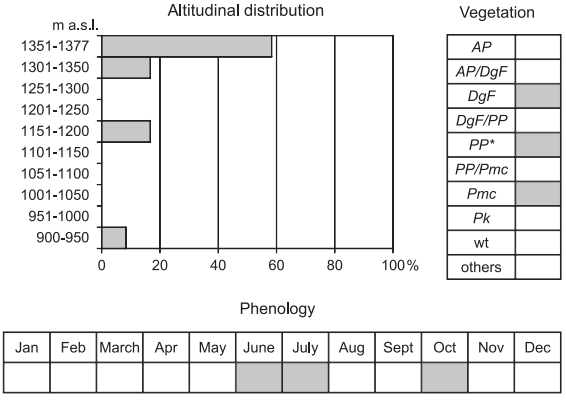
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■						

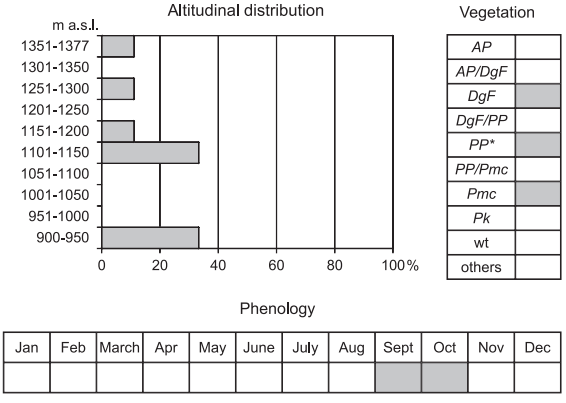
Mycena aciculata



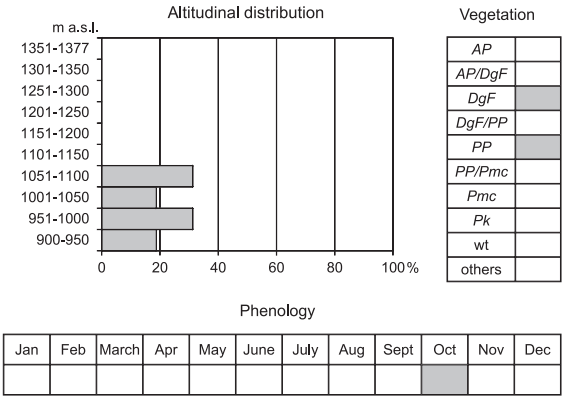
Mycena amicta



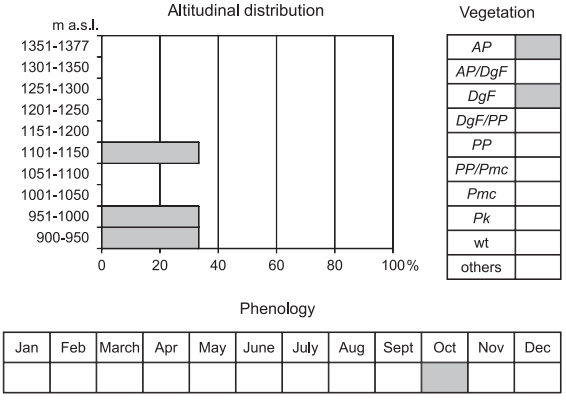
Mycena aurantiomarginata



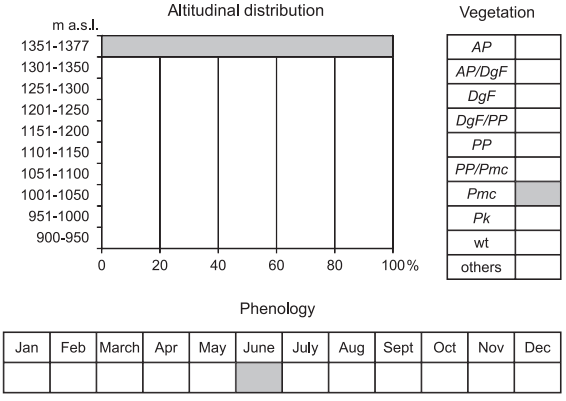
Mycena capillaris



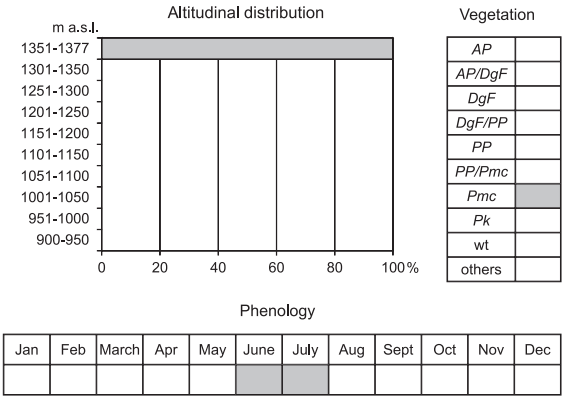
Mycena cinerella



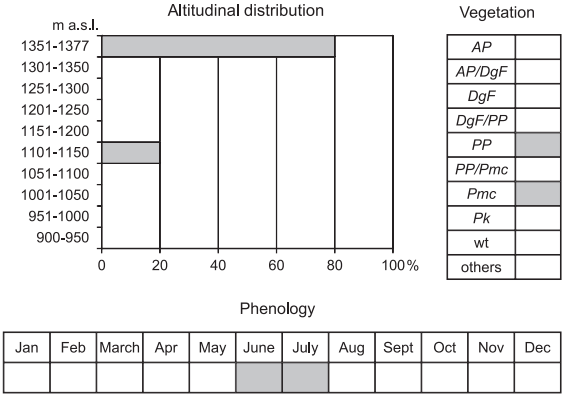
Mycena citrinomarginata



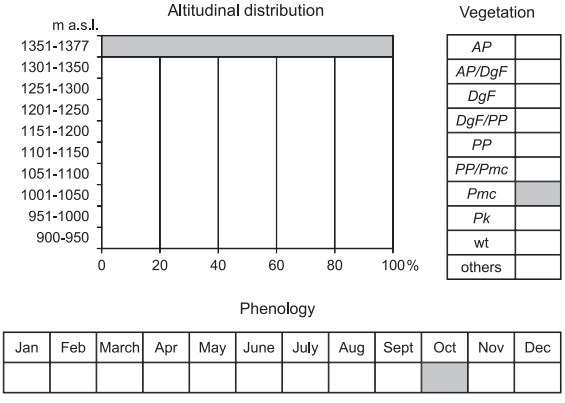
Mycena clavata



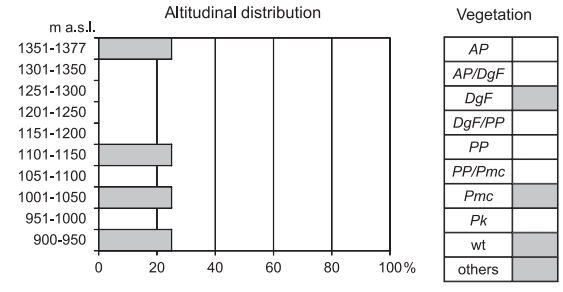
Mycena clavicularis



Mycena cyanorrhiza



Mycena epipterygia

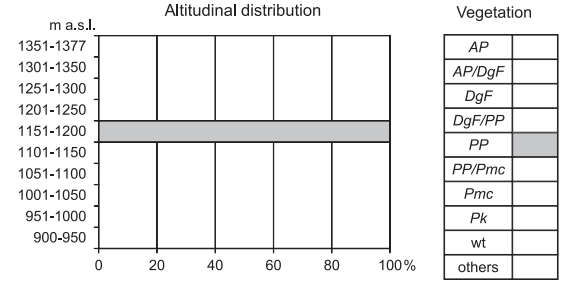


Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	■
others	■

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■	■		

Mycena epipterygia var. *viscosa*

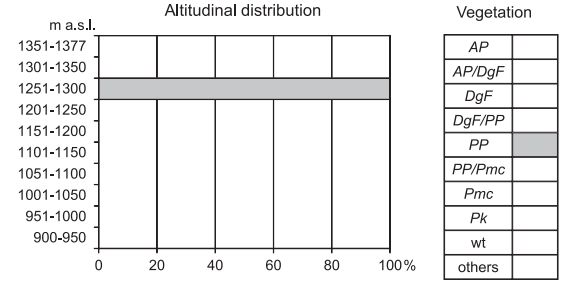


Vegetation	
AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■						

Mycena filopes

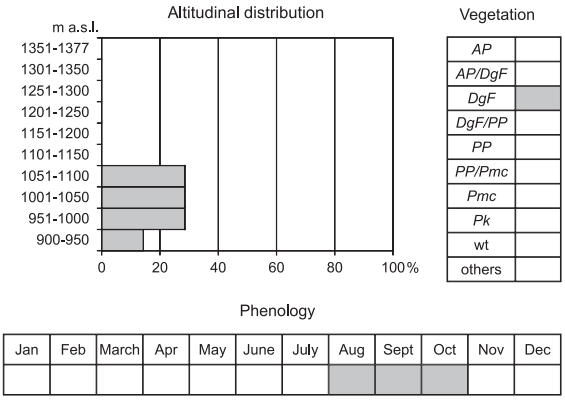


Vegetation	
AP	
AP/DgF	
DgF	
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

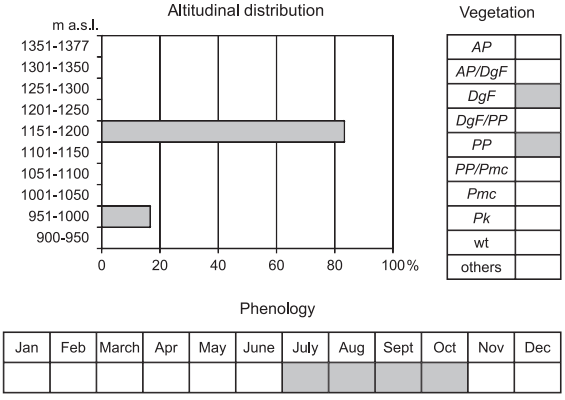
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■						

