The resupinate non-poroid Aphylllophorales of the temperate northern hemisphere

W. JÜLICH and J.A. STALPERS
THE RESUPINATE NON-POROID APHYLLOPHORALES
OF THE TEMPERATE NORTHERN HEMISPHERE
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Aangeboden december 1979
Aanvaard januari 1980
Gepubliceerd december 1980
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Introduction

In the last decennia the resupinate Aphyllororales (mainly Corticiaceae) were the subject of increasing interest. As a consequence the knowledge of this group became greatly expanded and many species originally described from North America were found in Europe and vice versa. Unfortunately the information on many of these species was scattered and no comprehensive flora for larger areas was available. The need for a compendium thus became urgent.

In this book the resupinate non-poroid Aphyllororales are treated in a broad sense to include groups traditionally considered to be Heterobasidio- mycetes, for example Ceratobasidium, Cerinomyces and Thanatephorus. Most of the effused-reflexed species as well as those cyphelloid and poroid species belonging to typically resupinate genera are treated, with the exception of Hymenochaete, a genus well known in Europe but poorly known in North America.

The area concerned covers the non-tropical region of the northern hemisphere, viz. all parts of Europe, the USSR and North America (excluding Mexico, but including the southern states of the USA). We originally wished to give any useful information about distribution of taxa, but because of the very incomplete data available it seemed unjustifiable to include small areas, so we restricted ourselves to continents. For the same reason no information is given on the distribution in tropical areas.

The main purpose of the keys is to make identification as easy as possible. Therefore in the main entries characters are used which are easily recognized instead of characters which have great systematic importance but are often difficult to observe. As a consequence the key to the genera does not reflect systematic lines and frequent cross-references are made. To facilitate the use of the key to the genera a ‘basic key’ is offered, giving the principal characters used in the main key.

The genera are brought in alphabetical order to facilitate location without the help of a key or an index; any arrangement in families or groups of genera is bound to be artificial, leaving too many intermediate taxa. We hope this is clearly illustrated in the scheme.

All well accepted generic synonyms are given in the generic description. In some cases, however, the synonymy is not yet indubitable and the genera concerned are mentioned as ‘inclusive’.

Information about the substrate is always given in general terms in the generic description. Most species grow on wood of angiosperms or
gymnosperms; this distinction is made where known with additional reference to substrates such as herbs or other material. In the species description the substrate is only given when of interest compared with related species or when it is very restricted.

With each description of an accepted genus the type species is given with its basionym. No type species are mentioned for generic synonyms.

The keys are principally dichotomous, except where the distinguishing characters are faint or intergrading (e.g. a small part of the key to the species of *Botryobasidium*).

Characters used in the main entries of the keys are not always repeated in the description, which is further reduced by only mentioning the important and distinguishing characters. Other characters, which apply to all species of a genus are only given in the generic description.

From the available references only those are selected which in our opinion are reliable and/or give good illustrations. In some cases, however, no good descriptions or figures were available and then no references are given.

In some cases we are not convinced that a certain species really belongs to the genus in which it is keyed out. It is listed under its basionym in the genus in which it is found most easily.

As far as the synonyms are concerned, we have tried to make the list given under the name of an accepted species as complete as possible. The synonyms are given with their basionyms at the species level; all varieties have been omitted as long as they have not been given specific rank.
Glossary to macro- and microstructures

Macrostructures

The basidia-producing fruitbody (basidiocarp) is generally annual (existing one season only) but sometimes perennial (persisting for several years). In the latter case there are several superimposed hymenial layers.

Resupinate basidiocarps consist of several layers:

a. Hymenial layer or hymenium with the basidia and eventually sterile elements (cystidia, hyphidia). This layer is exposed.

b. Subicular layer or subiculum, the sterile tissue between the hymenium and the substrate. When this layer is very compact it is sometimes called trama or context.

c. The abhymenial surface of the pileate parts of effused-reflexed basidiocarps typically consists of a layer of more or less parallel hyphae, which continues in the effused parts as a ‘basal layer’.

The form of a resupinate basidiocarp may be effused (always following the substrate), or effused-reflexed (a small marginal part bends away from the substrate). When the pileate part of the basidiocarp is large in comparison with the effused part, but broadly attached (and often semicircular), it is called dimidiate. When the base is much narrower and the basidiocarp fan-shaped it is called flabelliform and from that it is a small step to stipitate, where the basidiocarp is distinctly stalked. Resupinate basidiocarps can also be cyphelloid (cup-shaped and centrally attached) or discoid (circular and nearly flat).

The margin of the effused parts is often indistinct, but sometimes there is a broad sterile zone or conspicuous white fans. Hyphal strands (fascicles consisting of only one type of hyphae) or rhizomorphs (fascicles of hyphae with a differentiated cortex and a central core) may be present, either radiating from the margin or growing in the substrate. Sometimes bulblets (small, soft, globose bodies consisting of thin-walled hyphae) or sclerotia (hard, more or less globose bodies with thick-walled hyphae and/or surrounded by encrusting material) are found.

The texture of the basidiocarp is very variable; the following terms are used in the descriptions:

- arachnoid – cobwebby, with loosely interwoven hyphae
- byssoid – soft, cottony
- cartilaginous – hard, tough, but breaking when bent
ceraceous  — waxy
coriaceous  — leathery
crustose     — hard, rather thin, forming a crust
farinoso    — mealy, with a loose, powdery appearance
felty       — packed woolly, nearly glabrous
fleshy      — soft, putrescent
gelatinous  — jelly-like
hypochnoid  — loosely floccose to loosely felty
membranaceous — thin, compact but pliant
pellicular  — with thin hymenial layer which is easily separable from
              the loose subiculum
pruinose    — finely powdered, frosty
pulverulent — powdery, but relatively thick

The hymenial surface is often even, but can also be variously shaped. The
following configurations can be distinguished:
evén         — smooth
hydnoid      — with long, slender spines, typically longer than 0.5 mm
              (Mycocia, Sarcodontia)
irpicoid     — with broad, flattened, concrescent projections (Irpicex)
meruloid     — with anastomosing ridges, sometimes seeming irregularly
              poroid (Serpula)
odontoid     — (odontoid) with conical to cylindrical projections, often
              fimbriate at the apex, rarely longer than 0.5 mm
              (Kneissiella aspera)
phleboid     — with many ridges, irregular, but not anastomosing
              (Phlebia radiata)
poroid       — with distinct pores
raduloid      — with broad, flattened, separate tooth-like projections
               (Basidioradulum)
reticulate   — with shallow pores, resembling a network (Tubulicrinis
               spp.)
tuberculate  — (warted) with low, more or less hemispherical
               excrescences (Treichspora farinacea)

The abhymenial surface may be smooth, velvety (low and soft hairy), felty
(compressed woolly), tomentose (densely woolly) or villose (shaggy).

Microstructures

Hyphae may be hyaline or yellowish to brownish, thin- to thick-walled,
septate or not septate and the septa may have clamps (fig. 80), which
occasionally are multiple (fig. 79). There are 3 basal types of hyphae.
Generative hyphae are thin- to thick-walled, branched and provided with
primary septa, which often have clamps. They may be somewhat irregular,
show **ampullate septa** (fig. 80) or may be filled with resinous or refractive material (**gloeoplerous hyphae**). **Skeletal hyphae** are thick-walled, not or rarely branched straight hyphae of unrestricted length without primary septa and thus without clamps. Secondary septa may be present. **Binding hyphae** are thick-walled, much-branched hyphae of restricted length without primary septa. Species with only generative hyphae are called **monomitic**, species with generative and skeletal hyphae **dimitic** and species with all three types **trimitic**.

Sterile structures in the hymenium and the subiculum are:

- **acanthohyphidium** — more or less clavate element, at least apically provided with peg-like projections (fig. 68).
- **asterohyphidium** — centrally branched, stellate, brown, thick-walled element (fig. 64).
- **cystidiole** — thin-walled, not projecting hymenial cell, often acuminated, of the same size as the basidia.
- **cystidium** — hyaline to brown, thin- to thick-walled sterile cell, originating in subiculum or subhymenium, but generally reaching the hymenial surface and often even projecting. They are very variable in shape and size. They can be clavate (fig. 67), capitulate (fig. 54), fusoid or fusiform (fig. 56), cylindrical or flexuous-cylindrical, subulate, pyriform, conical (fig. 52), monilioid or moniliiform (fig. 51), toruloid or may have several apical bulbs (fig. 46). Cystidia are sometimes encrusted with crystals or resinous material, covered with an apical cap of crystals (fig. 57), provided with a resinous halo (fig. 55) or ensheathed with dendritcal hyphae (fig. 53). Rarely they are multi-rooted or multi-radiculate (fig. 62).
- **dendrohyphidium** — slender, much-branched hyphidium, often reaching the hymenial surface (fig. 69).
- **dichohyphidium** — thin- to thick-walled, often yellowish, dextrinoid, dichotomously branched hyphidium, occurring in both subiculum and hymenium (fig. 65).
- **echinocyst** — globose element covered with spines (fig. 49).
- **gloeocystidium** — hymenial or subicular element with oily or refractive contents, sometimes yellowish. In case of a positive reaction with sulpho-aldehydes they are sometimes called sulpho-cystidia (fig. 70).
- **hyphidium** — sterile hymenial or subicular element which has more or less retained its hyphal nature. Hyphidia can be unbranched, much-branched or provided with peg-like projections.
- **lagenocystidium** — flask-shaped hymenial element with a long, often encrusted tubuliform apex (fig. 59).
- **lamprocyctidium** — conical, thick-walled encrusted element, projecting or embedded (fig. 52).
leptocystidium — thin-walled, hyaline element, typically projecting (fig. 67).
lyocystidium — thick-walled cystidium, walls swelling or wall-thickening disappearing in 10% KOH (fig. 62).
septocystidium — thin- to thick-walled, more or less cylindrical projecting element of which the projecting part is distinctly septate (often with clamps) (fig. 60).
seta — thick-walled, brown conical to subulate element (fig. 66).
skeletocystidium — cystidium originating from skeletal hypha.
stephanocyst — two-celled globose structure of which the lower cell is cup-shaped and surrounds the upper cell with a row of spines (fig. 50).

The basidium is a terminal or lateral (pleurobasidium, fig. 8, 9) cell, in which karyogamy is followed by meiosis. The haploid nuclei migrate into the (1-4)-8 sterigmatum on which the spores are produced. The basidial shape is generally clavate (fig. 3) to nearly cylindrical (fig. 5), but can also be subglobose, ovoid, urniform (fig. 2), suburniform (fig. 1) or barrel-shaped (fig. 4). Basidia are sometimes nearly stalked (podobasidium, fig. 41) or they originate from the base of an old basidium (repetobasidium, fig. 45). A basidiole is a young or aborted basidium.

The basidiospore is a meiospore which is attached to the sterigma of a basidium by a sometimes prominent apiculus. It germinates with a germ tube or more rarely with a secondary spore (repetitive spore, fig. 19). Basidiospores are hyaline to yellowish or brownish, thin- to thick-walled, smooth or ornamented and display a wide variety in shape. They can be globose or subglobose (fig. 35), ovoid (fig. 17), ellipsoid (fig. 15, 36), cylindrical (fig. 16), allantoid (fig. 20), pyriform (fig. 24), citiform or navicular (fig. 18), fusiform or fusoid (fig. 31), sigmoid (fig. 34), angular to pyramidal (fig. 22) or irregularly lobed (fig. 37).

The ornamentation of the basidiospores is also variable. The majority of the spores is smooth, but they may be roughened (fig. 32), warted (fig. 26), echinulate (fig. 37), acuteate (fig. 38) or have crests or ridges (fig. 39).

A conidium is a mitospore. Conidia occur only rarely in or close to the basidiocarp, but some of the following types are occasionally found:

arthroconidium — a hypha breaks up into fragments, which are capable of forming a new mycelium. These fragments may become somewhat thick-walled (fig. 76).

blastoconidia — the conidium is a newly formed structure and the conidial initial enlarges before a basal septum is formed (fig. 73). They are found for example in Haplotrichum (fig. 71) and Sporotrichum (fig. 74). Zoosporidia (fig. 77) consist of two fusing blastoconidia.

chlamydomospores — thick-walled solitary resting spores (fig. 72).
Terms used in connection with colour reactions:

- Amyloid: becoming blue in Melzer’s reagent
- Cyanophilius: becoming deep blue in cotton blue
- Dextrinoid: becoming reddish brown in Melzer’s reagent
- Sulpho-positive: becoming blackish in sulpho-benzaldehyde
- Xantho-chroic: becoming dark brown in KOH 10%

Plates I–VI

Plate I. Basidia (Fig. 1–14).


Plate II. Spores and basidia (Fig. 15–45).


Plate III. Cystidia (Fig. 46–54).


Plate IV. Cystidia (Fig. 55–63).


Plate V. Cystidia (Fig. 64–70).