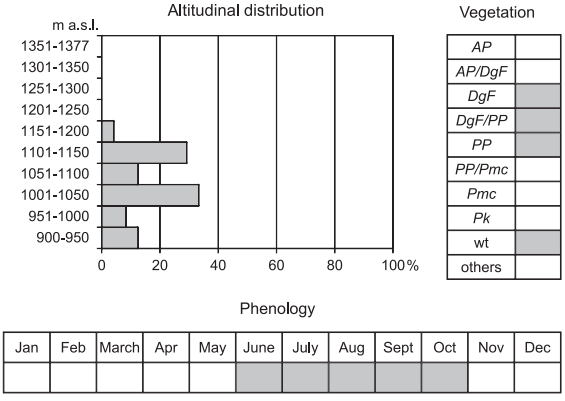
Mycena flavescens



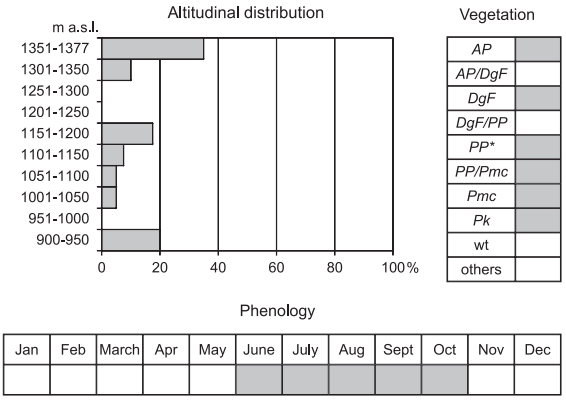
Mycena flavoalba



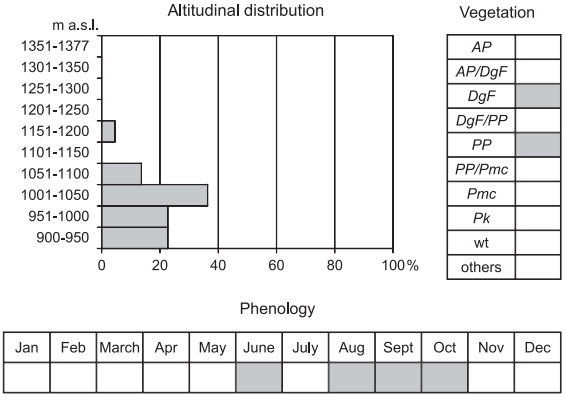
Mycena galericulata



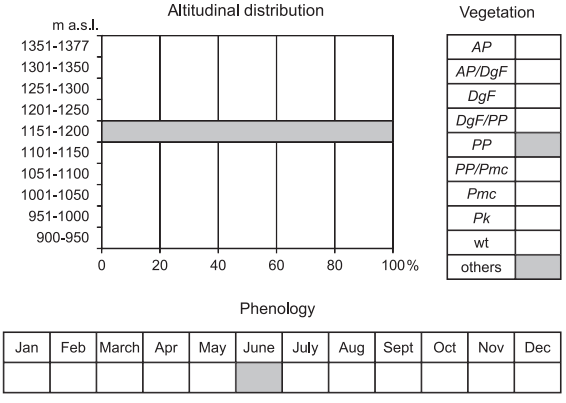
Mycena galopus



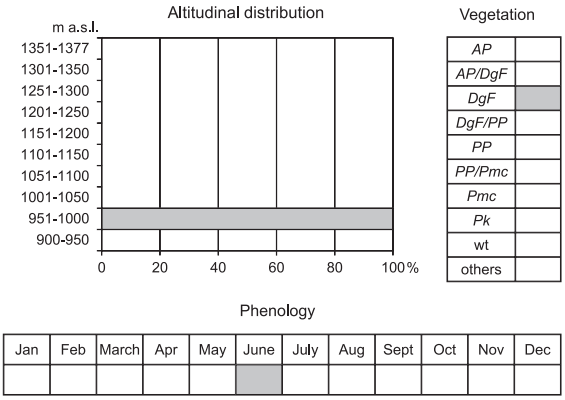
Mycena haematopus



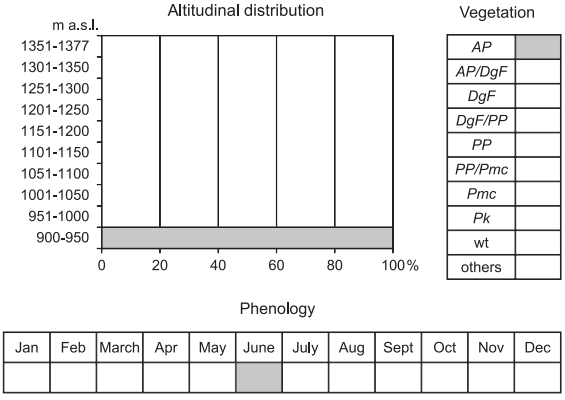
Mycena laevigata

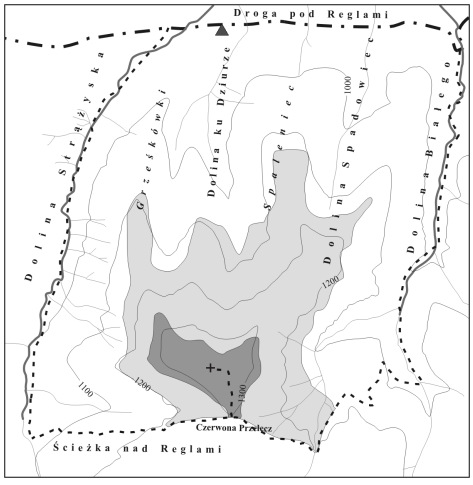


Mycena leptocephala

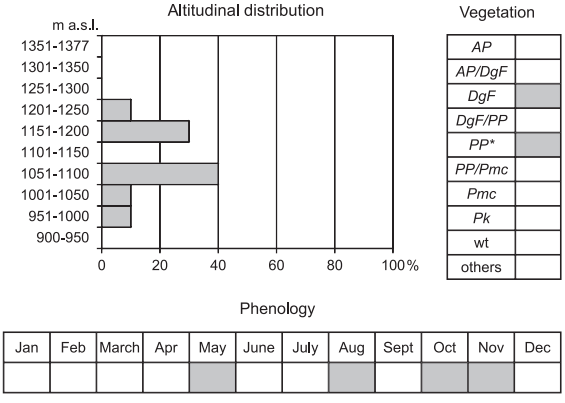


Mycena leucogala

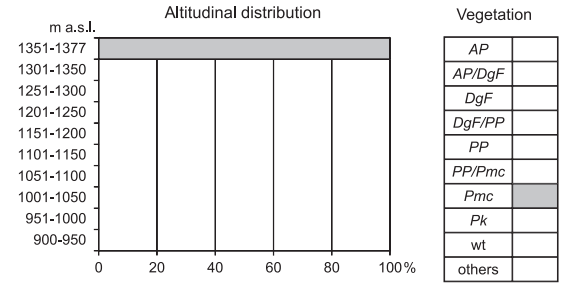




Mycena maculata



Mycena oregonensis



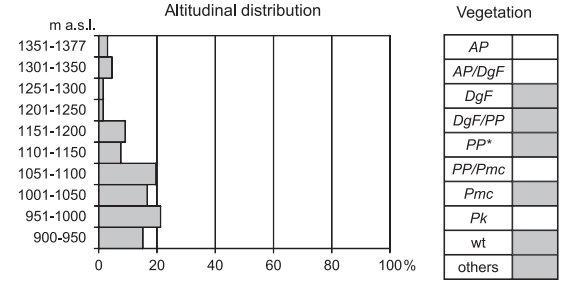
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■	■			

Mycena pura

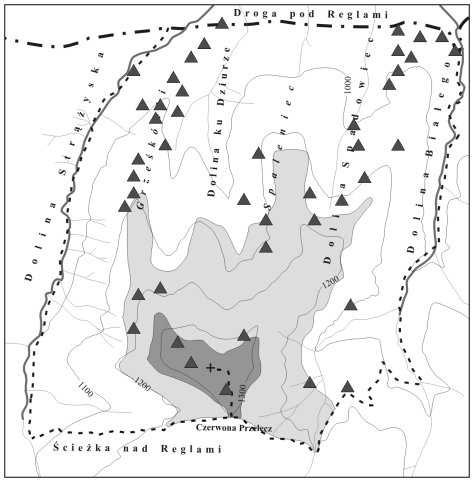


Vegetation

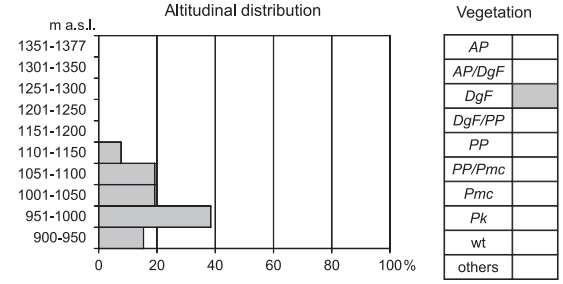
AP	
AP/DgF	
DgF	■
DgF/PP	■
PP*	■
PP/Pmc	
Pmc	■
Pk	
wt	■
others	■

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■	■	■	■	■		



Mycena renati

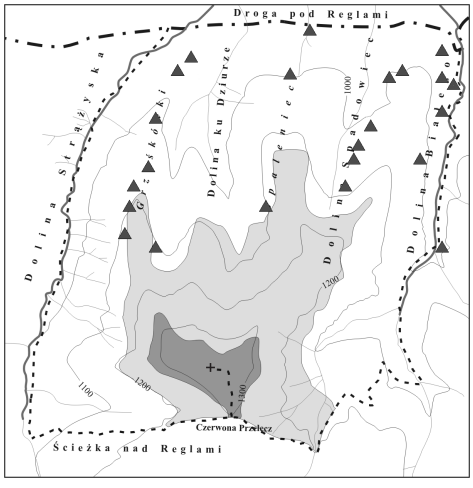


Vegetation

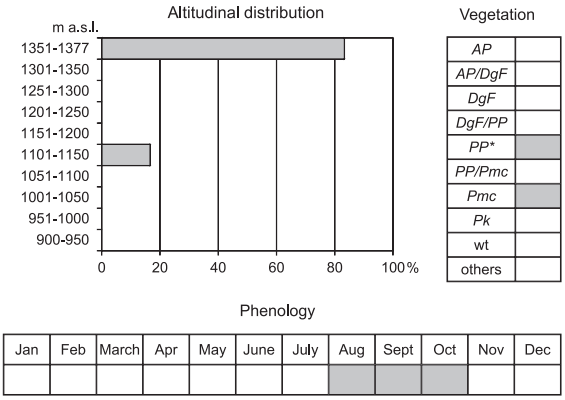
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

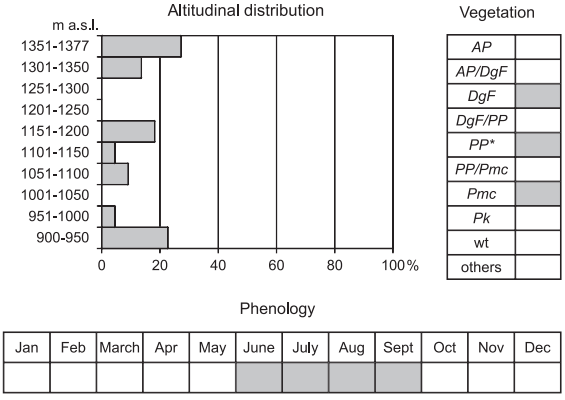
Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■		■				



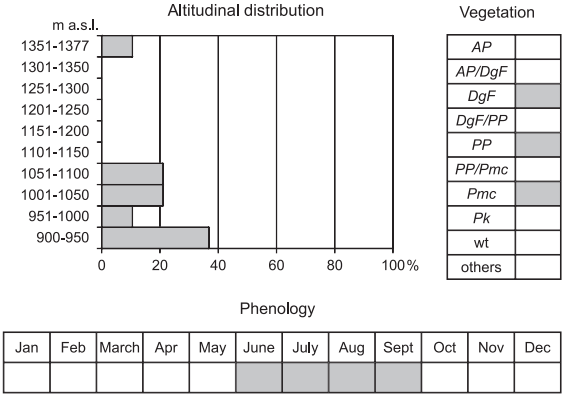
Mycena rosella



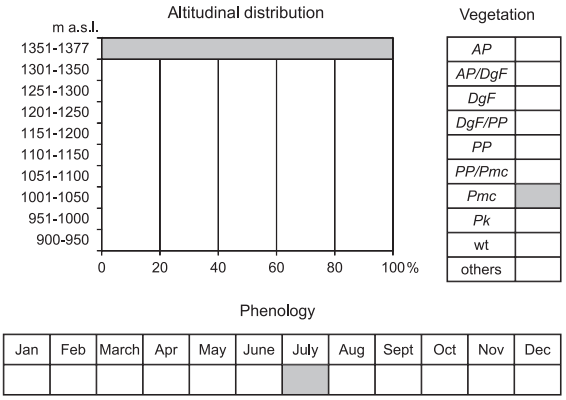
Mycena rubromarginata



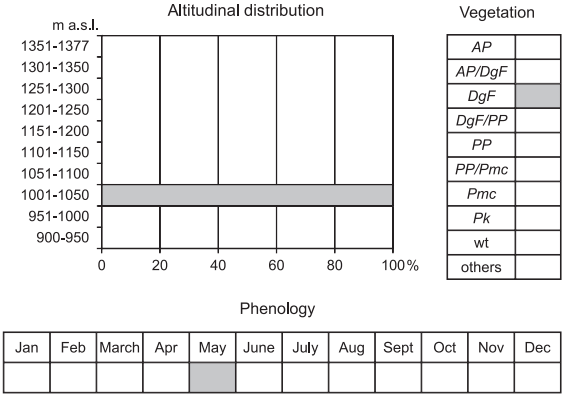
Mycena sanguinolenta



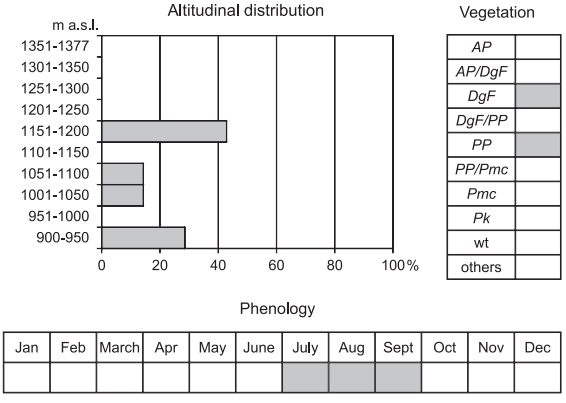
Mycena speirea f. *candida*



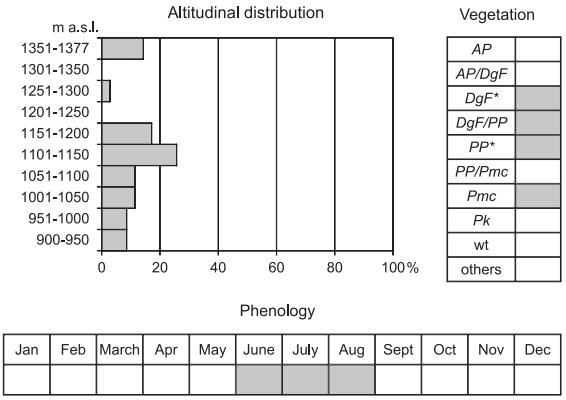
Mycena stipata



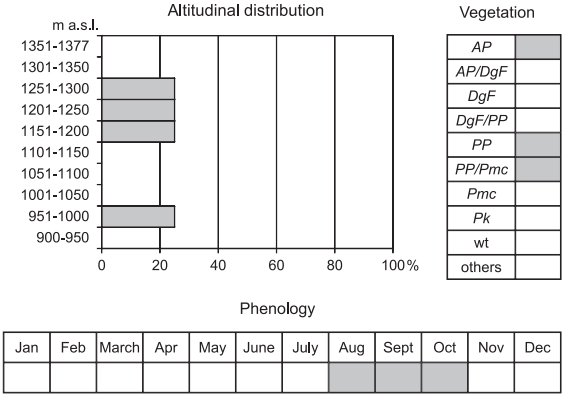
Mycena stylobates



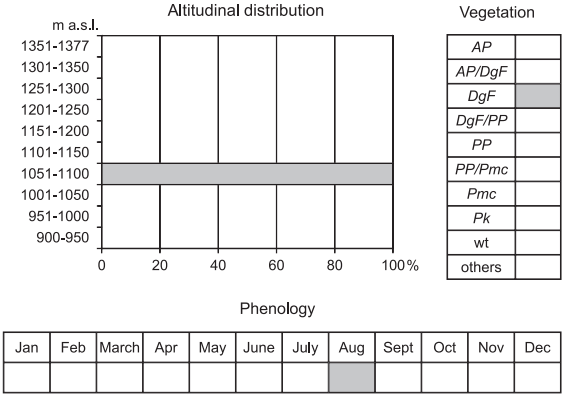
Mycena viridimarginata



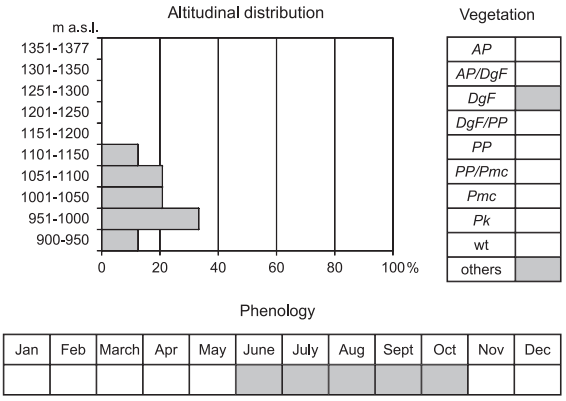
Mycena vulgaris



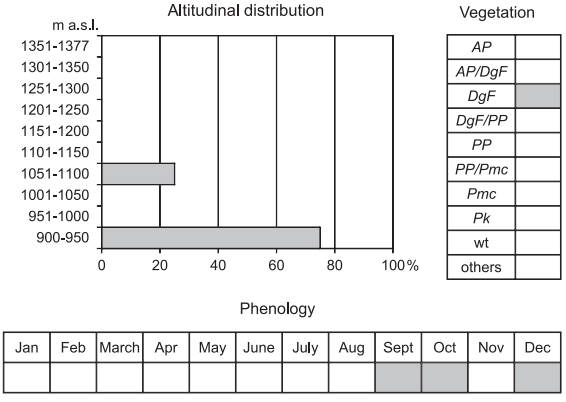
Mycena zephirus



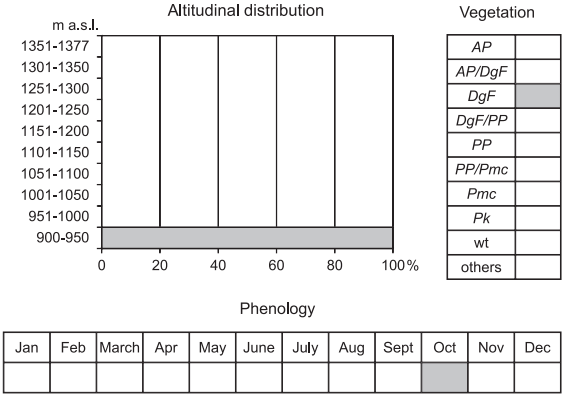
Mycetinis alliaceus



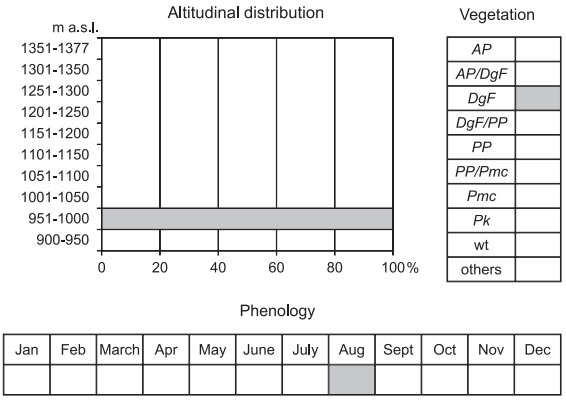
Panellus stypticus



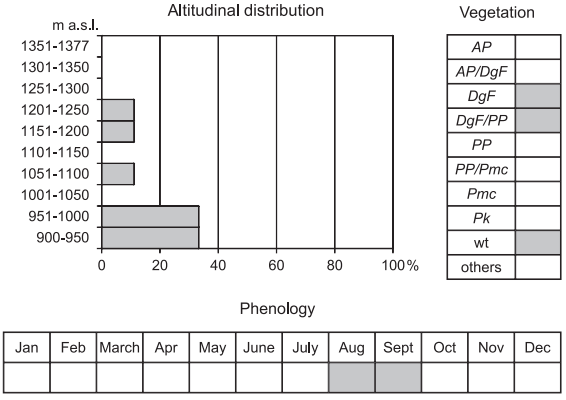
Parasola conopilus



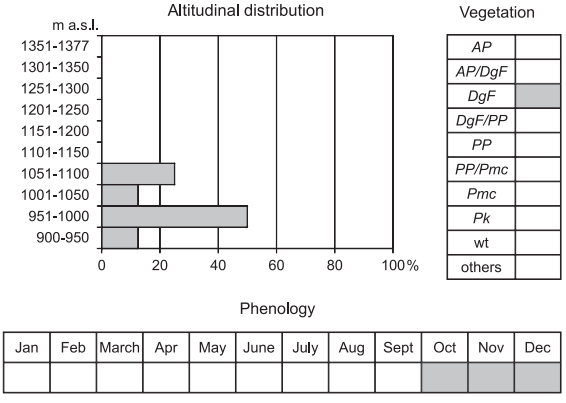
Parasola plicatilis



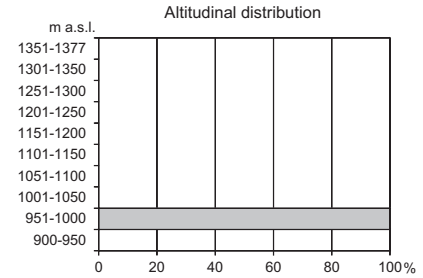
Pholiota flammans



Pholiota lenta



Pholiota limonella



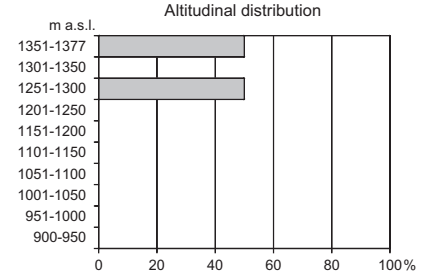
Vegetation

AP
AP/DgF
DgF
DgF/PP
PP
PP/Pmc
Pmc
Pk
wt
others

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Pholiota scamba



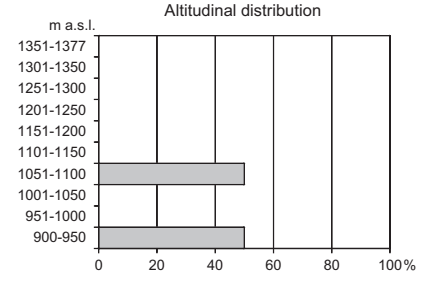
Vegetation

AP
AP/DgF
DgF
DgF/PP
PP
PP/Pmc
Pmc
Pk
wt
others

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Pholiota squarrosa



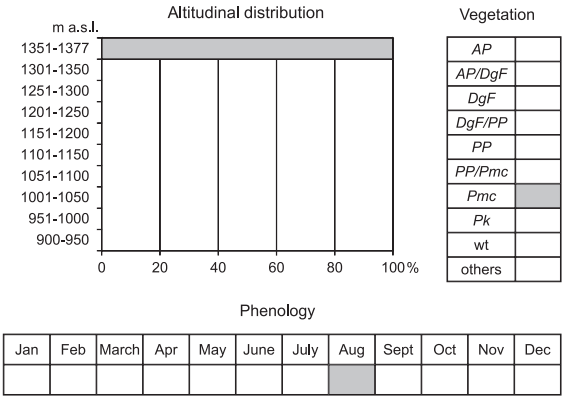
Vegetation

AP
AP/DgF
DgF
DgF/PP
PP*
PP/Pmc
Pmc
Pk
wt
others

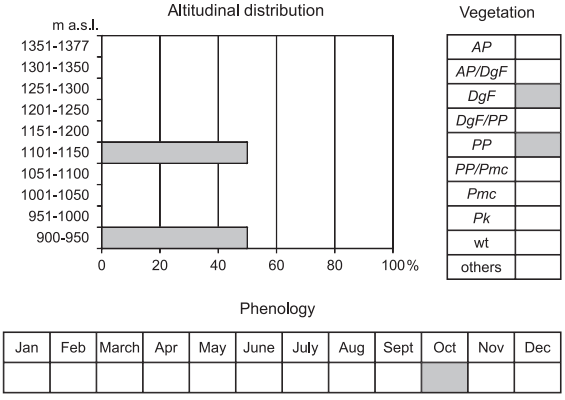
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