Plate VI. Anamorphic structures and hyphae (Fig. 71–81).

Generic relationships

Several groups of genera can be recognized in the resupinate non-poroid Aphyllophorales, though these are not clearly delimited because several intermediate genera combine characters from two or three groups. Morphological, cytological and cultural features have been used to construct a scheme which shows presumable relationships between genera or groups of genera. We are still far away from a thorough understanding of the phylogeny of these fungi, and therefore no attempt has been made to assign a genus or a group of genera as the most primitive. The taxa in the centre of the scheme are not supposed to represent the base of the evolutionary progress. The scheme is necessarily two-dimensional; however, genera appearing at one extreme of the diagram can be related to genera at other extremes. The genus Crustoderma, for example, is placed in the vicinity of Peniophora but could as well be given in the surroundings of Phlebia. The distance between two names is not an indication of the suspected degree of relationship: it is mainly dependant on the number of taxa which had to be placed in their vicinity.

The scheme shows how difficult it is to separate families: the Corticiaceae, to which family most of the genera in the scheme belong, are connected with the Coniophoraceae via Byssocorticium-Leucogryrophana on the one side, and via Phanerochaete from the other side. Separation of the Corticiaceae from the Stereaceae is impossible, because some species of Lopharia-Peniophora and Aleurodiscus exhibit a close relationship to Stereum-Xylobolus, while also Gloeocystidiellum is close to Stereum on the one hand. On the other hand this genus is related to the Auriscalpiaceae (inclusive of the Hericiaceae), relating this family with the Corticiaceae. Several other possible lines to further families are indicated, e.g. to the Gomphaceae, Hymenochaetaeae, several groups of the Polyporaceae, Thelephoraceae and some genera of the Heterobasidiomycetes.

It is obvious from the scheme that the main groups with amyloid spores are more or less closely related: Aleurodiscus, Gloeocystidiellum, Stereum and the surrounding genera. However, we are convinced that the amyloid reaction evolved independently in some other, smaller, groups, viz. in Leucogryrophana which is related to Serpula and Athelia, and in Amylocorticium-Irpicodon, two small genera which find their place near Ceraceomyces, while the genus Tyromyces can also be mentioned here.

Aleurodiscus is quite closely connected to a rather large number of genera; a line to Sistotrema is established via Vuilleminia and Galzinia, to Peniophora via
Laeticorticium and to Phlebia via Punctularia. Sistotrema is connected to Botryobasidium, but also to Athelia via Sistotremastrum. Athelia shows a relationship with Phanerochaete and via Ceraceomyces with the Phlebia-complex, but also a more distant connection with the genus-complex around Hyphoderma and Kneiffiella. Lines to distinctly poroid genera are given from Phanerochaete via Meruliopsis to Ceriporia and Rigidoporus, from Phlebia via Merulis to Gloeoporus, from Steccherinum to Junghuhnia and from Kneiffiella to Trichaptum on the one hand and to genera like Chaetoporellus, Fibroodontia and Schizopora (with a possible line to trametoid genera) on the other hand.

Information about microstructures, which is common in the resupinate Aphyllophorales, is limited in many other families and orders of the Basidiomycetes and a more detailed presentation of possible phylogenetic lines cannot be given at the present time. The scheme therefore mainly represents the lines within the resupinate Aphyllophorales, of which almost all genera present in the northern hemisphere have been included. The genera Kavinia and Rumaricium, both belonging to the Gomphacea, have been excluded as they could not be allotted a plausible place within the scheme.
Basic key to the genera

<table>
<thead>
<tr>
<th>Option</th>
<th>Page</th>
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<tbody>
<tr>
<td>Brown thick-walled setae, dichohyphidia and/or asterohyphidia present.</td>
<td>2</td>
</tr>
<tr>
<td>Spores amyloid.</td>
<td>6</td>
</tr>
<tr>
<td>Basidia normally with more than 4 sterigmata.</td>
<td>39</td>
</tr>
<tr>
<td>Dendrohyphidia or unbranched hyphidia present.</td>
<td>46</td>
</tr>
<tr>
<td>Marine. Sterigmata developing into apically branched diaspores.</td>
<td>62</td>
</tr>
<tr>
<td>Zygoconidia present and/or species parasitic on higher basidiomycetes.</td>
<td>63</td>
</tr>
<tr>
<td>Spores with distinctly thickened walls, smooth, often coloured.</td>
<td>65</td>
</tr>
<tr>
<td>Lyocystidia (dissolving or distorting in KOH) present, often bi- or multi-radicate.</td>
<td>87</td>
</tr>
<tr>
<td>Spores ornamented, at least in Melzer’s.</td>
<td>90</td>
</tr>
<tr>
<td>Sterigmata at least 10 μm long and/or spores repetitive.</td>
<td>106</td>
</tr>
<tr>
<td>Hyphal system dimitic or seemingly dimitic.</td>
<td>113</td>
</tr>
<tr>
<td>Basidia pleurobasidious and/or ovoid, pyriform or conical, but not constricted in the middle, sometimes repeating.</td>
<td>126</td>
</tr>
<tr>
<td>Many septa with distinct swellings (ampullate septa).</td>
<td>130</td>
</tr>
<tr>
<td>Thick-walled, conical, encrusted cystidia (lamprocystidia) present.</td>
<td>134</td>
</tr>
<tr>
<td>Cystidia projecting and projecting part septate (septocystidia).</td>
<td>141</td>
</tr>
<tr>
<td>Clamps absent or rare and then only at the basal hyphae.</td>
<td>147</td>
</tr>
<tr>
<td>Basidia with 1-2(-3) sterigmata.</td>
<td>167</td>
</tr>
<tr>
<td>Basidiocarp ceraceous to gelatinous.</td>
<td>170</td>
</tr>
<tr>
<td>Hymenial surface odontoidi, raduloid or hydnoid.</td>
<td>186</td>
</tr>
<tr>
<td>Hymenial surface even to tuberculate or minutely reticulate.</td>
<td>192</td>
</tr>
</tbody>
</table>
Key to the genera

1a. Brown thick-walled setae, asterothphidia and/or dichothphidia present. 2

1b. Brown setae, asterothphidia and dichothphidia absent. 5

2a. Hymenial setae present. Basidiocarp xanthochroic. Gloeocystidia absent. Spores smooth, not amyloid. Hymenochaetaeae (not treated). When the "setae" are encrusted and/or apically obtuse and when the basidiocarp is not xanthochroic, cf. Amylostereum, Columnocystis and Lopharia.

2b. Hymenial setae absent. Basidiocarp typically not xanthochroic. Gloeocystidia typically present. Spores smooth or ornamented, amyloid or not amyloid. 3

3a. Asterothetae present. Asterostruma

3b. Asterothetae absent. Vararia

4a. Subiculum with numerous dichothphidia. Scytinostruma

4b. Subiculum composed of irregularly branched thick-walled dextrinoid hyphae.

5a. Spores amyloid. Iripodion

5b. Spores not amyloid. Scytinostruma

6a. Hymenial surface distinctly odontoid to hydnoid. Gloeodontia

6b. Hymenial surface even to warted. Dentipellis

7a. Gloeocystidia absent. Gloioodon

7b. Gloeocystidia present. Scytinostruma

8a. Thick-walled encrusted cystidia present. Gloeodontia

8b. Thick-walled encrusted cystidia absent. Dentipellis

9a. Skeletal or skeletonoid hyphae absent. Gloioodon

9b. Skeletal or skeletonoid hyphae present. Scytinostruma

10a. Basidiocarp consists of a dark brown tomentum surrounding ramifying processes, strands or veins. Gloioodon

10b. Basidiocarp different. Scytinostruma

11a. Gloeoplerous hyphae present. Basidiocarp typically effused-reflexed. Stecchericum


12a. Acanthohyphidia or dendrohyphidia present. 13

12b. Hyphidia absent or not branched. 17

13a. Acanthohyphidia present. 14

13b. Acanthohyphidia absent. 16
<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>14a. Skeletoid hyphae absent (but cf. <em>A. fruticetorum</em>).</td>
<td><strong>Aleurodiscus</strong></td>
</tr>
<tr>
<td>14b. Skeletoid hyphae present.</td>
<td>15</td>
</tr>
<tr>
<td>15a. Acanthohyphidia thin-walled, with few aculei.</td>
<td><strong>Stereum</strong></td>
</tr>
<tr>
<td>15b. At least some acanthohyphidia with thickened walls.</td>
<td><strong>Xylobolus</strong></td>
</tr>
<tr>
<td>16a. Spores up to 10 μm long.</td>
<td><strong>Dendrophysellum</strong></td>
</tr>
<tr>
<td>16b. Spores at least (11—)15 μm long (when spores 10—13 × 7—10 μm and faintly or irregularly amyloid, cf. <em>Dendrothele acerina</em>).</td>
<td><strong>Aleurodiscus</strong></td>
</tr>
<tr>
<td>17a. Skeletoid hyphae present, sometimes only in hyphal strands.</td>
<td>18</td>
</tr>
<tr>
<td>17b. Skeletoid hyphae absent.</td>
<td>24</td>
</tr>
<tr>
<td>18a. Skeletoid hyphae dextrinoid.</td>
<td><strong>Scytinostroma</strong></td>
</tr>
<tr>
<td>18b. Skeletoid hyphae not dextrinoid.</td>
<td>19</td>
</tr>
<tr>
<td>19a. Spores subglobose to ellipsoid, roughened to warted in Melzer’s.</td>
<td>20</td>
</tr>
<tr>
<td>19b. Spores narrowly ellipsoid to cylindrical, smooth in Melzer’s.</td>
<td>22</td>
</tr>
<tr>
<td>20a. Spores at least (11—)15 μm long.</td>
<td><strong>Aleurocystidiellum</strong></td>
</tr>
<tr>
<td>20b. Spores up to 8 μm long.</td>
<td>21</td>
</tr>
<tr>
<td>21a. Gloeocystidia present.</td>
<td><strong>Scytinostromella</strong></td>
</tr>
<tr>
<td>21b. Gloeocystidia absent.</td>
<td><strong>Laurilla</strong></td>
</tr>
<tr>
<td>22a. Spores ovoid to ellipsoid. Basidiocarp at least initially disciform to cyphellloid.</td>
<td><strong>Aleurodiscus</strong></td>
</tr>
<tr>
<td>22b. Spores cylindrical, often slightly curved. Basidiocarp often effused-reflexed to pileate, never disciform or cyphellloid.</td>
<td>23</td>
</tr>
<tr>
<td>23a. Thick-walled brown encrusted cystidia present.</td>
<td><strong>Amylostereum</strong></td>
</tr>
<tr>
<td>23b. Encrusted cystidia absent.</td>
<td><strong>Stereum</strong></td>
</tr>
<tr>
<td>24a. Gloeocystidia present.</td>
<td>25</td>
</tr>
<tr>
<td>24b. Gloeocystidia absent.</td>
<td>30</td>
</tr>
<tr>
<td>25a. Spores globose to ellipsoid, at least (8—)10 μm broad.</td>
<td><strong>Aleurodiscus</strong></td>
</tr>
<tr>
<td>25b. Spores narrower.</td>
<td>26</td>
</tr>
<tr>
<td>26a. Spores ornamented in Melzer’s.</td>
<td>27</td>
</tr>
<tr>
<td>26b. Spores smooth in Melzer’s.</td>
<td>29</td>
</tr>
<tr>
<td>27b. Gloeocystidia with homogeneous contents. Basidiocarp effused.</td>
<td>28</td>
</tr>
<tr>
<td>28a. Pleurobasidium present and dominant. Basidiocarp very thin.</td>
<td><strong>Pseudoxenasma</strong></td>
</tr>
<tr>
<td>28b. Pleurobasidium absent.</td>
<td><strong>Gloeocystidiellum</strong></td>
</tr>
<tr>
<td>29a. Gloeocystidia vesicular, sulpho-negative. Spores globose to subglobose.</td>
<td><strong>Vesicolomyces</strong></td>
</tr>
<tr>
<td>29b. Gloeocystidia more or less tubular, often swollen at the base, sulpho-negative. Spores ellipsoid to cylindrical.</td>
<td><strong>Gloeocystidiellum</strong></td>
</tr>
<tr>
<td>30a. Pleurobasidium present, dominant. Basidiocarp very thin.</td>
<td><strong>Xenasma</strong></td>
</tr>
<tr>
<td>30b. Pleurobasidium absent or not predominant.</td>
<td>31</td>
</tr>
<tr>
<td>31a. Spores narrowly allantoid, up to 2.5 μm broad.</td>
<td>32</td>
</tr>
<tr>
<td>31b. Spores not allantoid or broader than 2.5 μm.</td>
<td>33</td>
</tr>
<tr>
<td>32a. Spores up to 4.5 μm long. Basidiocarp effused-reflexed to typically pileate. Hymenial surface merulioid to poroid when fresh (not treated).</td>
<td><strong>Plicatura</strong></td>
</tr>
</tbody>
</table>
32b. Spores at least 4.5 μm long. Basidiocarp effused. Hymenial surface even.