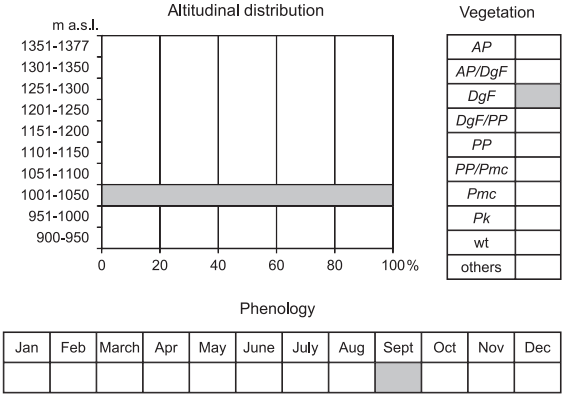
Pholiotina filaris



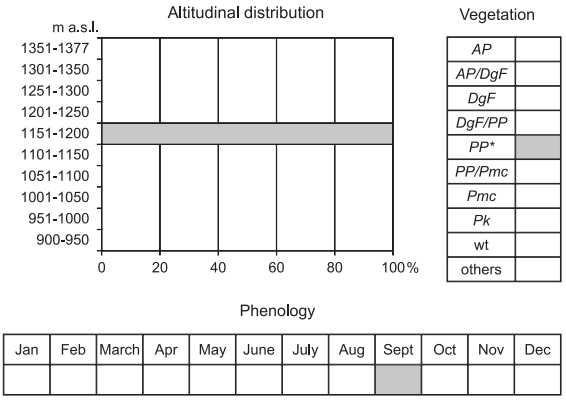
Phyllotopsis nidulans



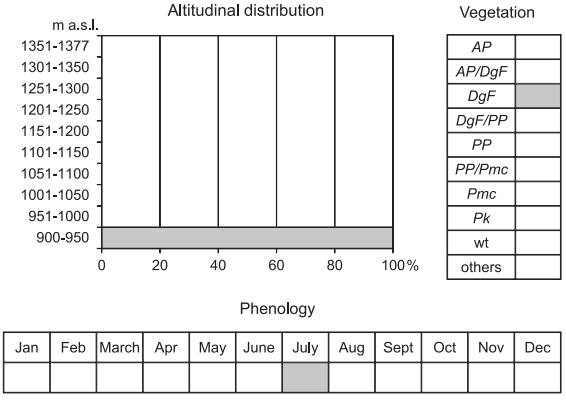
Pleurocybella porrigens



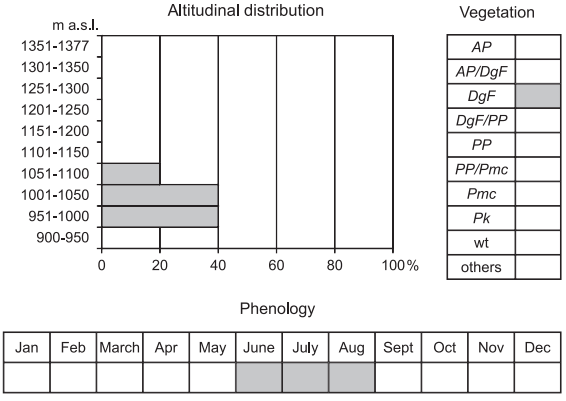
Pleurotus ostreatus



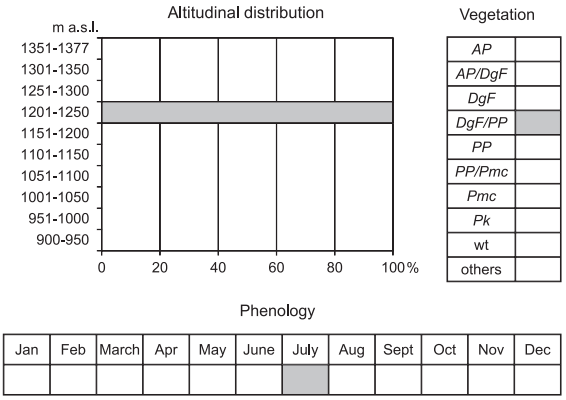
Pluteus atromarginatus



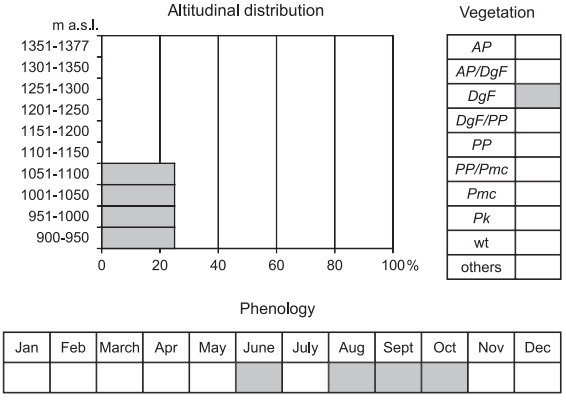
Pluteus cervinus

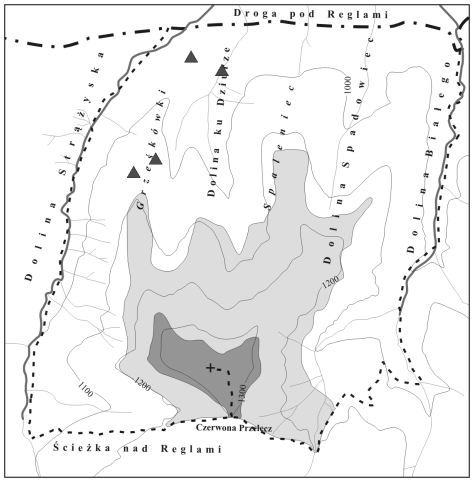


Pluteus luctuosus

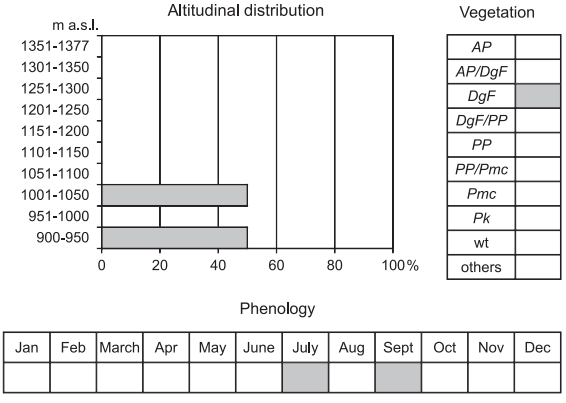


Pluteus pouzarianus

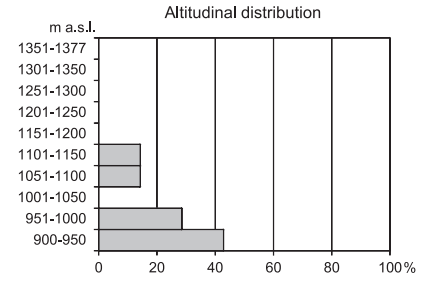




Pluteus cf. *primus*



Porphyrellus porphyrosporus



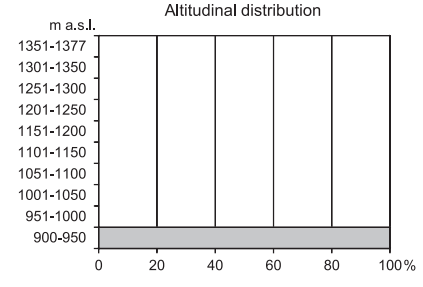
Vegetation

AP	
AP/DgF	■
DgF	■
DgF/PP	
PP*	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■	■		

Psathyrella hydrophiloides



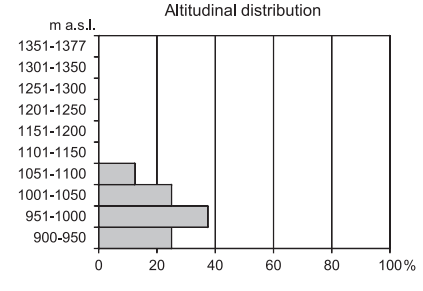
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
											■

Psathyrella murcida



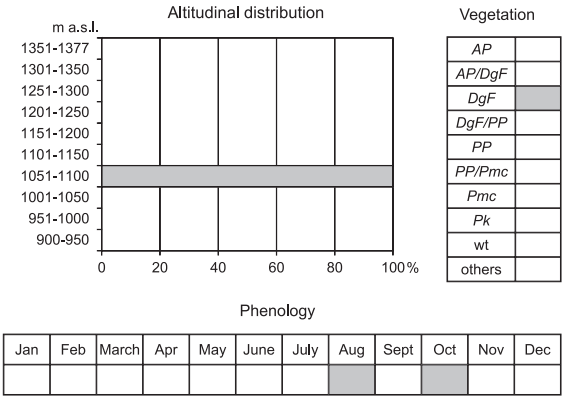
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
									■	■	

Psathyrella piluliformis



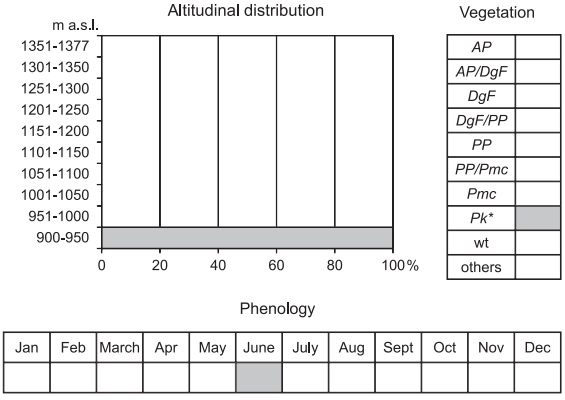
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■		■		

Psathyrella prona

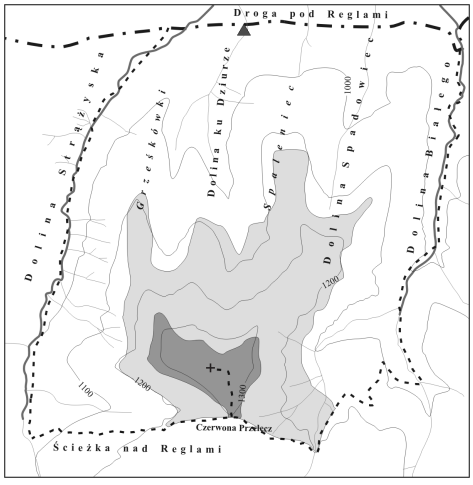


Vegetation

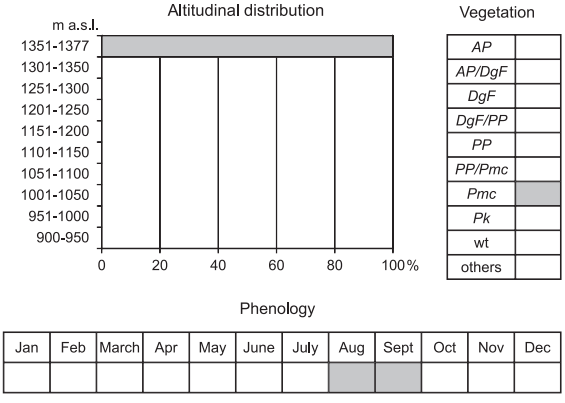
AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk*	■
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
					■						