33a. Vesicles present in subiculum.
33b. Vesicles absent.
34a. Spores thin-walled, often somewhat constricted in the middle.
34b. Spores with thickened walls, not constricted in the middle.

35b. Hyphidia absent. Spores up to 7.5 μm long. Amyloid reaction often faint.
36a. Hymenial surface white to pale ochraceous when fresh. Basidiocarp pellicular.
36b. Hymenial surface blue, green or violaceous when fresh. Basidiocarp hypochnoid.
37a. Clamps present. Hymenial surface blue to green.
38a. Basidia normally with more than 4 sterigmata.
38b. Basidia with (1–)2–4 sterigmata.
39b. Basidia subglobose to cylindrical, not urniform.
40a. Spores aculeate, globose.
40b. Spores smooth, subglobose to cylindrical.
42a. Basidiocarp arachnoid, hypochnoid or pellicular. Basal hyphae wide, branching at right angles.
42b. Basidiocarp ceraceous when fresh, often forming a thin film over the substratum when dry. Hyphae narrower, up to 5 μm wide.
43a. Pleurobasidia present. Cystidia present.
44b. Basidia broadly clavate to broadly cylindrical, sometimes stalked, usually smaller, at least 5 μm wide. Basidiocarp subinvisable when dry.
45a. Dendrohyphidia or unbranched hyphidia present.
45b. Hyphidia absent.
46a. Spores navicular to fusoid.
46b. Spores not navicular to fusoid.
47a. Spores fusoid, yellowish, at least 16 μm long. Sterile fascicles present, consisting of an aggregate of upright hyphae.
47b. Spores navicular, hyaline, up to 13(–15) μm long. Sterile fascicles absent.
48a. Hymenial surface brightly or dark coloured when fresh: pink, lilac, brown, blue, yellow or dark grey.
48b. Hymenial surface pale coloured when fresh or dry: whitish, cream-coloured, ochreous or pale grey.  
55
49a. Lamprocystidia and/or gloecystidia present.  
50
49b. Lamprocystidia and gloecystidia absent.  
51
50a. Lamprocystidia present or spores at least on average longer than 8 μm. Basidiocarp effused, rarely effused-reflexed.  
Peniophora
50b. Lamprocystidia absent. Spores up to 7.5(–8) μm long. Basidiocarp typically effused-reflexed.  
Punctularia
51a. Hymenial surface blue or bluish green.  
52
51b. Hymenial surface without bluish or greenish tinge.  
52
52a. Basidia swollen at the base (originating from probasidia). Spores at least 4 μm broad.  
Laeticorticium
52b. Basidia not swollen at the base. Spores up to 4.5(–5) μm broad.  
53
53a. Hyphidia simple or once or twice branched.  
Cerocorticium
53b. Dendrohyphidia present.  
54
54a. Spores ellipsoid. Purplish conidia typically present.  
Punctularia
54b. Spores cylindrical, often slightly curved. Conidia absent.  
Dentocorticium
55a. Branched thick-walled skeletonoid hyphae present.  
Licrostroma
55b. Branched thick-walled skeletonoid hyphae absent.  
56
56a. Thick-walled cystidia present, multi-radicate, covered with dendritically branched hyphae.  
Tubulicium
56b. Multi-radicate thick-walled cystidia absent.  
57
57a. Basidia distinctly urniform.  
Galzinia
57b. Basidia not distinctly urniform.  
58
58a. Basidia up to 20 μm long.  
59
59b. Basidia at least 25 μm long.  
60
59a. Dendrohyphidia richly branched.  
Crustomyces
59b. Hyphidia rare, simple or once or twice branched.  
Pteridomyces
60a. Basidiocarp develops under the bark, which rolls up.  
Vuilleminia
60b. Basidiocarp develops on the substratum.  
61
61a. Dendrohyphidia richly branched.  
Dendrothele
61b. Hyphidia simple or rarely branched.  
Cerocorticium
Digitatisspora
63
63a. Zygonocondia present (Syzygospora) and/or species parasitic on higher basidiomycetes.  
Christiansenia
64
64a. Spores with distinctly thickened walls, smooth, often coloured.  
65
64b. Spores thin-walled or ornamented.  
86
65a. Clamps absent or rare.  
66
65b. Clamps present at nearly all primary septa.  
73
66a. Spores up to 6(–6.5) μm long.  
67
66b. Spores at least on average longer than 6.5 μm.  
69
67a. Basidiocarp poroid or hymenial surface bluish, greenish or olivaceous.  
Byssocorticium
67b. Basidiocarp not poroid. Hymenial surface cream, yellowish or brown.

68a. Clamps completely absent.  
Piloderma
68b. Clamps present in hymenium and subhymenium.  
Aethelia
69a. Cystidia septate, yellowish to brown, with thickened walls.  
70  
70b. Septate cystidia absent.  
71
70a. Spores globose to subglobose.  
Membranomyces
71a. Hymenial surface yellowish to brown.  
Coniophora
71b. Hymenial surface reddish or violaceous when fresh.  
Erythricium
72a. Spores at least 9 μm long. Hymenial surface reddish.  
Hypochnella
72b. Spores 6–8 μm long. Hymenial surface violaceous.  
Bulbillomyces
73a. Thick-walled cystidia and bulbils (Aegerita) present.  
74
73b. Thick-walled cystidia and bulbils absent.  
74a. Spores fusoid, 12–25 μm long.  
Jaapia
74b. Spores globose to ellipsoid, smaller.  
75
74c. Spores similar to those of 73a.  
76
75a. Hymenial surface merulioid when dry.  
75b. Hymenial surface even to hydnoid when dry, rarely slightly merulioid when fresh.  
77
76a. Skeletoid hyphae present, but sometimes only in hyphal strands. Spores at least 8 μm long, on average longer.  
Serpula
76b. Skeletoid hyphae absent. Spores up to 8 μm long, on average shorter.  
Leucogyrophana
77a. Spores becoming violet in KOH. Hymenial surface with greenish tinge.  
Hypochnopsis
77b. Spores not violet in KOH.  
78
78a. Basidia distinctly stalked. Spores often subangulate.  
Intextomyces
78b. Basidia not stalked. Spores not subangulate.  
79
79a. Hymenial surface bluish, greenish or olivaceous or basidiocarp poroid.  
Byssocorticium
79b. Hymenial surface not bluish, greenish or olivaceous and basidiocarp not poroid.  
80
80a. Spores subglobose to broadly ellipsoid, 2.8–3.5 × 2–2.5 μm.  
Ceraceomyces
80b. Spores larger.  
81
81a. Septate cystidia absent.  
82
81b. Septate cystidia present.  
83
82a. Basidia up to 25 μm long.  
82b. Basidia at least on average longer than 25 μm.  
83
83a. Cystidia present.  
Lagarobasidium
83b. Cystidia absent, but cystidioles rarely present.  
84
84a. Immature basidia with cyanophilous granulation.  
Cristinia
84b. Basidia never with cyanophilous granulation.  
Lepiosporomyces
85a. Hymenial surface hydnoid.  
Sarcoodontia
85b. Hymenial surface not hydnoid.  
220
86a. Lyocystidia (dissolving or distorting in KOH) present, often bi- or multi-radicate. 87
86b. Lyocystidia absent. Cystidia, when present, rarely multi-radicate. 89
87a. Cystidial inner wall immediately dissolving in KOH. **Tubulicrinis**
87b. Cystidial wall swelling in KOH. 88
88a. Cystidia conical, multi-radicate, often ensheathed by simple or dendritic hyphae. **Tubulicrinis**
88b. Cystidia cylindrical, not multi-radicate, not ensheathed. **Dacryobolus**
89a. Spores ornamented, at least in Melzer’s. 90
89b. Spores smooth. 105
90a. Pleurobasidium present. Basidiocarp thin, gelatinous to ceraceous. 91
90b. Pleurobasidium absent. Basidiocarp hypochrome to membranaceous. 92
91a. Basidia with 2 sterigmata. Spores angular-pyramidal. **Xenosperma**
91b. Basidia with (2–)4 sterigmata. Spores not angular. **Xenasma**
92a. Basidiocarp green with 10% FeSO₄. 93
92b. Basidiocarp not green with FeSO₄. 94
93a. Hymenial surface hydnoid. **Kavinia**
93b. Hymenial surface even to warted. **Ramaricium**
94a. Spores dichotomously warted. Basidia often sphaeropedunculate when immature. 95
94b. Spores not dichotomously warted. Immature basidia not sphaeropedunculate. 96
95a. Long brown septate cystidia present. **Tomentellina**
95b. Cystidia absent. **Pseudotomentella**
96a. Spores with crest-like ornamentation. **Lindtneria**
96b. Ornamentation regular, not crest-like. 97
97a. Clamps present at all primary septa or at least on the basidia and sub-hymenial hyphae. 98
97b. Clamps absent or scattered on subicular hyphae. 102
98a. Clamps lacking at many subicular hyphae. **Cyanobasidium**
98b. Clamps present at all primary septa. 99
99a. Hyphae with distinct swellings at a number of septa (amphullate). Basidia usually up to 20 µm (in some species up to 30 µm). Spores hyaline. **Treichispora**
99b. Septa not ampullate or basidia large and spores brownish. 100
100a. Hymenial surface coloured (yellowish, brownish, pink, green, blue, violaceous or blackish). Spores typically coloured. **Tomentella**
100b. Hymenial surface white to cream, rarely yellowish brown. Spores hyaline. 101
101a. Spores regular, subglobose to broadly ellipsoid. Basidia at least 25 µm long, on average longer. **Hypochnymium**
101b. Spores irregular, lobed or triangular. Basidia up to 25 µm long, on average shorter. **Tylospora**
102a. Spores up to 7(–7.5) µm long or in diam. 103
102b. Spores at least 7 µm in diam., on average more. 104
103a. Spores becoming blue in KOH.
103b. Spores never blue in KOH.
104a. Subicular hyphae 8–12 μm wide. Hymenial surface whitish to ochraceous.
104b. Subicular hyphae up to 5(–8) μm wide. Hymenial surface with brown tinges.
105a. Sterigmata at least 10 μm long and/or spores repetitive.
105b. Sterigmata up to 10 μm long. Spores not repetitive.
106a. Clamps present.
106b. Clamps absent.
107a. Basidia with 4 sterigmata.
107b. Basidia with (1–)2(–3) sterigmata.
109a. Basidia more or less globose. Cystidia absent.
109b. Basidia clavate to cylindrical or ovoid, but then cystidia present.
110a. Basidia 50–100 μm long.
110b. Basidia shorter.
111a. Cystidia present.
111b. Cystidia absent.
112a. Hyphal system dimitic or seemingly dimitic.
112b. Skeletal or skelletoid hyphae absent.
113a. Hyphae with brown incrustations, turning green in KOH. Boreostereum
113b. Incrustation when present not green in KOH.
114a. Cystidia thick-walled, often encrusted.
114b. Cystidia absent or thin-walled, sometimes with cap of resinous material.
115a. Hymenial surface irpicoid to hydroid.
115b. Hymenial surface even.
116a. Clamps present.
116b. Clamps absent.
118a. Spores at least 8.5 μm long. Cystidia brown.
118b. Spores up to 6.5 μm long. Cystidia hyaline.
119a. Skeletal hyphae dextrinoid.
119b. Skeletal hyphae not dextrinoid.
120a. Gloeocystidioidea vesicles present.
120b. Gloeocystidioidea vesicles absent.
121a. Hymenial surface even or meruloid.
121b. Hymenial surface warted, hydnoid, irpicoid or poroid.
123a. Skeletoid hyphae mainly in the axis of the spines. Hymenial surface hydnoid, spines slender.

Lazulinospora
Tomentellopsis
Botryohypochmus
Tomentella
Oliveonia
Galzinia
Ceratobasidium
Laeticorticium
Thanatephorus
Steccherinum
Irpex
Loparia
Columnocystis
Fibricium
Scytinostroma
Cystostereum
Merulicium
Fibricellum
Mycoaciella
123b. Skeleotid hyphae not confined to the axis of the teeth. Hymenial surface warted to irpicid or poroid.  
124a. Hymenial surface warted to odontoid.  
Fibrodontia
124b. Hymenial surface irpicid to poroid (not treated).  
Schizopora
125a. Basidia pleurobasidious and/or ovoid, pyriform or conical, but not constricted in the middle, sometimes repeating. Basidiocarp thin, sub-invisible when dry.  
126b. Spores not angular. Basidia normally with 4 sterigmata.  
127a. Basidia formed in linear succession; empty walls of preceding basidia visible.  
Repetobasidium
127b. Basidia not repeating.  
128a. Basidia subglobose, stalked, not pleurobasidious. Cystidia when present capitate, swollen at the base.  
Sphaerobasidium
Xenasma
129a. Many septa with distinct swellings (ampullate septa).  
130b. Hyphae not ampullate at the septa.  
131a. Basidiocarp green with 10% FeSO4.  
131b. Basidiocarp not green in 10% FeSO4.  
132a. Hymenial surface hydnoid.  
Kavinia
131b. Hymenial surface even.  
Ramaricium
132a. Basidia urniform.  
Sistotrema
132b. Basidia cylindrical to suburniform.  
Trechispora
133a. Thick-walled, conical, encrusted cystidia (lamprocystidia) present.  
133b. Lamprocystidia absent.  
134a. Septate, thick-walled cystidia projecting from the apex of the teeth.  
Scopuloides
134b. Septate cystidia absent.  
135a. Hymenial surface coloured, with pink, reddish, violaceous, greyish or brownish tinges.  
Peniophora
135b. Hymenial surface whitish or pale coloured.  
136a. Clamps present at all or nearly all septa.  
136b. Clamps absent or rare and confined to the basal hyphae.  
137a. Bulbils present.  
Bulbillomyces
137b. Bulbils absent.  
138a. Basidia cylindrical to narrowly clavate. Spores rarely exceeding 7.5 μm in length.  
Phlebia
138b. Basidia clavate to typically suburniform. Spores at least 7 μm long. (except H. karstenii).  
Hyphoderma
139a. Basidiocarp ceraceous, hymenium not separable from subiculum.  
Phlebiopsis
139b. Basidiocarp pellicular to membranaceous, when slightly ceraceous then hymenium separable from subiculum. (Cf. also Phlebiopsis roume-guerii) 
Phanerochaete
140a. Cystidia projecting and projecting part septate (septocystidia) (excl. apical hyphae in teeth).
141
140b. Septocystidia absent.
146
141a. Clamps absent.
142
141b. Clamps present.
143
142a. Basidiocarp hypochaenoid to pellicular. Spores subcylindrical, 3–5 μm broad. Candelabrophylla
142b. Basidiocarp membranaceous. Spores allantoid, 1.5–2 μm broad.

Phanerochaete

143a. Spores up to 6(–6.5) μm long.
144
143b. Spores at least 7 μm long.
145
144a. Hymenial surface even, yellowish. Yellow hyphal strands present, at least in the subiculum. Amphinema
144b. Hymenial surface even to odontiod. Hyphal strands absent. Kneiffiella
145a. Basidia clavate to subcylindrical. Spores ellipsoid to cylindrical.

Hyphoderma
Suillusporium

146a. Clamps absent or rare and then only at the basal hyphae (when the distribution is different, the species is keyed out both ways).
147
146b. Clamps present at nearly all septa.
148
147a. Basidia with 2 sterigmata.
149
147b. Basidia with (2–)4 sterigmata.
150
148a. Spores navicular.
151
148b. Spores ellipsoid.
149
149a. Spores at least 20 μm long.
150
149b. Spores up to 6 μm long.

Laeticorticium
Kneiffiella

150a. Hymenial surface warted, odontiod or hydnoid.
151
150b. Hymenial surface even, merulioid or poroid.
152
151a. Basidia up to 20 μm long.
153
151b. Basidia larger.
154
152a. Spores at least 7 μm long.
155
152b. Spores up to 6 μm long.

Odonticum
Hyphoderma

153a. Spores subglobose to broadly ellipsoid. Hyphae up to 3.5 μm wide.

Radulodendron

153b. Spores narrowly ellipsoid, when broadly ellipsoid then subicular hyphae up to 8 μm wide.

Phanerochaete

154a. Hymenial surface meruliod to poroid.
155
154b. Hymenial surface even to slightly tuberculate.
156
155a. Cystidia present.
155b. Cystidia absent.
156
156a. Cystidia subulate, thick-walled.
157
156b. Cystidia not subulate and thick-walled.

Oliveonia

157a. Sterigmata about half as long as the basidia.
157b. Basidia at least four times as long as the sterigmata.  
158a. Hymenium rather easily separable from subiculum.  
158b. Hymenium not separable from subiculum.  
159b. Basidiocarp membranaceous to subceraceous. Basidia often larger than 25 μm.  
160a. Basidiocarp ceraceous. Spores up to 5.5 μm long.  
160b. Basidiocarp membranaceous. Spores at least 8 μm long.  
161a. Basidia always with clamps at the base. Spores subfusciform.  
161b. Basidia lacking clamps at the base; if rarely so, then spores broadly ellipsoid.  
162a. Basidiocarp pellicular.  
162b. Basidiocarp membranaceous.  
163a. Basidia up to 25 μm long, narrowly clavate to cylindrical. (When basidia subglobose to pyriform or broadly clavate, cf. *Ceratobasidium*)  
163a. Basidia at least 25 μm long.  
164a. On grasses, parasitic. Apart from basidiocarp also pink hyphal fascicles are formed, 1–10 mm long.  
164b. On wood, saprophytic or rarely parasitic. Pink fascicles absent.  
165b. Basal hyphae thin-walled. Spores somewhat thick-walled.  

**Membranomyces**  
166a. Basidia with 1–2(–3) sterigmata.  
166b. Basidia normally with 4 sterigmata.  
167a. Basidiocarp pellicular.  
167b. Basidiocarp pruinose, membranaceous or ceraceous, sometimes hardly visible when dry.  
168b. Basidia up to 25 μm long, when longer gloeocystidia absent.  
169a. Basidiocarp ceraceous to gelatinous.  
169b. Basidiocarp not ceraceous or gelatinous.  
170a. Hymenial surface merulioid to poroid.  
170b. Hymenial surface even to tuberculate, odontioid, raduloid or hydnoid.  

**Ceraceomyces**  
171a. Hymenial layer easily separable from subiculum.  
171b. Hymenial layer not separable.  
172a. Basidiocarp effused.  
172b. Basidiocarp typically effused-reflexed.  
173a. Cystidia apically swollen, with large resinous bubble or halo.  
173b. Cystidia when present not with resinous halo.  
174a. Hymenial surface odontioid to raduloid or hydnoid.  

**Resinicum**
174b. Hymenial surface even to tubercululate.  
175a. Spores at least 7.5 μm long.  
175b. Spores up to 7.5 μm long.  
176a. Spores subglobose to broadly ellipsoid.  
176b. Spores narrowly ellipsoid to allantoid.  
177a. Spines 1–3 mm long.  
177b. Spines up to 0.5 mm long.  
178a. At least some cystidia with an apical bulb.  
178b. Cystidia never with an apical bulb.  
179a. Hymenial layer easily separable from subiculum.  
179b. Hymenial layer not easily separable.  
181a. Basidia clavate to nearly cylindrical.  
181b. Basidia subglobose or ovoid to urniform.  
182a. Basidia broadly clavate to stalked-clavate, at least 6 μm wide.  
182b. Basidia narrowly clavate to nearly cylindrical, up to 6 μm wide.  
183a. Cystidia thick-walled, cylindrical. Spores cylindrical to narrowly ellipsoid, up to 3.5 μm wide.  
183b. Cystidia absent or thin-walled (when rarely with thickened walls, then spores at least 3.5 μm wide.  
184a. Basidia subglobose to ovoid.  
184b. Basidia distinctly urniform.  
185a. Hymenial surface odontoid, raduloid or hydnoid.  
185b. Hymenial surface even to tubercululate or minutely reticulate.  
186a. Basidia up to 25 μm long and spores up to 8 μm long.  
186b. Basidia at least 25 μm long or spores more than 8 μm long.  
187a. Gloecystidia present.  
187b. Gloecystidia absent.  
188a. Spores narrowly allantoid, 5–6 × 1.5 μm.  
188b. Spores broader.  
189a. Spores subglobose to broadly ellipsoid.  
189b. Spores narrowly ellipsoid, cylindrical or allantoid.  
190a. Moniliform (toruloid) cystidia present.  
190b. Moniliform cystidia absent.  
191a. Basidia suburniform. Spores up to 7.5 μm long.  
191b. Basidia stalked-clavate or clavate. Spores 9–11 μm long.  
192a. Cystidia subulate, with longitudinal rows of crystals, often bifurcate at the base. Basidia sometimes repeating.  
192b. Cystidia without longitudinal rows of crystals, not bifurcate. Basidia never repeating.  
193a. Spores fusiform, navicular or biapiculate.
193b. Spores not fusiform, navicular or biapiculate.
194a. Thick-walled cylindrical cystidia present. Basidia more than 50 μm long.

Chaeotoderma

194b. Cystidia thin-walled when present. Basidia up to 25 μm long.
195a. Cystidia present, some with an apical bulb.
195b. Cystidia absent.
196a. Basidia broadly clavate to pyriform, 6–9 μm wide. Spores at least 7 μm long.
196b. Basidia clavate to subcylindrical, 4.5–6 μm wide. Spores up to 6.5 μm long.

Luella

197a. Clamps not at all septa.
197b. Clamps at all primary septa.

Hyphodontiella


Hyphodontiella

198b. Spores globose, ovoid, ellipsoid or cylindrical. Basidia rarely with clamps at the base, broadly clavate. Basidiocarp pellicular. (If basidia narrowly clavate and basidiocarp membranaceous-ceraceous, cf. Phlebia)

Atheia

199a. Spores triangular.
199b. Spores even in outline.
200a. Basidiocarp pellicular, hymenium easily separable from subiculum.
200b. Basidiocarp membranaceous to crustaceous.
201a. Basal hyphae cinnamon brown.
201b. Basal hyphae hyaline to yellowish.

Leptosporomyces

202a. Basidia 6–12 μm long.
202b. Basidia longer.
203a. Basidia broadly clavate or stalked. Subhymenial hyphae few.
203b. Basidia narrowly clavate to cylindrical. Subhymenial hyphae abundant.

Confertobasidium

204a. Basidia stalked (podobasidia).
204b. Basidia never stalked.
205a. Basidia up to 20 μm long.
205b. Basidia longer than 20 μm, at least on average.
206a. Hymenial surface distinctly blue or blue-green.
206b. Hymenial surface not blue.
207a. Basidiocarp consisting of minute globules.
207b. Basidiocarp not consisting of minute globules.

Mycostigma

208a. Subhymenial cells short, conical.
208b. Subhymenial cells cylindrical.

Conohypha

209a. Basidia subbuniform.
209b. Basidia clavate to cylindrical.
210a. Basidia up to 20 μm long.
211a. At least some cystidia with an apical bulb.
211b. Cystidia never with an apical bulb.
212a. Sulpho-positive gloeocystidia present.  
212b. Sulpho-positive gloeocystidia absent.  
213a. Basidia up to 20 μm long.  
213b. Basidia at least 20 μm long.  
214b. Cystidia present.  
215a. Basidia 8–12 μm long.  
216a. Thick-walled cystidia present.  
216b. Thick-walled cystidia absent.  
217a. Spores narrowly allantoid, up to 1.5 μm wide. Cystidia swelling in KOH.  
217b. Spores ellipsoid to subcylindrical, at least 2.5 μm wide. Cystidia not swelling in KOH.  
218b. Spores not pyriform. Basidia narrowly to broadly clavate.  
219a. Basidia broadly clavate or stalked-clavate, at least 6.5 μm wide. Spores at least 5 μm wide.  
219b. Basidia narrowly clavate, up to 6.5(–7) μm wide. Spores up to 3.5(–4.5) μm wide.  
220a. Hymenium easily separable from subiculum.  
220b. Hymenium not easily separable from subiculum.  
221a. Spores ellipsoid and/or becoming grey in Melzer’s.  
221b. Spores globose to ovoid, not becoming grey in Melzer’s.  
222a. Spores slightly yellowish.  
222b. Spores hyaline.
Description of genera and species

ALEUROCYSTIDIELLUM Lemke 1964

Basidiocarp annual or perennial, discoid or effused-reflexed, with thick margins. Hymenial surface even. Hyphal system dimitic with skeletal hyphae. Generative hyphae with clamps. Skeletal hyphae hyaline. Skeletocystidia present, originating from skeletal hyphae, encrusted. Basidia cylindrical to sub-clavate, large. Spores hyaline, ellipsoid or ovoid, minutely warted in Melzer’s, large, with thick walls, amyloid.

Substrate: saprophytic on wood of gymnosperms.
Type species: Stereum subcruentatum Berk. & Curt. 1858
Distribution: in the whole area.
References: 230.