Pseudobaeospora pillodii



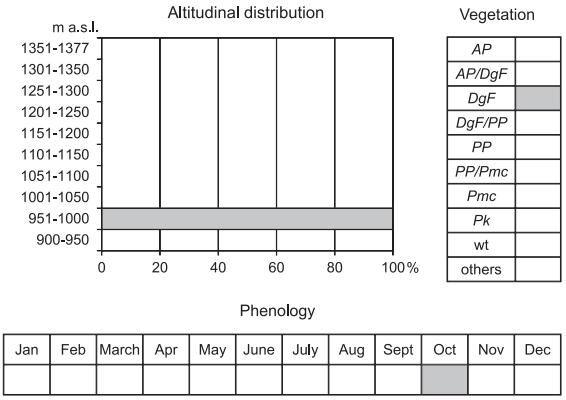
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	■
Pk	
wt	
others	

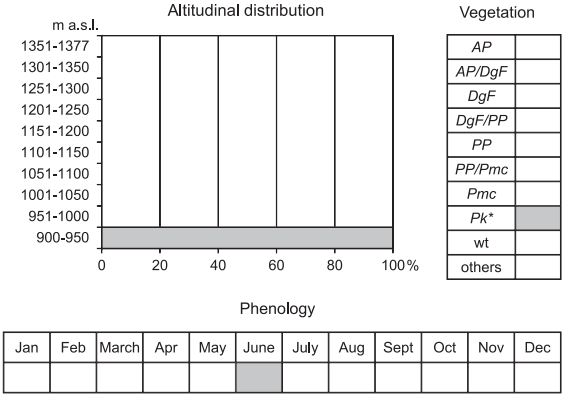
Phenology

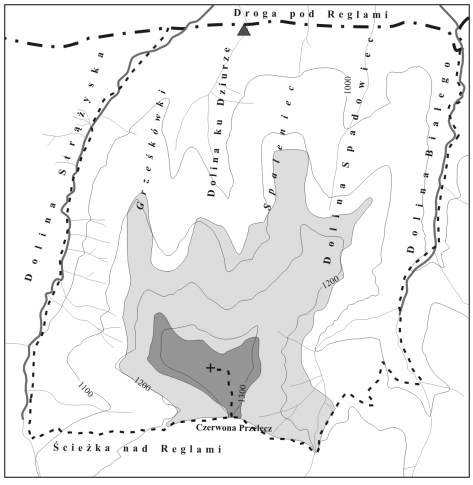
Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			