Monotypic. Basidiocarp 0.2–1.6 mm thick. Abhymenial surface greyish brown, light-buff towards the margin, sometimes concentrically zoned. Hymenial surface cream-buff with greyish tinge. Generative hyphae 1.5–4 \( \mu \)m wide. Skeletal hyphae hyaline to yellowish in KOH, 2–6 \( \mu \)m wide. Skeletocystidia cylindrical, thick-walled, 3.5–6 \( \mu \)m wide, encrusted, the incrustation dissolving in KOH. Simple hyphidia scattered, thin-walled, 3–4 \( \mu \)m wide. Basidia flexuous-cylindrical to narrowly clavate, 55–90(–110) \( \times \) 8–12 \( \mu \)m. Spores ovoid to broadly ellipsoid, (12–)15–18(–20) \( \times \) (10–)11–15(–16) \( \mu \)m, the wall up to 2 \( \mu \)m thick.
Distr.: whole area. Ref.: 230.
A. subcruentatum (Berk. & Curt.) Lemke 1964
Syn.: Aleurodiscus stereoides Yasuda apud Lloyd 1921; A. scutellatus Litsch. 1926

ALEURODISCUS Rabenh. ex Schroet. apud Cohn 1888


Basidiocarp annual or perennial, resupinate, effused, discoid or cyphelloid, initially separate, later often confluent and effused, rarely effused-reflexed, pruinose, pulverulent or ceraceous. Margin adnate to reflexed. Hymenial
surface even, whitish, cream-coloured or buff, often with orange, reddish or greyish tinges. Hyphal system typically monomitic, rarely dimitic. Hyphae hyaline, with or without clamps, with thin or thickened walls. Acanthohyphidia, dendrohypidia and gloecystidia often present. Basidia typically large, single, with (2–)4 sterigmata. Spores hyaline, medium-sized to large, thin- to thick-walled, smooth or ornamented (ornamentation soluble in KOH), globose, ovoid, ellipsoid or allantoid, amyloid.

Substrate: saprotypic or parasitic on bark or undecayed wood of angiosperms and gymnosperms.

Type species: *Peziza amorpha* Pers. ex Purt. 1821

Distribution: in the whole area.

References: 113, 230.

Note: The genus is here treated in a rather broad sense. Some authors prefer to split it into several genera, the provisional limits of which are indicated in the key by placing the generic name between brackets.

1a. Acanthohyphidia present. 2
1b. Acanthohyphidia absent (*Aleurodiscus* s.str.). 24

2a. Spores smooth (*Acanthophysellum*). 3
2b. Spores ornamented, at least in Melzer’s (*Gloeosoma*). 15

3a. Spores subglobose to broadly ovoid or broadly ellipsoid, length-width ratio <1.35 (cf. also the 2-spored *A. canadensis* under 8a). Acanthohyphidia faintly amyloid. Gloecystidia sulpho-negative. 4
3b. Spores ovoid, ellipsoid or cylindrical, length-width ratio >1.5. Acanthohyphidia not amyloid. Gloecystidia sulpho-positive (except sometimes *A. cerussatus*). 6

*A. abietis* H.S. Jacks. & Lemke apud Lemke 1964

4b. Spores ovoid to ellipsoid, up to 15 μm broad. 5

Basidiocarp orbicular to discoid, sometimes becoming confluent and effused. Hymenial surface ochraceous buff with pinkish or greyish tinges. Hyphae thin- to thick-walled, 3–4.5 μm wide, without clamps. Acanthohyphidia cylindrical to clavate, often thick-walled,


A. piceinus Lyon & Lemke apud Lemke 1964


A. farlowii Burt 1918

6a. Spores at least longer than 12 μm on average. 7

6b. Spores up to 12 μm long, on average smaller. 11

7a. Spores at least 7 μm broad. 8

7b. Spores up to 7 μm broad. 10

8a. Clamps present. Basidia with (1–)2(--3) sterigmata.


A. canadensis Skolko 1944

8b. Clamps absent. Basidia with (2–)4 sterigmata.


A. fennicus Laurila 1939

Syn.: Aleurodiscus vleugelii Litsch. 1944

9b. On angiosperms, mainly Ericaceae. Spores ellipsoid to subcylindrical, 14–16 × (6.5–)7–8(--9) μm.

Basidiocarp effused, pruinose to subfetid. Hymenial surface cream to ochraceous buff. Hyphae with thin to thickened walls, 2.5–4.5 μm.

A. macrocystidiatius Lemke 1964

10a. Aculeate parts of acanthohyphidia thick-walled to solid, yellowish in KOH, not amyloid.


A. diffissus (Sacc.) Burt 1931

Syn.: Stereum sajanensis Murashk. ex Pilát 1931

10b. Aculeate parts of acanthohyphidia thin-walled, hyaline in KOH, slightly amyloid.


A. succineus Bres. 1925

11a. Clamps absent or very rare. Skeletoid hyphae present.


A. fruticutorum W.B. Cooke 1943

11b. Clamps present at nearly all primary septa. Skeletoid hyphae absent. 12
12a. Spores at least in average longer than 8 μm.

12b. Spores up to 7.5(−8) μm long.

13a. Spores ellipsoid, (7−)8−10(−11) × (4.5−)5−6(−7) μm.
Basidiocarp effused, subcoriaceous to crustose. Hymenial surface white to yellowish or grey, ochraceous when dry. Hyphae with thin to thickened walls, 2−4 μm wide, with clamps. Acanthohyphidia thin- to apically thick-walled, apically 2.5−6 μm wide. Gloeostictidia subcylindrical, 30−65(−85) × 5.5−12(−14) μm, often with monilioid apex. Basidia clavate, 30−50 × 6−8(−9) μm. On angiosperms, rarely on gymnosperms.
A. cerussatus (Bres.) Höhn. & Litsch. 1907

13b. Spores ellipsoid, (8−)10−12(−13) × (5.5−)6−8(−8.5) μm.
Basidiocarp effused, pruinose to subcoriaceous. Hymenial surface greyish to drab or ochraceous buff. Hyphae with thin to thickened walls, 2−4.5(−6) μm wide, with clamps. Acanthohyphidia thin- to apically thick-walled, apically 3−5 μm wide. Simple hyphidia may be present. Gloeostictidia subcylindrical, 40−90 × 5−10(−12) μm, often monilioid at the apex. Basidia clavate, 40−70 × (8−)10−12 μm. On angiosperms.
A. lapponicus Litsch. 1944

14a. Spores subcylindrical, 5.5−7.5(−8) × 2.5−3.5(−4) μm. Hymenial surface with bluish tinges, becoming plumbeous to bluish black, but locally sometimes palid or ochraceous with blue tinge.
Basidiocarp effused, membranaceous to subcoriaceous. Hyphae with thin to thickened walls, 2−3.5 μm wide, with clamps, often covered with blue granules. Acanthohyphidia thin-walled, 3−5 μm wide. Gloeostictidia cylindrical, 25−80 × (4.5−)6−12 μm, often with monilioid apex. Basidia clavate, (15−)20−25(−30) × 4−5(−5.5) μm. On gymnosperms, rarely on angiosperms.
A. lividocorius (P. Karst.) Lemke 1964

14b. Spores D-shaped, (5.5−)6−7.5(−8) × (3−)3.5−4.5 μm, often adhering in groups of four. Hymenial surface cream to buff, rimose.
Basidiocarp effused, pruinose to subcoriaceous. Hyphae with thin to thickened walls, 3−4.5 μm wide, with clamps. Acanthohyphidia thick-walled in the aculeate part, up to 4 μm wide. Gloeostictidia cylindrical to ampulliform with an apical bulb, (30−)40−60(−80) × 7−12(−14) μm. Basidia clavate, about 40 × 6 μm. On angiosperms.
A. bertii Lloyd 1924
Syn.: Aleurodiscus cremeus Burt 1918, non ~ Pat. 1915
15a. Spores up to 15 µm long.
15b. Spores at least 15 µm long.

16a. Acanthohyphidia delicately branched at their apices (botryose), branches with amyloid granulation.
   Basidiocarp effused, pruinose to pulverulent. Hymenial surface white to pale buff, sometimes rimose. Hyphae thin-walled, 2–3.5 µm wide, without clamps. Gloeocystidia clavate to cylindrical or fusiform, 35–90 × 7–12 µm, sulpho-positive. Basidia clavate to subclavate, 38–68 × 10–12 µm. Spores ovoid, 12–15 × (7–)8–11 (–12) µm, often adhering in groups of two or four. On angiosperms and gymnosperms.
   Distr.: whole area. Ref.: 230.

A. botrysus Burt 1918

16b. Acanthohyphidia not botryose, without amyloid granulation.


18a. Spores (10–)11.5–14(–16) × (9–)9.5–12(–13) µm.
   Basidiocarp effused, pruinose to farinose-pulverulent. Hymenial surface whitish, becoming cream to buff when dry, rimose. Hyphae thin- to thick-walled, 1.5–5(–6) µm wide, with clamps. Acanthohyphidia (sub)clavate, thin-walled, some aculeate parts thick-walled. Gloeocystidia cylindrical to subclavate, 50–85 × 4–7 µm, often with an apical bulb, yellowish to brown in KOH. Basidia cylindrical to subclavate, 60–90 × 10–13 µm.

A. spiniger D.P. Rogers & Lemke apud Lemke 1964

18b. Spores up to 10 µm long.

19a. Spores 8–10 × (7.5–)8–9 µm, warted to echinulate. Mainly on Abies and Picea.
   Basidiocarp effused, pruinose to farinose-pulverulent. Hymenial surface whitish, becoming cream to buff when dry, rimose. Hyphae thin- to slightly thick-walled, 1.5–4 µm wide, with clamps. Acanthohyphidia with thin- to thickened walls, apically up to 7 µm wide. Gloeocystidia cylindrical to subclavate, 30–80(–100) × 5–7(–10) µm, often with an apical bulb, yellowish in KOH. Basidia 55–70 × 8–10 µm.

A. laurentianus H.S. Jacks. & Lemke apud Lemke 1964

Basidiocarp effused, pruinose to farinose-pulverulent. Hymenial surface whitish when fresh, becoming cream to buff, rimose. Hyphae thin- to thick-walled, 1.5–4 μm wide, with clamps. Acanthohyphidia thin- to thick-walled, aculate parts up to 6 μm wide. Gloeocystidia cylindrical, 55–80 × 5–6(–8) μm, rarely with an apical bulb, yellowish in KOH. Basidia 30–45 × 5–7 μm.


A. weirii Burt 1918


A. norvegicus J. Erikss. & Ryv. 1973


A. delicatus Wakef. 1952

Note: The insufficiently known Aleurodiscus apricus Bourdot 1910 also keys out here. The species has gloeocystidia with apical constrictions. Bourdot & Galtin (32) mention collections on Calluna and Pteris.


Basidiocarp at first discoid, becoming confluent and effused, pruinose-pulverulent to subcoriaceous, margin often reflexed. Hymenial surface cream to ochre, often with pinkish tinge, rimose to cracked when dry. Abhymenial surface tomentose, with acanthohyphidia. Hyphae thin- to thick-walled, 2–3.5(–5) μm, with clamps. Acanthohyphidia (4–)6–8 μm wide. Gloeocystidia cylindrical, 70–150 × 7–15 μm, yellowish in KOH, Basidia clavate, 80–160 × 16–24 μm, sterigmata up to 24 μm long. On angiosperms.


A. mirabilis (Berk. & Curt.) Höhn. 1909

Syn.: Corticium peradeniae Berk. & Br. 1873; Aleurodiscus javanicus P. Hoff. 1900; A. usambarensis P. Hoff. 1904; A. spinulosus P. Hoff. 1905; A. apiculatus Burt 1918; A. japonicus Yasuda 1919; A. alboroseus Bres. 1920; A. peteloti
21b. Acanthohyphidia cylindrical to clavate, only the upper half covered with aculei. Gloeocystidia sulpho-negative. Spores globose to ovoid or ellipsoid, never D-shaped or biapiculate.

   A. penicillatus Burt 1918

22b. Clamps absent or present, but not at all primary septa. Gloeocystidia without globose particle. Basidia not aculeate. On angiosperms.

23a. Clamps absent or very rare. Subicular hyphae partly skeletonized. Gloeocystidia typically thick-walled, 4.5–6(–8) μm wide, cylindrical, often with monilioid apex.
   Basidiocarp at first discoid to cyphelloid, later often confluent, subcoriaceous or pulverulent. Hymenial surface avellaneous to ochraceous-buff, often with greyish tinges. Abhymenial surface white when fresh, becoming pallid. Hyphae thin- to thick-walled, 2.5–4.5 μm wide. Acanthohyphidia cylindrical to subclavate, 4–6 μm wide. Basidia 75–120 × 12–15.5(–20) μm. Spores ovoid to ellipsoid, (16–)18–25(–27) × (10–)12–14(–17) μm.
   A. oakesii (Berk. & Curt.) Höhn. & Litsch. 1907

23b. Clamps not rare, abundant in subhymenium, occasional in subiculum. Subicular hyphae thick-walled. Gloeocystidia typically thin-walled, 4–8.5 μm wide, cylindrical, often with monilioid apex.
   Basidiocarp discoid, later often confluent, pulverulent to subcoriaceous. Hymenial surface isabelline, often with pinkish tinge, becoming avellaneous to buff. Hyphae thin- to thick-walled, 2.5–5.5 μm wide. Acanthohyphidia (sub)clavate, 4–7(–10.5) μm wide. Basidia (60–)100–160(–200) × 12.5–20 μm. Spores ovoid to ellipsoid, (17–)19.5–24(–29) × (12.5–)14–18(–20) μm.
   A. wakefieldiae Boldin & Beller 1966

24a. Spores ornamented in Melzer’s.

24b. Spores smooth in Melzer’s.

25b. Dendrophyidia, when present, not botryose and without amyloid granulation.

26a. Clamps present.

26b. Clamps absent.


Hymenial surface even to slightly warty, whitish to cream, often with greyish tinges, becoming buff. Hyphae thin- to thick-walled, 2.5–4.5 μm wide. Simple hyphidia may be present. Basidia 60–90 × 10–12(–14) μm. Spores subglobose to ovoid or ellipsoid, (13–)15–18(–20) × (8.5–)10–14(–16) μm.


*A. disciformis* (DC. ex Fr.) Pat. 1894

Syn.: *Thelephora castaneae* Schlechter 1815

27b. Basidiocarp effused, pruinose to pulverulent, cracked when dry. Gloeocystidia sulpho-negative, 24–45 × 5.5–12 μm, typically with one apical bulb. On gymnosperms, mainly Tsuga.

Hymenial surface even, whitish to cream or buff. Hyphae thin-walled, 1.5–2.5 μm wide. Simple or scarcely branched hyphidia typically present. Basidia 55–75 × 16–18 μm. Spores ovoid to ellipsoid, (13–)15–22(–27) × 10–17(–20) μm.


*A. tsugae* Yasuda apud Lloyd 1921


*A. amorphus* (Pers. ex Purt.) Schroet. 1888

Syn.: *Nodularia balsamica* Peck 1872; *Aleurodiscus grantii* Lloyd 1920.


**A. aurantius** (Pers. ex Fr.) Schroet. 1888

Syn.: *Thelephora rubi* Libert 1837; *Corticium marchandii* Pat. 1883; *C. angulatum* Britz. 1897.

29a. Spores subglobose to ellipsoid or D-shaped, 18–22(–24) × 14–19 μm. On angiosperms.


**A. ljubarskii** Parm. 1967

29b. Spores ovoid to broadly ellipsoid, 9–13(–14) × 6–8.5 μm. On gymnosperms.

Basidiocarp effused, pellicular to soft membranaceous. Hymenial surface even, cream-coloured to yellowish-ochraceous. Hyphae thin-to slightly thick-walled, 2–3.5 μm wide, with clamps. Hyphidia often present, not or rarely branched. Cystidia and gloeocystidia absent. Basidia 25–45 × 6–8.5 μm.


**A. amylaceus** (Bourd. & Galz.) D.P. Rogers & H.S. Jacks. 1943

Syn.: *Corticium ermineum* Burt 1926; *C. sociatum* Burt 1926

**AMPHINEMA** P. Karst. 1892

Syn.: *Diagonema* P. Karst. 1889, non – G. Don 1837

Basidiocarp annual, resupinate, effused, pellicular with a subiculum of loosely interwoven hyphae, rarely membranaceous and closely adnate; rhizomorphs present. Hymenial surface even, appearing hispid through a lens owing to the far projecting cystidia. Hyphal system monomitic. Hyphae yellowish, rarely hyaline, more or less thin-walled, with clamps, often covered with small granules. Cystidia yellowish, rarely hyaline, hyphoid, cylindrical, slightly thick-walled, with several clamped septa, densely covered with small granules. Basidia subniform or clavate, with 4 sterigmata. Spores hyaline, small, thin-to slightly thick-walled, smooth, often guttulate, not amyloid.

Substrate: saprophytic on plant debris.

Type species: *Diagonema sordescens* P. Karst. 1889

Distribution: in the whole area.

References: 113.
Amylocorticium

Monotypic. Basidiocarp effused, soft-membranaceous or often pellicular, loosely adnate; yellowish (rarely white) rhizomorphs often present. Hymenial surface even, cream-coloured, rarely white, hispid. Hyphae yellowish, rarely hyaline, more or less thin-walled (0.2–0.3 μm), 2–4 μm wide, with clamps throughout, the surface often granulose. Basidia cylindrical, suburniform or clavate, mostly smooth, but sometimes covered with small granules, hyaline to yellowish, 20–25 × 4–5 μm, with 4 sterigmata 2–3 μm long. Spores hyaline, ellipsoid, thin- to very slightly thick-walled (c. 0.3 μm), 4–4.5 × 2–2.5 μm, often 1-guttulate, with small, lateral apiculus; not or only slightly cyanophilous.

Distr.: whole area. Ref.: 66, 113, 368.

Amphinema byssoides (Pers. ex Fr.) J. Erikss. 1958
Syn.: Corticium lacunosum Berk. & Br. 1873; Hypochirus muscorum Schröt. apud Cohn 1888; H. setosus Schröt. apud Cohn 1888; Tomentella obducent P. Karst. 1889; Diplonema sordecens P. Karst. 1889; Zygoedesmus pubidus Ellis & Everh. 1900; Kneiffia tomentella Bres. 1903.

AMYLOCORTICUM Pouzar 1959

Basidiocarp annual or perennial, resupinate, effused, pellicular, membranaceous or subcoriaceous, separable or adnate. Hymenial surface even to tuberculate, whitish, yellowish or reddish. Margin even or fimbriate. Hyphal system monomitic. Hyphae hyaline or coloured in the basal part, with thin to thickened walls, with clamps at all septa. Cystidia when present hyaline, thin-walled, hyphoid, sometimes with a median clamped septum. Basidia terminal, in small clusters, narrowly clavate, with (2–)4 sterigmata. Spores hyaline, with thin or slightly thickened walls, smooth, narrowly ellipsoid, cylindrical or allantoid, amyloid.

Substrate: saprophytic on wood of gymnosperms, rarely on angiosperms.

Type species: Corticium subsulphureum P. Karst. 1881

Distribution: in the whole area.

References: 113.

1a. Cystidia absent. 2
1b. Cystidia present. 3


Distr.: whole area Ref.: 66, 113.

A. cebennense (Bourd.) Pouzar 1959
2b. Hymenial surface even, cream to reddish, subiculum and margin lemon yellow to sulphur yellow, purplish to blackish in KOH. Basal hyphae hyaline to brownish, with somewhat thickened walls, 3–5 μm wide.

Basidiocarp effused, soft-membranaceous. Subhymenial hyphae hyaline, thin-walled, 2–3 μm wide. Basidia narrowly clavate, 20–30 × 4–5 μm. Spores narrowly ellipsoid, cylindrical or slightly allantoid, (4.8–)5.5–7(–7.8) × (1.8–)2–2.3 μm. On gymnosperms.


A. canadense (Burt) J. Erikss. & Weresub apud Weresub 1974
Syn.: ? Corticium sulphureo-marginatum Litsch. 1933

Note: A. rhodoleucum (Bourd.) J. Erikss. & Ryv. 1976 (116) is a similar species without clamps.

3a. Spores cylindrical, slightly curved, 4.5–6.5(–7.5) × (1.5–)1.7–2 μm.
Hymenial surface even, dark cream to greyish yellow, locally with ochraceous or reddish tinges, blackish brown with KOH.

Basidiocarp effused, subcoriaceous, thick (up to 700 μm), adnate. Hyphae hyaline, thin- to basally thick-walled, 2.5–4(–5) μm wide, often with yellowish material. Cystidia scarce, thin-walled, obtuse, 60–80 × 4–5 μm, sometimes with a median clamp, projecting up to 30 μm. Basidia clavate, 20–30 × 4–5 μm. On gymnosperms.

Distr.: USSR. Ref.: 318.

A. suaveolens Parm. 1968

3b. Spores narrowly ellipsoid to cylindrical, 2–2.5 μm broad. Hymenial surface even to tuberculate, yellow or reddish. Reaction with KOH unknown.

4a. Spores narrowly ellipsoid, with slightly thickened walls, 4.5–5 × 2–2.5 μm. Hymenial surface even to tuberculate, at first yellow, later reddish.

Basidiocarp membranaceous to subcoriaceous, thick (up to 400 μm), adnate. Hyphae hyaline, thin-walled, 3–4 μm wide. Cystidia thin-walled, hyphoid, sometimes with a median clamp, 50–70 × 4–5 μm, projecting up to 30 μm. Basidia narrowly clavate, about 20 × 4–5 μm.

Distr.: whole area. Ref.: 113, 368.

A. subincarnatum (Peck) Pouzar 1959

4b. Spores cylindrical with slightly thickened walls, 5–7 × 2–2.5 μm.
Hymenial surface even, yellow, never reddish.


Distr.: whole area. Ref.: 113, 368.

A. subsulphureum (P. Karst.) Pouzar 1959
AMYLOSTEREUM Boidin 1958

Basidiocarp annual or perennial, resupinate or effused-reflexed, coriaceous to corky. Hymenial surface even to tuberculate. Hyphal system mono- or dimitic. Skeletal hyphae parallel, brown. Generative hyphae hyaline, with clamps. Cystidia originating from skeletal hyphae, rarely from generative hyphae, thick-walled, brownish, encrusted. Basidia subclavate. Spores hyaline, ellipsoid to cylindrical, thin-walled, smooth, amyloid.

Substrate: saprophytic on wood of gymnosperms.
Type species: Thelephora chailletii Pers. 1822
Distribution: in the whole area.
References: 10, 113, 182.

1a. Basal parallel layer absent, basidiocarp always resupinate. Spores ellipsoid to cylindrical, 7–10 × 3–4 μm. On Juniperus, rarely Taxus or Cupressus.
   Basidiocarp up to 1000 μm thick. Hymenial surface even, ochraceous to pale brown. Skeletal hyphae may be absent (no basal layer!). Generative hyphae 3–5 μm wide. Cystidia thick-walled, yellowish to brown, encrusted, 30–150 × 5–9 μm. Basidia subclavate, 25–35 × 3.5–5 μm.
   Distr.: whole area. Ref.: 113, 182, 368.
   A. laevigatum (Fr.) Boidin 1958
   Syn.: Xerocarpus juniperi P. Karst. 1881

1b. Basal parallel layer present, basidiocarp resupinate or effused-reflexed. Spores ellipsoid to subcylindrical, 5–8.5 × 2.5–4 μm. On other gymnosperms.

2a. Basidiocarp up to 700 μm thick, resupinate or effused-reflexed. No dark dense thin layer between abhymenial layer and subiculum.
   Distr.: whole area. Ref.: 113, 182, 234.
   A. chailletii (Pers.) Boidin 1958
   Syn.: Xerocarpus ambiguus P. Karst. 1881; Peniophora atkinsonii Ellis & Everh. 1894

2b. Basidiocarp up to 1500 μm thick, usually effused-reflexed. A dark dense thin layer present between subiculum and abhymenial layer.
   Abhymenial layer distinctly tomentose, yellowish brown to dark brown. Hymenial layer even, ochraceous brown to greyish brown, somewhat violaceous when wet. Skeletal and generative hyphae as above. Cystidia yellowish brown, thick-walled, encrusted, 4–6 μm

*A. areolatum* (Fr.) Boidin 1958

**ASTEROSTROMA** Massee 1889

Basidiocarp annual, rarely perennial, resupinate, effused, arachnoid, byssoid, soft-membranaceous or pulverulent to spongy-crustose. Hymenial surface even, whitish to brownish. Hyphal strands may be present. Hyphal system monomitic (dimitic in one species). Generative hyphae hyaline, with thin to slightly thickened walls, without clamps. Asterosetae present, with 3–8(–10) rays, brown, thick-walled. Rays simple or one or more times dichotomously branched; the rays pointing towards the hymenium sometimes considerably longer. When present in the hymenium and not typically developed (sometimes acanthohyphidium-like) they are occasionally called asterophyses (asterohyphidia). Gloeocystidia present, sometimes rare, clavate to fusiform, thin-walled. Basidia single or in small clusters, clavate to cylindrical, with (2–)4 sterigmata. Spores hyaline, with thin to somewhat thickened walls, smooth or ornamented, amyloid or not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Corticium apatum* Berk. & Br. 1875

Distribution: in the whole area.

References: 321, 399.

1a. Spores smooth. 2
1b. Spores ornamented. 5

2a. Spores not amyloid. 3
2b. Spores amyloid. 4

3a. Basidiocarp hydnoid. Hymenial setae and skeletal hyphae present. Spores ovoid to ellipsoid, 5–7 $\times$ 3.5–4.5 $\mu$m. *Asterodon ferruginosus* Pat. (not treated here) 3b. Basidiocarp even. Hymenial setae and skeletal hyphae absent. Spores subcylindrical to navicular or subfusoid, 7–9(–10) $\times$ 2.5–3(–3.5) $\mu$m. Basidiocarp arachnoid to soft-membranaceous. Hymenial surface yellowish ochraceous to pale brown. Hyphae 2.5–4.5 $\mu$m wide. Asterosetae with (2–)3–4(–5) rays, often bilaterally symmetrical. Rays 20–50(–80) $\times$ 3–5(–6) $\mu$m, often dichotomously branched. Asterohyphidia smaller and more irregular. Gloeocystidia clavate to fusiform, (20–)25–35 $\times$ 6–8 $\mu$m. Basidia clavate, 25–30 $\times$ 4–5.5 $\mu$m. Distr.: USSR. Ref.: 321.