Pseudoclitocybe cyathiformis

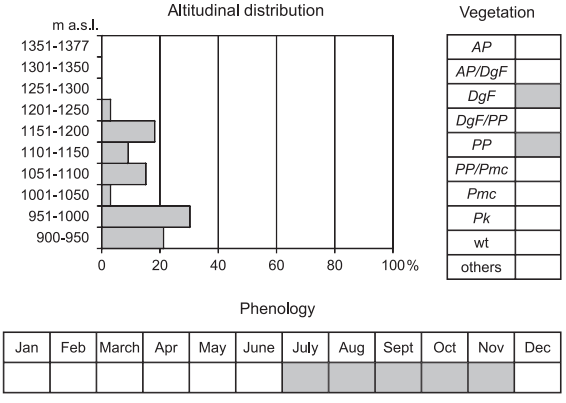


Psilocybe phyllogena

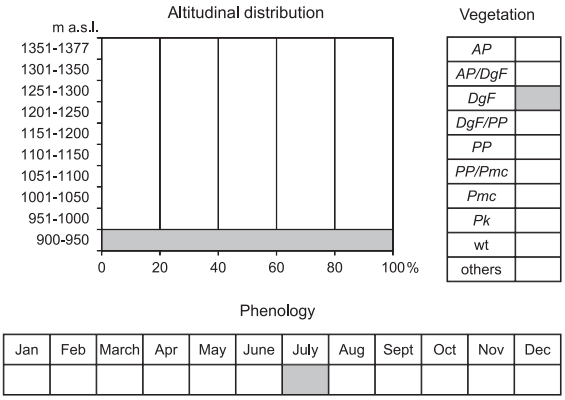




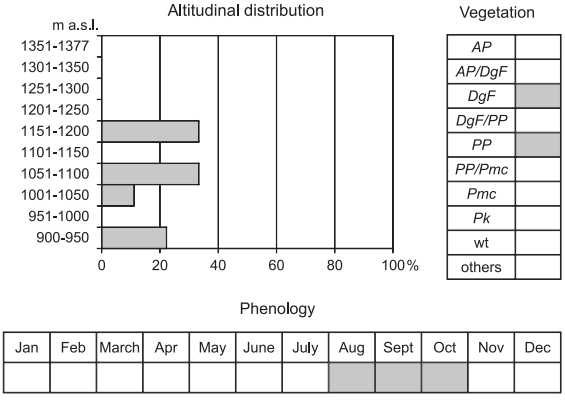
Rhodocollybia butyracea f. *asema*



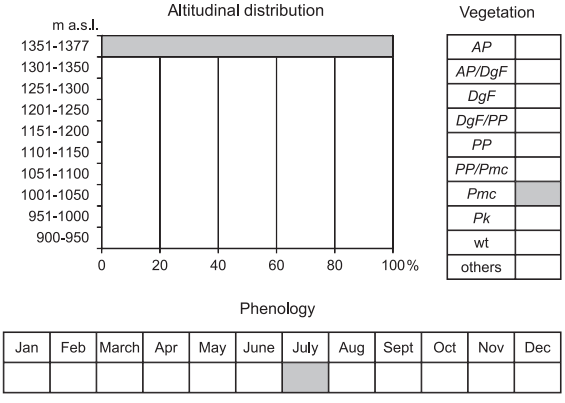
Rhodocollybia maculata



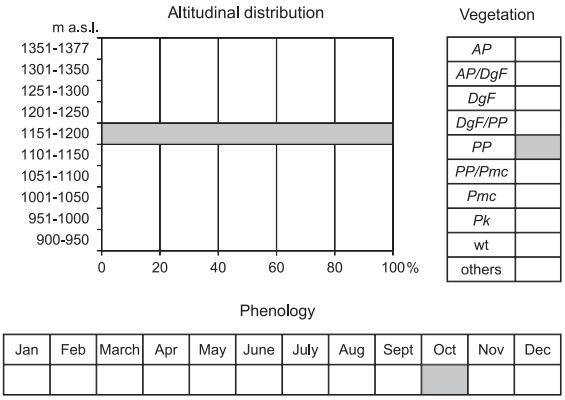
Rhodocybe nitellina



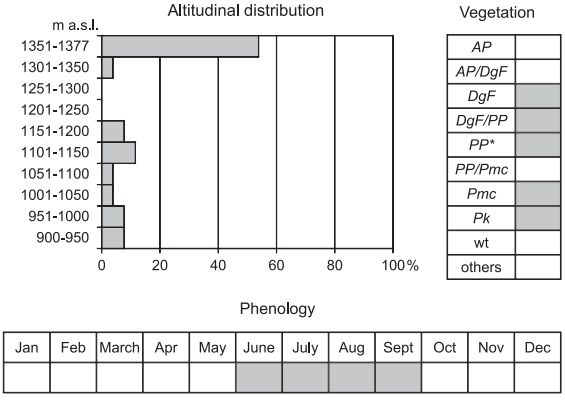
Rimbachia neckerae

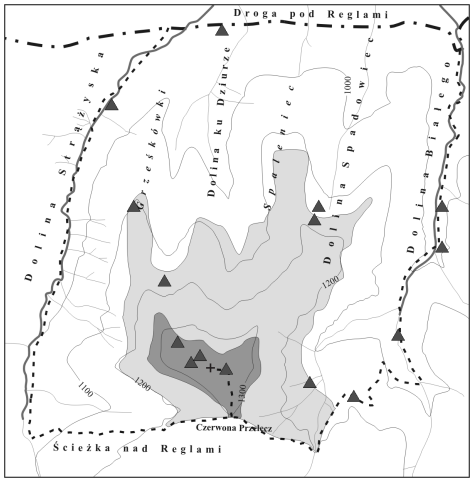


Ripartites serotina

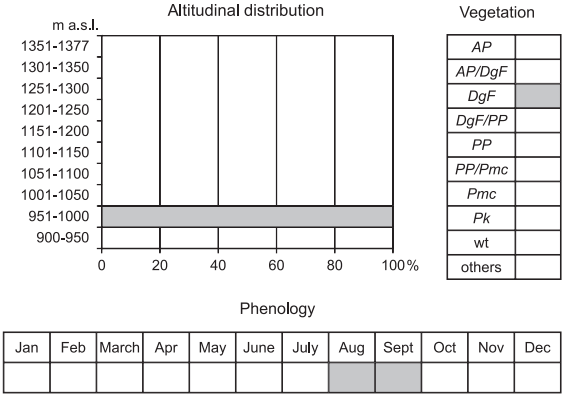


Roridomyces rorida

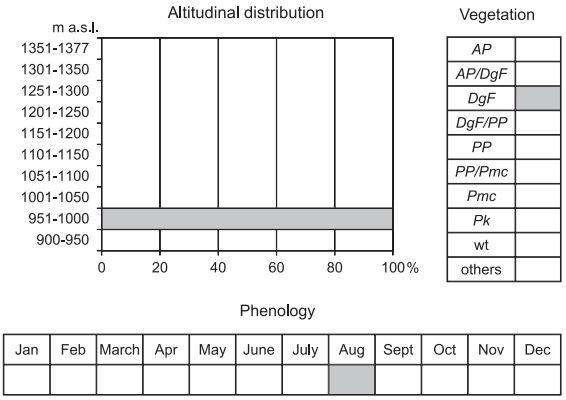




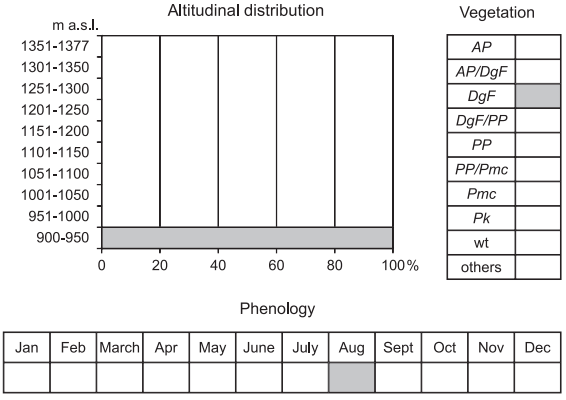
Russula albonigra



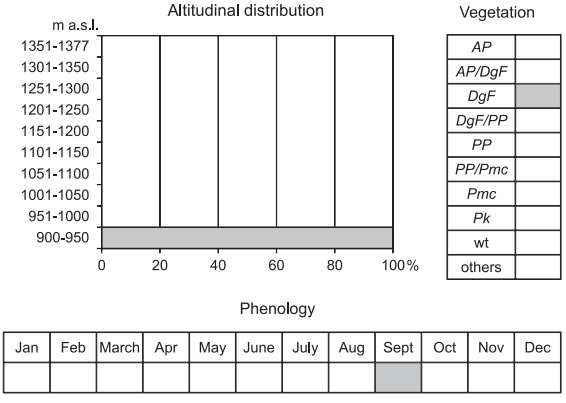
Russula anthracina



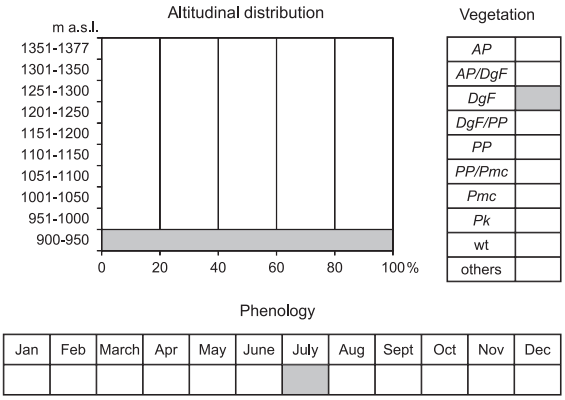
Russula aurea



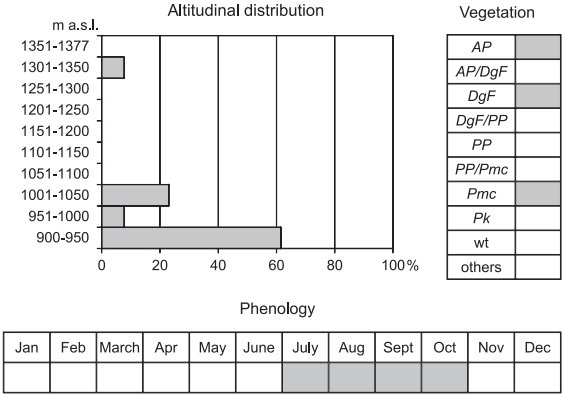
Russula aurora



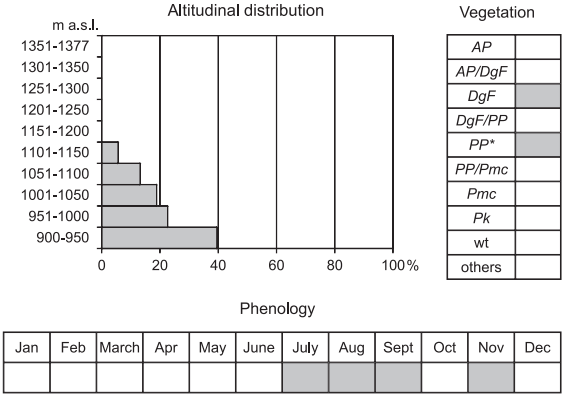
Russula cavipes

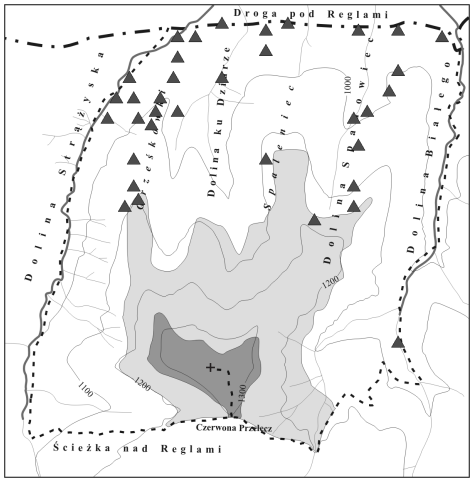


Russula chloroides

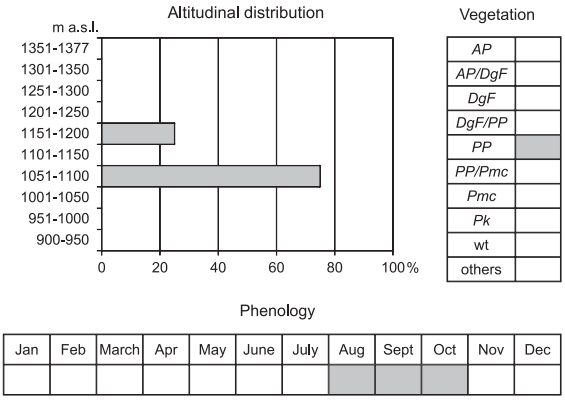


Russula cyanoxantha

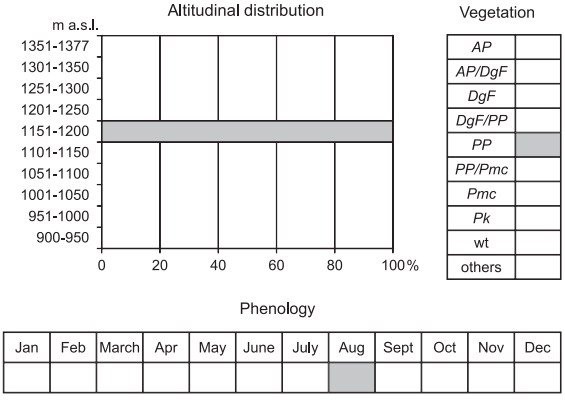


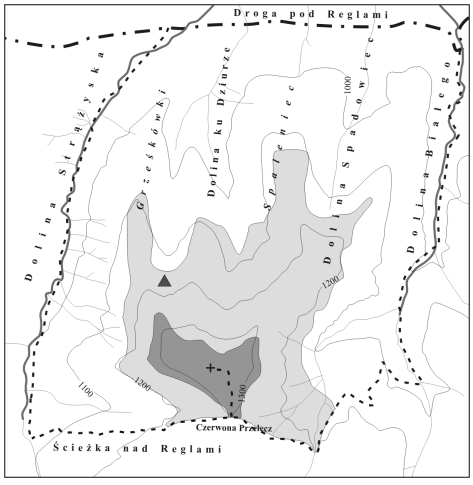


Russula emetica

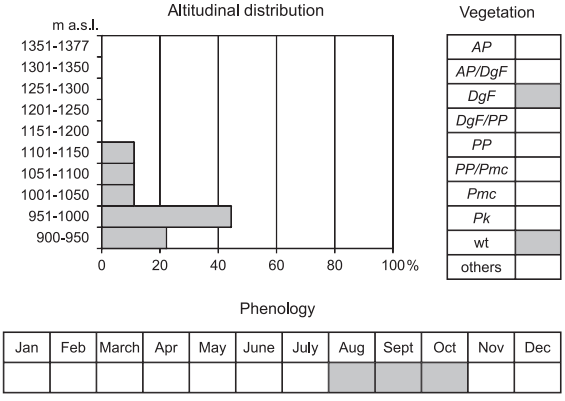


Russula favrei

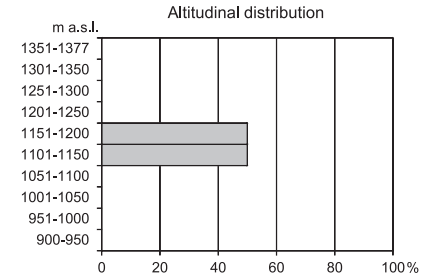


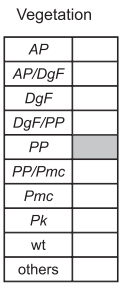


Russula fellea



Russula firmula

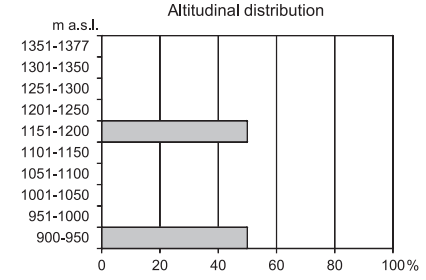


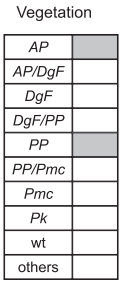


Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Russula integra

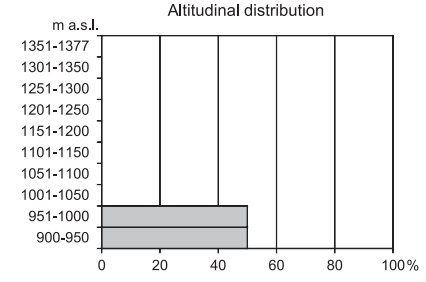


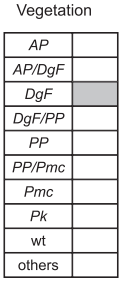


Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Russula laurocerasi

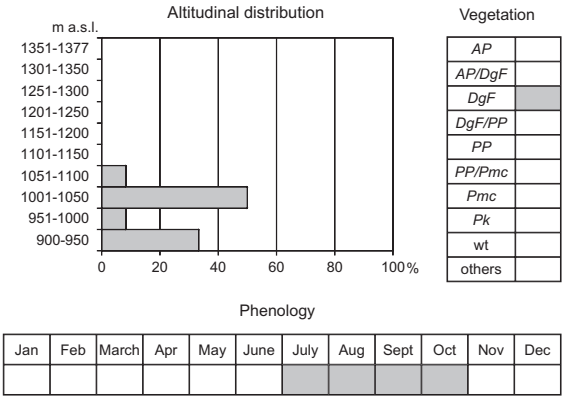




Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Russula mairei



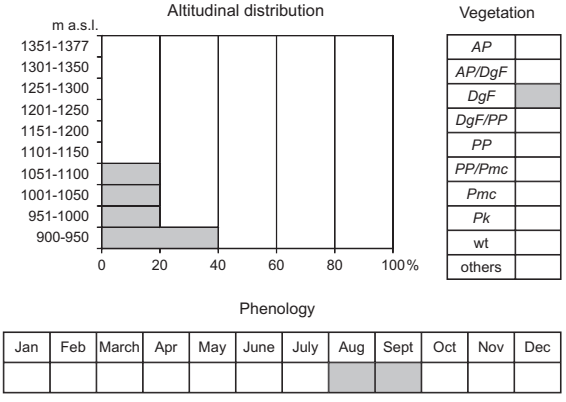
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■	■	■		

Russula nigricans

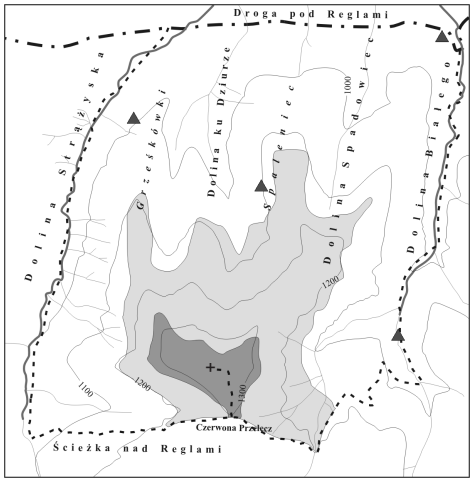


Vegetation

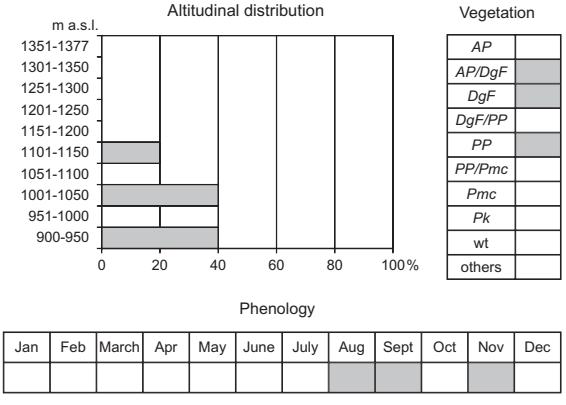
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			



Russula ochroleuca



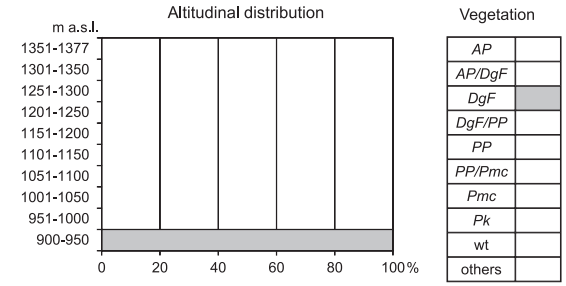
Vegetation

AP	
AP/DgF	■
DgF	■
DgF/PP	
PP	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■		■	

Russula postiana



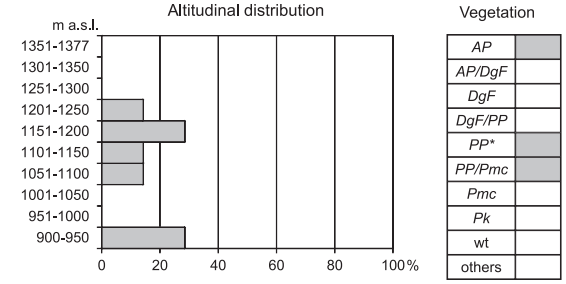
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Russula queletii