*A. creneo-fulvum* Parm. 1970

4a. Rays of subicular asterosetae 30–150 $\times$ 3–8 $\mu$m, rarely dichotomously branched. Spores globose, 5–7 $\mu$m in diam.


A. andinum Pat. 1893
Syn.: Asterostroma bicolor Ellis & Everh. 1894; A. spiniferum Burt 1924; A. gracile Burt 1924


Distr.: Eur., USSR. Ref.: 321, 399.

A. laxum Bres. apud Bourd. & Galz. 1920

5a. Spores regular, densely covered with blunt spines, up to 1.5 μm long. N. Am.


A. muscicola (Berk. & Curt.) Masse 1889
Syn.: ? Corticiium apatum Berk. & Br. 1875; ? A. roseum Bres. 1920

5b. Spores regular or irregular, with scattered and/or low ornamentation. 6

6a. Rays of subicular asterosetae normally simple, rarely dichotomously branched, 30–100 × (2–)3–6(–7) μm, spores globose to subglobose, sometimes irregular, with scarce hemispherical warts, 4.5–7 × 4.5–6 μm. N. Am.


A. cervicolor (Berk. & Curt.) Masse 1889

6b. Rays of subicular asterosetae often dichotomously branched. Spore ornamentation conical to bluntly spinous. Eur., USSR.
7a. Spores irregular to angular, (4.5–)5–6(–7) × 4–5.5 μm, with blunt spines up to 1.5 μm long.
Distr.: Eur., USSR. Ref.: 321.
A. medium Bres. 1920
Syn.: ? A. cellare P. Henn. 1908.

7b. Spores globose to subglobose, regular, 5–7(–7.5) × 4–5.5(–7) μm, with blunt spines up to 1.5 μm long.
Distr.: Eur., USSR. Ref.: 321.
A. ochroleucum Bres. apud Torrend 1913

ATHELIA Pers. 1822
Basidiocarp annual, resupinate, effused, more or less pellicular, often easily separable. Hymenial surface even when dry, in some species slightly meruloid, grandinioild or finely reticulate when fresh, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled (0.1–1.0 μm), clamps present or absent, often loosely encrusted. Some species with thin-walled cystidia (leptocystidia), but no gloeocystidia. Basidia clustered, more or less clavate, hyaline, a basal clamp present or absent, with 2–4 sterigmata. Spores hyaline, smooth, thin-walled, not amyloid.
Substrate: saprophytic on debris of angiosperms and gymnosperms, also on soil. Some species are parasites of algae and lichens.
Type species: Athelia epiphylla Pers. 1822
Distribution: in the whole area.
References: 113, 186.

1a. Weakly parasitic on or symbiotic with filamentous Cyanophyceae.
Basidiocarp effused, only a few mm long, loosely adnate. Hymenial surface even to slightly grandinioild, whitish. Hyphae hyaline, thin-walled, 4–6.5 μm wide, with relatively small clamps at all septa. Cystidia lacking. Basidia 15–18 × 5.5–6.5 μm, with a basal clamp. Spores ovoid, basally widened, 5.5–6 × 4–4.4 μm.
A. poeltii Jülich 1978

1b. Not on filamentous Cyanophyceae, but on wood, leaves, soil, other plant debris or on Lichens or Chlorococcales
2a. Basidia with 2 (rarely 4) sterigmata.

2b. Basidia with 4 (rarely 2) sterigmata.

3a. Clamps present at nearly all septa.

   Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae somewhat thick-walled (up to 0.4 μm thick), 4–5 μm wide. Basidia clavate, with a clamp at the base, 17–22 × 6.5–8 μm. Spores broadly cylindrical to ellipsoid, thin-walled, 9.5–13.5 × 5–5.6 μm, with distinct apiculus.

   Distr.: Eur., USSR. Ref.: 113, 186.

   A. sibirica (Jülich) J. Erikss. & Ryv. 1973

3b. Clamps only occasionally present at the basal hyphae, lacking in other parts of the basidiocarp (particularly at the base of the basidia)

   Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae hyaline, slightly thick-walled (up to 0.5 μm thick), 5–8(–10) μm wide. Basidia clavate, 24–33 × 6.5–8 μm. Spores thin-walled, 8–11(–12) × 4–5.5(–6) μm (only 3–3.5 μm wide in A. arachnoidea var. leptospora Jülich 1972).

   Distr.: whole area. Ref.: 113, 186.

   A. arachnoidea (Berk.) Jülich 1972

   Syn.: Hypochaerus bisporus Schroet. 1888

4a. Clamps completely lacking.

4b. Clamps present at all septa or present only at the base of the basidia or only on the basal hyphae.

5a. Spores broadly ellipsoid, 5–6.5 μm long.

5b. Spores pyriform (c. 7–10 μm long) or ovoid (c. 6–8 μm long).

6a. Cystidia lacking.

   Basidiocarp thin, pellicular, even. Hymenial surface whitish. Hyphae thin-walled in the hymenial region, thick-walled (up to 1.0 μm) in the basal part, 4–5 μm wide. Basidia clavate, 10–14 × 5–6 μm. Spores thin-walled, 5–6.5 × 3–3.8 μm, with distinct apiculus. Mostly on coniferous wood.

   Distr.: whole area. Ref.: 113, 186.

   A. decipiens (Höhn. & Litsch.) J. Erikss. 1958

   Syn.: A. caucasica Parm. 1968

6b. Leptocystidia present, scattered, ± cylindrical, 20–30 × 4–5 μm, projecting up to 15 μm.

   Basidiocarp thin, pellicular. Hymenial surface at first even, later granuloid, whitish. Hyphae thin-walled (up to 0.3 μm thick), 3–5.5 μm wide. Basidia clavate, 13–16 × 5–6 μm. Spores thin-walled, 5–6 × 3–4 μm, with small apiculus.

   Distr.: whole area. Ref.: 186.

   A. cystidiolophora Parm. 1967
7a. Spores pyriform, 7–9.5(–10.5) × 3.6–4.8–5.5 µm.
   **A. pyriformis** (M.P. Christ.) Jülich 1972

7b. Spores narrowly ovoid, the basal part broadened, 6–8 × 2.8–3 µm.
   Basidiocarp thin, pellicular. Hymenial surface whitish. Hyphae hyaline, basal hyphae with scattered clamps in some specimens, thin-walled (up to 0.4 µm thick), 5–7 µm wide. Basidia clavate, 12–15 × 4.5–5 µm. Spores thin-walled, with small but distinct apiculus. Distr.: Eur. Ref.: 188.
   **A. subovata** Jülich & Hjortstam apud Jülich 1973

8a. Clamps present at almost all septa.

8b. Clamps only present in the hymenial or in the basal part of the basidiocarp

9a. Spores globose to broadly ellipsoid.

9b. Spores narrowly cylindrical to ellipsoid (see also *Fibulomyces*).

10a. Leptocystidia lacking. Spores broadly ellipsoid, some specimens with a few globose spores.
   Basidiocarp thin, pellicular to slightly membranaceous. Hymenial surface even, sometimes merulioid when fresh, whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.5 µm), 4–6 µm wide, the basal ones not always clamped. Basidia clavate, sometimes somewhat stalked, 20–25 × 7.5–9 µm. Spores thin- to slightly thick-walled (up to 0.3 µm), 6.5–8.5(–10) × 4.5–5.5(–7) µm, with distinct apiculus. Distr.: whole area. Ref.: 113, 186.
   **A. neuhoffii** (Bres.) Donk 1957
   Syn.: *A. globularis* M.P. Christ. 1960; *Corticium arachnoideum* Berk. sensu Bres.

10b. Capitate leptocystidia present. Spores globose.
   Basidiocarp thin, pellicular to slightly membranaceous, sometimes with a few narrow hyphal strands. Hymenial surface whitish to cream-coloured. Hyphae hyaline to slightly yellowish, thin-walled (up to 0.3 µm thick), 2–2.5(–3) µm wide. Basidia ± clavate, 18–33 × 6.5–8.5 µm. Leptocystidia capitate, thin-walled, smooth, 40–50 × 6–7 µm, the upper capitate part 7–8 µm wide, with a basal clamp, projecting up to 30 µm. Spores thin- to slightly thick-walled (up to 0.3 µm thick), (5.5–)6–6.5(–7) µm in diam., with distinct apiculus. Distr.: N. Am. Ref.: 186.
   **A. laxa** (Burt) Jülich 1972
11a. Spores up to 6 μm long, cylindrical to narrowly ellipsoid.
   Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm), 3–5 μm wide. Basidia cylindrical to narrowly clavate, 12.5–16 × 4–6.5 μm, sterigmata 5–6 × 1.3 μm. Spores thin-walled, 4.5–6 × 2.5–3(-3.5) μm, with distinct apiculus.
   Distr.: whole area. Ref.: 113, 186.
   A. bombacina (Pers.) Jülich 1972

11b. Spores longer than 6 μm, ellipsoid.

12a. Spores 7–11 × 3.5–4.5 μm.
   Basidiocarp thin, pellicular to thin-membranaceous. Hymenial surface whitish to cream-coloured. Hyphae thin- to slightly thick-walled (up to 0.5 μm), 4–5 μm wide. Basidia clavate, 16–20 × 6–8 μm, sterigmata c. 4–6 × 1.2–1.5 μm. Spores thin-walled, with distinct apiculus.
   Distr.: whole area. Ref.: 113, 186.
   A. fibulata M.P. Christ. 1960

12b. Spores 8–14 × 5–6 μm.
   Distr.: USSR. Ref.: 186.
   A. singularis Parm. 1967

13a. Clamps at almost all septa of the hymenial part, rare or lacking on the basal hyphae.

13b. Clamps always lacking in the hymenial part, rare or abundant in the basal part of the basidiocarp

14a. Spores with thickened walls (up to 0.5 μm), globose, guttulate. Basidia with oil drops in the cytoplasm.

14b. Spores thin- to slightly thick-walled (up to 0.3 μm), globose to usually broadly ellipsoid, non-guttulate. Basidia without oil drops. Athelia neuhoffii, see 10a.

   Basidiocarp thin, pellicular, with small rhizomorphs. Hymenial surface whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm). Basidia clavate, guttulate, 20–25 × 6–7.5 μm. Spores hyaline. On plant debris and dung.
   A. coprophila (Wakef.) Jülich 1972

Note: This species has been placed in the genus Byssocorticium by J. Erikss. & Ryv. 1973.
15b. Hyphae 2.5–3 μm wide, clamps on the basal hyphae relatively abundant. Spores 3.5–4.5 μm in diam.
Byssocorticium lutescens J. Eriks. & Ryv. 1973

16a. Spores narrowly cylindrical to narrowly ellipsoid. 17
16b. Spores ellipsoid, pyriform or ovoid. 20

17a. Spores 5.5–8 μm long. 18
17b. Spores 8–12 μm long, up to 4–5 μm broad, 19

18a. Spores cylindrical, with rounded base, (5.5–)6–7.5(–8) × 2.8–3.2 μm.
Basidiocarp thin, pellicular. Hymenial surface whitish. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm), (4–)5–7(–8) μm wide. Clamps scattered on the basal hyphae, otherwise lacking. Basidia clavate, 13–18 × 5–8 μm. Spores hyaline, thin-walled.
Distr.: whole area. Ref.: 113, 186.
A. epiphylla Pers. 1822

18b. Spores cylindrical, with tapering base, 5.5–7(–8) × 2.2–2.6 μm.
Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm), 3.5–4.5 μm wide, clamps scattered on the basal hyphae. Basidia clavate, 12–15 × 5–6 μm. Spores hyaline, thin-walled.
A. acrospora Jülich 1972

19a. Spores cylindrical, with rounded base, 8–10(–12) × 3.5–4 μm.
Basidiocarp thin, pellicular. Hymenial surface whitish. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm), 4–7 μm wide, clamps scattered on the basal hyphae. Basidia clavate, 16–18 × 6.5–7.5 μm. Spores hyaline, thin-walled.
Distr.: whole area. Ref.: 186.
A. tenuispora Jülich 1972

19b. Spores cylindrical, with tapering base, 9–11.5 × 3.5–4.8 μm.
Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm), 3.5–4.5 μm wide. Basidia 18–24 × 6–7 μm. Spores hyaline, thin-walled.
Distr.: N. Am. Ref.: 186.
A. alutacea Jülich 1972

20a. Spores ellipsoid. 21
20b. Spores pyriform or ovoid. 24

21a. Spores 9–13.5 × 5–6 μm.
Basidiocarp thin, pellicular to membranaceous. Hymenial surface cream-coloured. Hyphae hyaline, thin-walled, but the basal ones thick-walled (up to 1.0 μm), 5–7 μm wide, clamps scattered on the basal hyphae. Basidia large, clavate, 20–36 × 8–10 μm (basidia 18–25 × 10–12 μm in *A. teutoburgensis* var. *teutoburgensis* (Donk) Jülich). Spores hyaline, thin-walled, apiculi not always distinct.