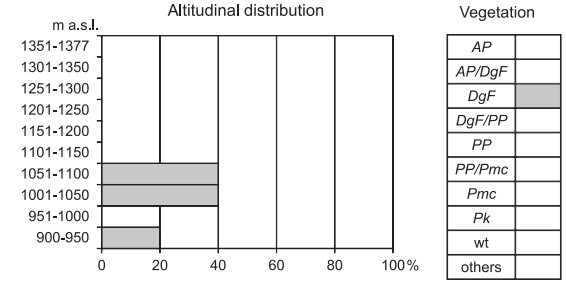
Vegetation

AP	■
AP/DgF	
DgF	
DgF/PP	
PP*	■
PP/Pmc	■
Pmc	
Pk	
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■			

Russula risigallina



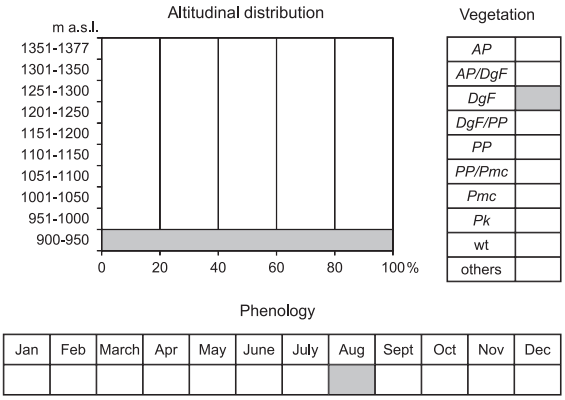
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

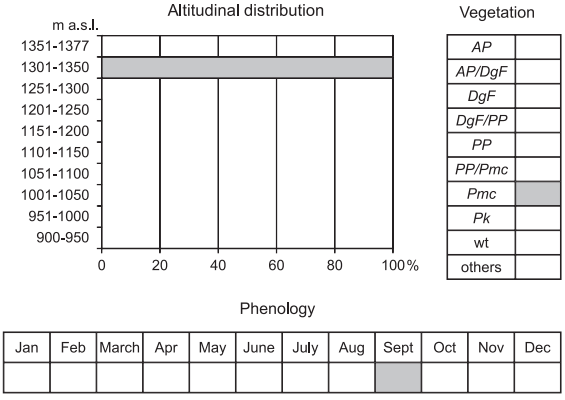
Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■	■				

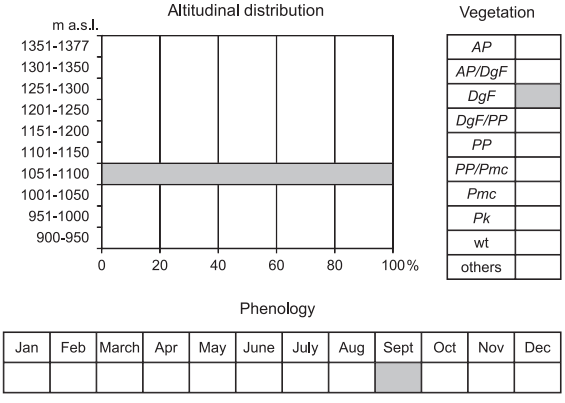
Russula romellii



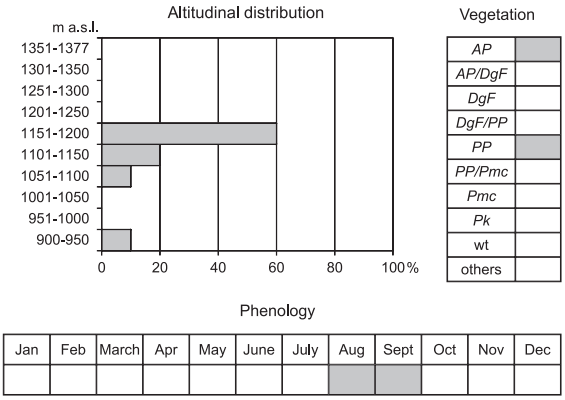
Russula aff. *silvestris*



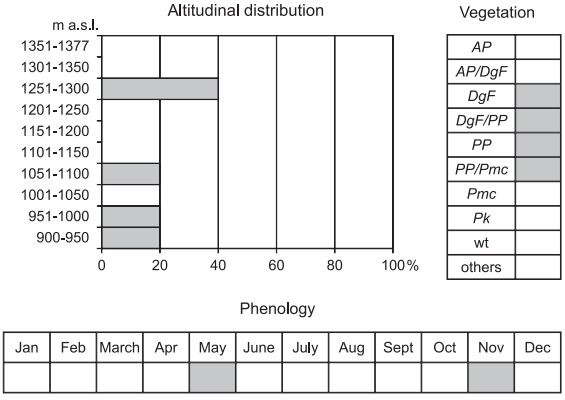
Russula veternosa



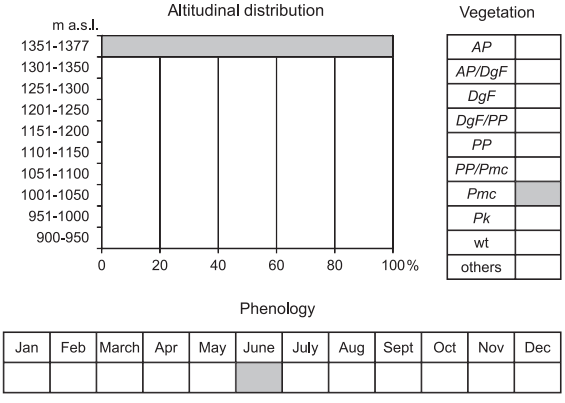
Russula vinosa



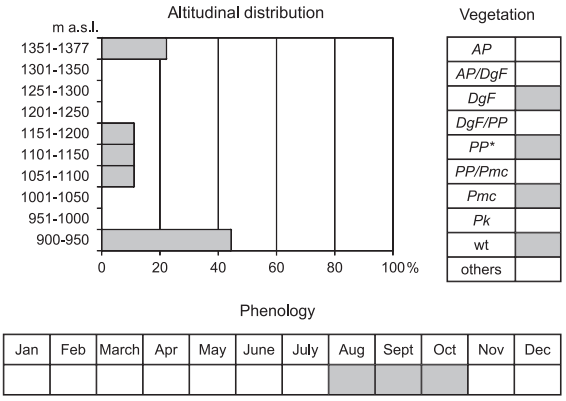
Strobilurus esculentus



Strobilurus stephanocystis



Stropharia aeruginosa



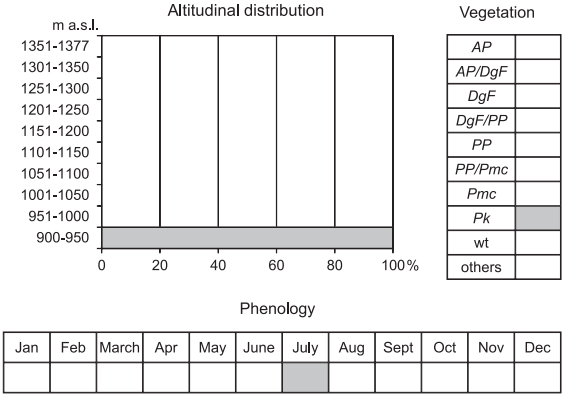
Vegetation

AP	
AP/DgF	
DgF	■
DgF/PP	
*PP**	■
PP/Pmc	
Pmc	■
Pk	
wt	■
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■	■	■		

Stropharia semiglobata



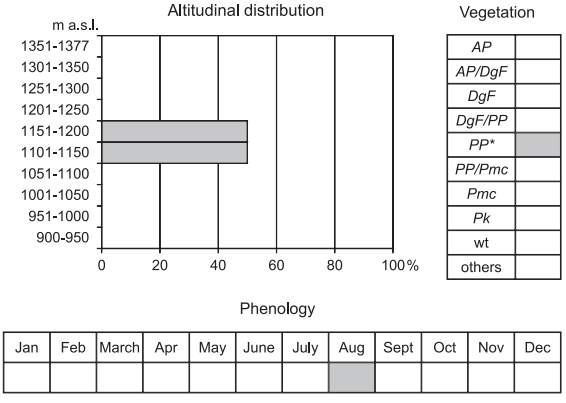
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	■
wt	
others	

Phenology

Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
						■					

Suillus cavipes



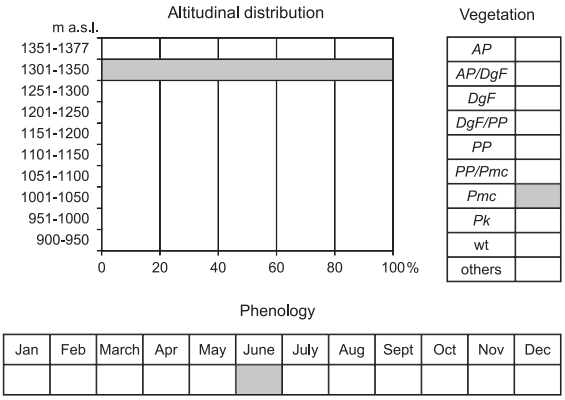
Vegetation

AP	
AP/DgF	
DgF	
DgF/PP	
*PP**	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

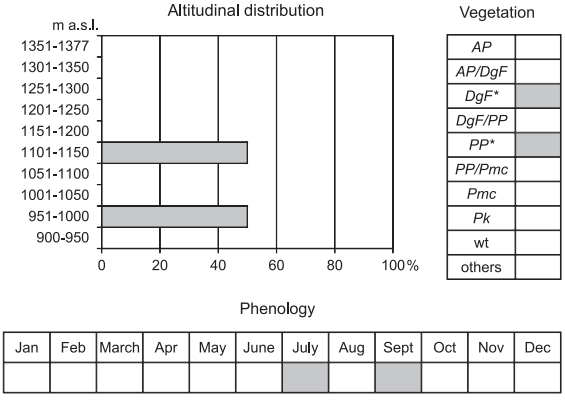
Phenology

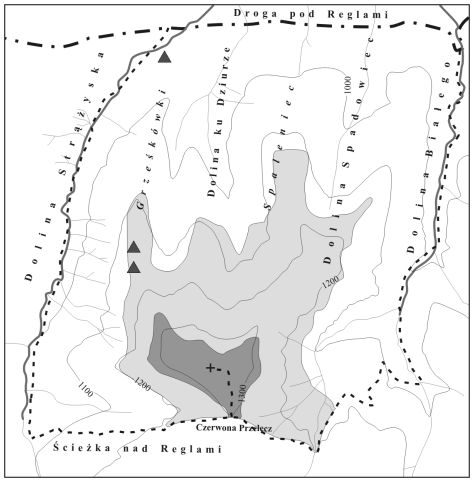
Jan	Feb	March	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
							■				

Suillus cf. *granulatus*

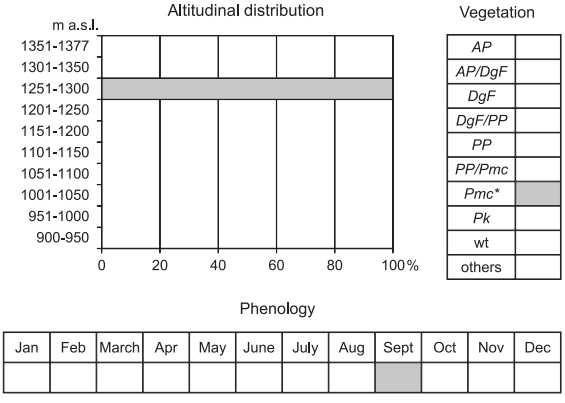


Suillus grevillei

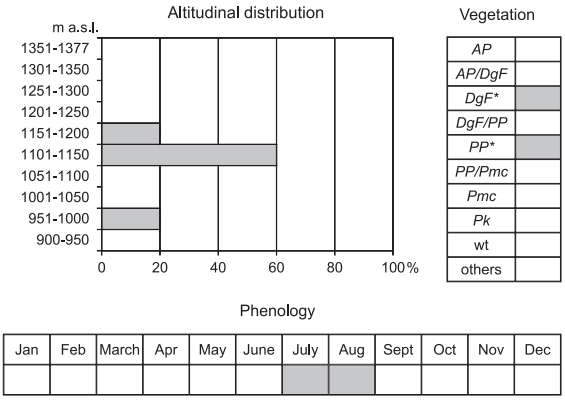




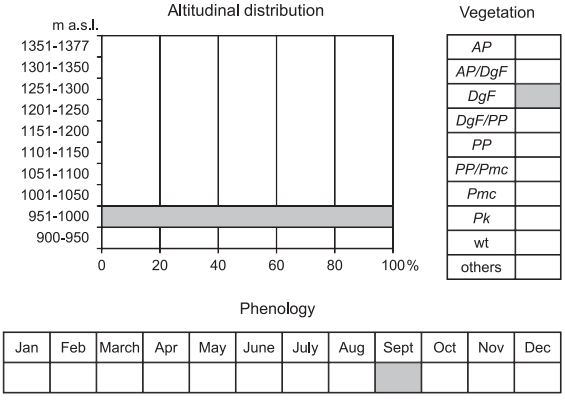
Suillus luteus



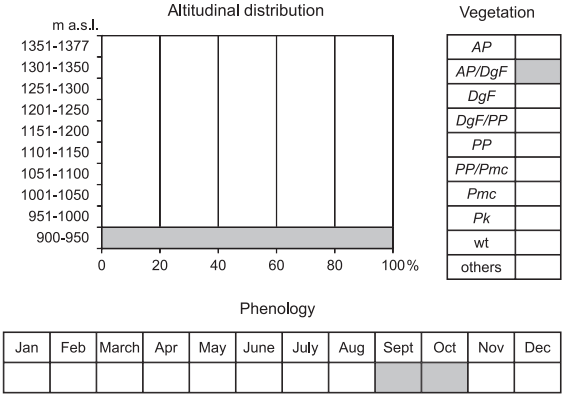
Suillus viscidus



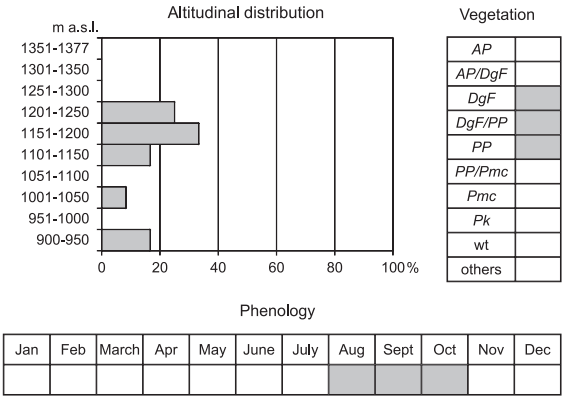
Tricholoma atrosquamosum



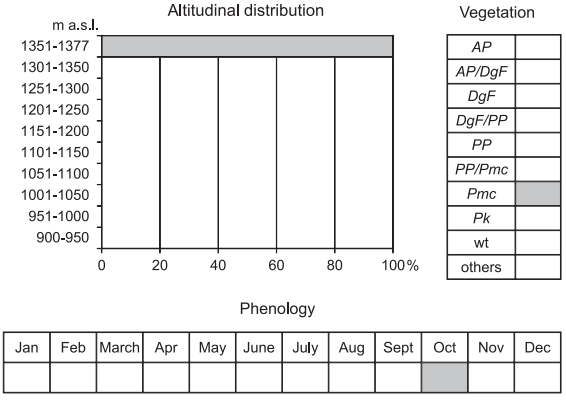
Tricholoma saponaceum



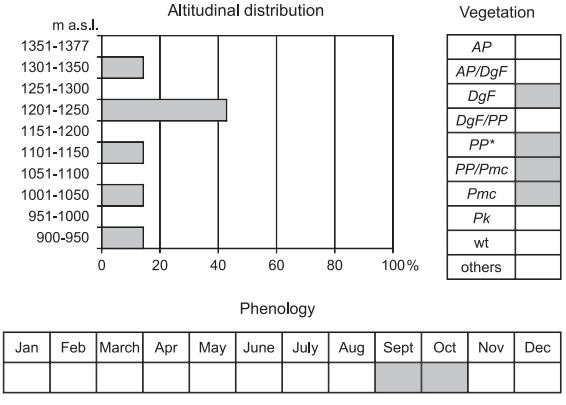
Tricholoma sulphureum



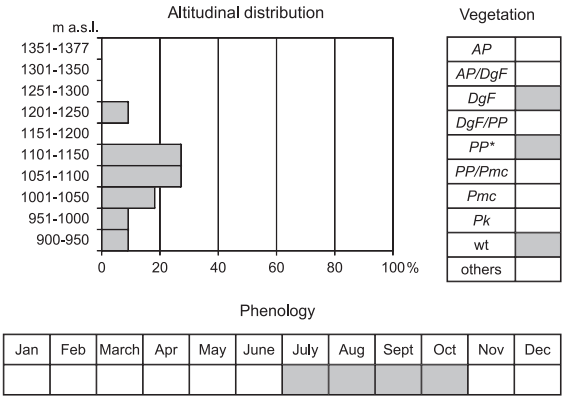
Tricholoma terreum



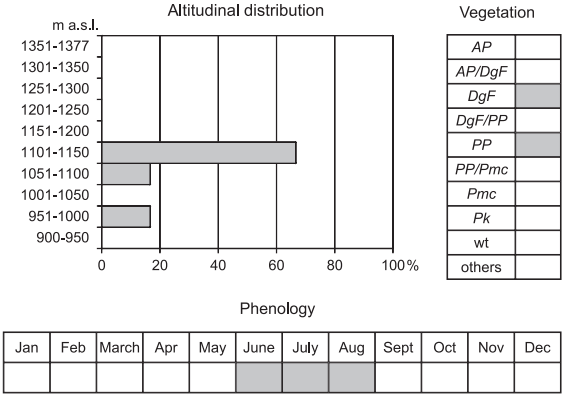
Tricholoma vaccinum

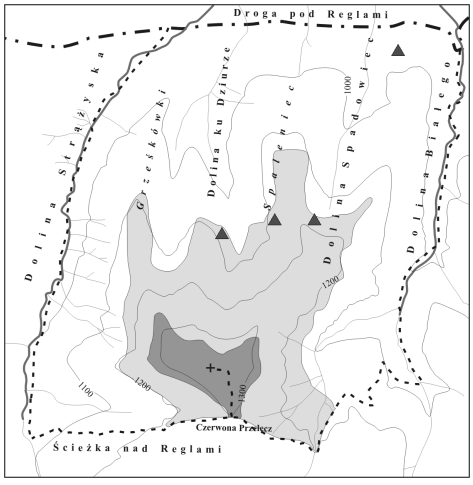


Tricholomopsis decora

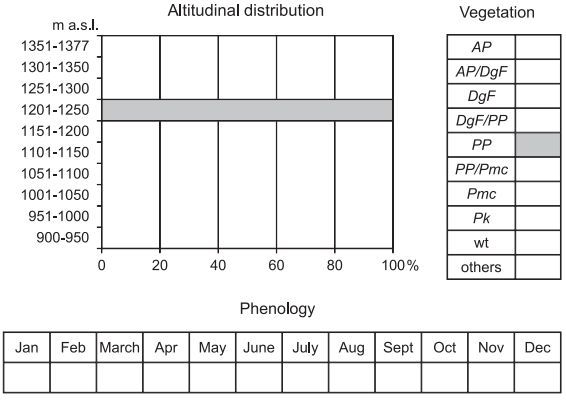


Tricholomopsis rutilans

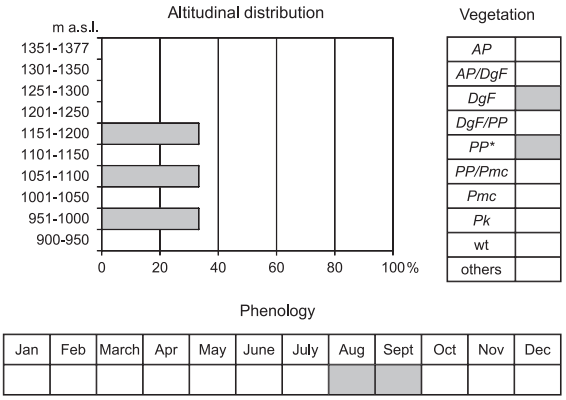




Tubaria confragosa

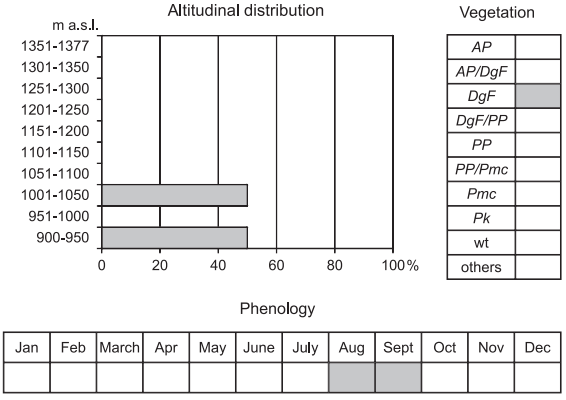


Tubaria conspersa



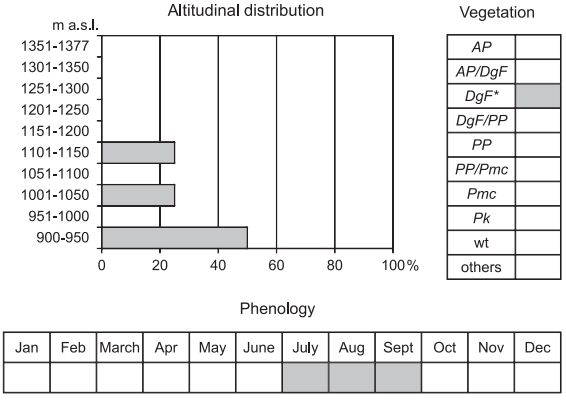
Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP*	■
PP/Pmc	
Pmc	
Pk	
wt	
others	

Xerocomus badius



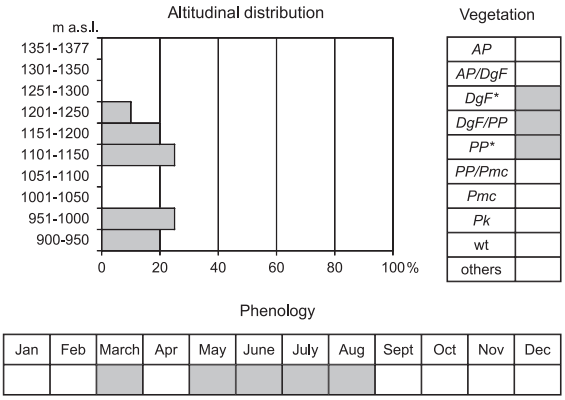
Vegetation	
AP	
AP/DgF	
DgF	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Xerocomus chrysenteron



Vegetation	
AP	
AP/DgF	
DgF*	■
DgF/PP	
PP	
PP/Pmc	
Pmc	
Pk	
wt	
others	

Xeromphalina campanella



Xerula melanotricha