Distr.: whole area. Ref.: 186, 188.

*A. teutoburgensis* (Brinkm.) Jülich 1973

21b. Spores up to 8(–9) μm long and up to 4.5 μm broad. 22

22a. Spores ellipsoid, up to 8(–9) × 4.5 μm. Hyphae relatively wide, mostly 5–8(–10) μm wide, clamps only scattered. 23

22b. Spores broadly ellipsoid to broad and short cylindrical, 4.3–5.2 μm broad. Hyphae relatively narrow, 2.5–4 μm wide, the basal ones with clamps at most septa.

 Basidiocarp thin, pellicular. Hymenial surface whitish. Hyphae thin-to basally slightly thick-walled (up to 0.5 μm). Basidia clavate, 15–18 × 5.5–6.5 μm. Spores hyaline, thin-walled, the adaxial part flattened, 6.5–8(–9) × 4.3–5.2 μm, with distinct apiculus.


*A. nivea* Jülich 1972


 Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.5 μm), (3–)5–8(–10) μm wide. Basidia clavate, 10–16 × 5.5–8 μm. Spores hyaline, thin-walled, (5.5–)6–7.5(–8) × 3.5–4.5 μm, with distinct apiculus.

Distr.: whole area. Ref.: 186.

*A. salicifum* Pers. 1822
Syn.: *A. incrustata* M.P. Christ. 1960

23b. Basidia 15–25 μm long, the subbasidial hyphae relatively wide. Basidiocarp membranaceous. Rare species.

 Basidiocarp membranaceous. Hymenial surface cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.4 μm), 5–8 μm wide. Basidia clavate, 15–25 × 5–8 μm. Spores hyaline, thin-walled, 6.5–8.5 × 3.6–4.4 μm, with distinct apiculus.


*A. alnicola* (Bourd. & Galz.) Jülich 1972

24a. Spores ovoid, 8–9 μm long.

 Basidiocarp thin, pellicular. Hymenial surface whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled (up to 0.5 μm), 4–5 μm wide. Basidia clavate, 16–18 × 5–7 μm. Spores
broadened at the base, hyaline, thin-walled, 8–9 × 3.8–4.2 μm, with distinct apiculus.
Distr.: Eur., USSR. Ref.: 186.
A. ovata Julich 1972
Note: If spores 6–8 × 2.8–3 μm, see 6b, A. subovata.

24b. Spores pyriform, 4.5–6 μm long.
Basidiocarp thin, pellicular. Hymenial surface even to finely reticulate, whitish. Hyphae hyaline, thin-walled, the basal ones 5–10 μm wide, the subhymenial ones 3–4 μm wide. Basidia clavate, 10–16 × 4–5 μm. Spores hyaline, thin-walled, 4.5–6 × 2.5–3 μm.
A. binucleospora J. Erikss. & Ryv. 1973

ATHELIDIUM Oberw. 1965

Substrate: saprophytic on decayed wood.
Type species: Xenasma aurantiacum M.P. Christ. 1960
Distribution: Europe.
References: 113, 186, 303.

A. aurantiacum (M.P. Christ.) Oberw. 1965

ATHELOPSIS Oberw. ex Parm. 1968
Basidiocarp annual, resupinate, effused, pellicular or hypochond, separable. Hymenial surface even, with yellowish or greenish colour. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps, sometimes encrusted. Cystidia absent. Basidia single or usually in clusters, subclavate to cylindrical, stalked (podobasidia), with (2–)4 sterigmata. Spores hyaline, thin-walled, smooth, ellipsoid to narrowly cylindrical or allantoid, not amyloid.

Substrate: saprophytic on angiosperms and gymnosperms
Type species: Corticium glaucinum Bourd. & Galz. 1928
Distribution: in the whole area.
References: 113.
1a. Spores ellipsoid, 6–8(–8.5) × 3.8–4.5 μm.
   Basidiocarp hypnoid to pellicular, thin. Hymenial surface even,
   light yellowish, often with greenish tint. Hyphae 2–4 μm wide.
   A. subinconsipicua (Litsch.) Jülich 1975

1b. Spores cylindrical or allantoid, up to 3.5 μm broad.

2a. Spores allantoid, 5–7(–8) × 2–2.5(–3) μm.
   Basidiocarp pellicular, thin. Hymenial surface even or somewhat
   reticulate, whitish to cream yellow. Hyphae (1–)1.5–2.5 μm wide.
   Basidia 14–20 × 5–6 μm.
   A. lacerata (Litsch.) J. Erikss. & Ryv. 1973

2b. Spores cylindrical, straight.

3a. Spores cylindrical, often somewhat flexuous, (5.5–)6.5–7.5(–8) × 2 μm.
   Basidiocarp farinose to pellicular, thin. Hymenial surface even,
   whitish to bright grey. Hyphae (1–)1.5–2.5 μm wide.
   Basidia 13–20 × 4.5–5.5 μm.
   A. baculifera (Bourd. & Galz.) Jülich 1971

3b. Spores cylindrical, (7–)8–11(–12.5) × (1.5–)2–3(–3.5) μm.
   Basidiocarp pellicular, thin. Hymenial surface even, light yellow to
   pale ochraceous, sometimes with greenish tint. Hyphae 1–3 μm wide.
   Basidia 8–20 × 4.5–6(–7.5) μm.
   Distr.: Eur., USSR.    Ref.: 113, 242, 303.
   A. glaucina (Bourd. & Galz.) Oberw. ex Parm. 1968

**BASIDIORADULUM** Nobles 1967

Basidiocarp annual, resupinate, effused or effused-reflexed, membranaceous,
sometimes with a ceraceous hymenial layer. Hymenial surface raduloid. Hyphal
system monomitic. Hyphae hyaline, the basal ones more or less loosely
arranged, in the hymenial layer compact, thin-walled, clamped. Cystidia and
gloeocystidia lacking. Cystidioles may be present. Basidia when mature
suburniform and constricted in the middle, the young stages broadly ellipsoid
or pyriform, with clamps at the base. Spores hyaline, thin-walled, cylindrical,
not amyloid.

Substate: saprophytic on wood or bark of angiosperms and gymnosperms.
Type species: *Hydnnum radula* Fr. ex Fr. 1821
Distribution: in the whole area.
References: 300.

Monotypic. Basidiocarp orbicular, later confluent, effused, up to several
decimeters long, thick-membranaceous, the hymenial layer often ceraceous; margin adnate or reflexed. Hymenial surface at first even, but soon covered with teeth of variable shape, from cylindrical or conical to plate-like, the tip in younger stages fertile, after rapid growth often sterile, scattered over the whole surface or slightly fasciculate; cream-coloured, the margin lighter. Hyphae hyaline, 2–5 μm wide, with clamps at all septa, the basal ones distinct and straight, the subhymenial ones often torulose and indistinct. Cystidioles sometimes present, moniliform, 35–60 × 5–7 μm. Basidia irregularly cylindrical to narrowly clavate, 22–30 × 4.6–6 μm. Spores hyaline, cylindrical, often slightly curved, smooth, 7–11 × 2.3–3 μm, with small apiculus.

Distr.: whole area. Ref.: 114, 300.

**Basidioradulum radula** (Fr. ex Fr.) Nobles 1967
Syn.: *Radulum orbiculare* Fr. ex Grev. 1827; *Radulum hydnans* Schw. 1834; *Radulum bennettii* Berk. & Curt. 1873; *Corticium colliculosum* Berk. & Curt. 1873; *R. corallinum* Berk. & Br. 1875; *R. epileucum* Berk. & Br. 1875

**BOREOSTEREUM** Parmasto 1968

Basidiocarp annual, resupinate or effused-reflexed, rarely flabelliform, coriaceous. Hymenial surface even or slightly plicate, ferruginous. Abhymenial surface tomentose to nearly smooth, dark brown to blackish. Hyphal system dimitic (?). Thick-walled hyphae nearly unbranched in the basal part and then up to 6.5 μm wide, densely branched with right angles in the upper part. Incrustations brown, in KOH dark green. Leptocystidia present. Basidia subclavate. Spores hyaline, thin-walled, smooth, cylindrical, not amyloid.

Substrate: on wood of gymnosperms.

Type species: *Stereum radiatum* Peck 1873

Distribution: in the whole area.

References: 182, 318.

Monotypic. Basidiocarp typically narrowly reflexed, up to 800 μm thick (without tomentum). Hymenial surface even or plicate, ferrugineous to amber brown, rarely black. Abhymenial surface tomentose to nearly smooth, dark brown to black. Hyphae of tomentum often with verruculose protuberances, (2.5–)3.5–4.5 μm wide; “skeletal” hyphae thick-walled, in the upper part abundantly branched. Generative hyphae hyaline to yellowish, 2–3.5(–5) μm wide, without clamps. Brown incrustations present, turning green in KOH. Leptocystidia (hyphidia?) immersed or protruding up to 30 μm, thin-walled, encrusted, filiform, acute, 3–4 μm wide. Basidia subclavate, 30–35 × 5–7 μm. Spores cylindrical, 6–12 × (2.5–)3–4 μm.

Distr.: whole area. Ref.: 12, 182, 234.

**B. radiatum** (Peck) Parm. 1968
**BOTRYOBASEIDIIUM** Donk 1931

Basidiocarp annual, resupinate, effused, arachnoid, byssoid or hypochnoid, rarely pellicular, even, often minutely reticulate under a lens, often not continuous. Hyphal system monomorphic. Hyphae rather wide, branching at right angles, usually without clamps. Basal hyphae hyaline to yellowish, long-celled, often with thickened walls. Subhymenial hyphae hyaline, short-celled, thin-walled, cyanophilous. Cystidia usually absent, when present hyaline, cylindrical or subfusiform, originating in hymenium. Basidia in clusters, typically subcylindrical, often constricted in the middle, with (4–)6(-8) sterigmata. Spores hyaline, smooth or rarely warted, usually navicular to fusoid, not amyloid, cyanophilous.

Substrate: saprophytic on decayed wood of angiosperms and gymnosperms and on humus.

Type species: *Corticium subcoronatum* Höhn. & Litsch. 1907
Anamorphs: *Haplotrichum* Link 1824 (syn.: *Acladium* Link ex Pers. 1822; *Oidium* Link ex Fr. 1829); *Allescheriella* P. Henn. 1897

Distribution: in the whole area.

References: 113, 169, 252.

1a. Clamps present, at least sub-basidial and at the basal hyphae.  
1b. Clamps absent.

2a. Spores broadly navicular to fusiform.  

3a. Cystidia present.  
3b. Cystidia absent.

4a. Cystidia hyaline, smooth, thin- to slightly thick-walled, cylindrical to subfusiform, 55–120 × 8–12.5 μm. Spores navicular to broadly fusiform, 8–9 × 4–5 μm. Basidiocarp hypochnoid, continuous. Hymenial surface buff. Hyphae 7–15 μm wide, the basal ones with thickened walls (up to 2.5 μm). Basidia subcylindrical to suburniform, 17–29 × 8–10 μm, with (4–)6 sterigmata.

Distr.: N. Am.  
Ref.: 354.

**B. ansosum** (H.S. Jacks. & D.P. Rogers apud D.P. Rogers) Parm. 1968


Distr.: USSR.  
Ref.: 107.

**B. pilosellum** J. Erikss. 1958
5a. Clamps present on basal hyphae and sub-basidial, not on subhymenial hyphae. Spores narrowly navicular to fusiform, 7–9 × 1.5–2.5 μm. Basidioecarp hypochnoid to pellicular. Hymenial surface white to cream-coloured, pale ochraceous when old. Basal hyphae with thickened walls, 4–10 μm wide. Subhymenial hyphae 4–6 μm wide. Basidia subcylindrical, not or slightly constricted, 16–30 × 5–6.5 μm, usually with 6 sterigmata.

Distr.: whole area. Ref.: 5, 113.

B. intertextum (Schw.) comb. nov.
Syn.: Pellicularia angustispora Boidin 1957

5b. Clamps present in all parts of the basidiocarp. Spores broader than 2.5 μm.


Basidioecarp hypochnoid. Hymenial surface greyish white to yellowish. Basal hyphae hyaline to yellowish, with thickened walls, 7–10(–15) μm wide. Subhymenial hyphae 4–5–7.5 μm wide. Basidia subcylindrical, somewhat constricted in the middle, 10–22 × (5–)7–10 μm, with (4–)6 sterigmata.

Distr.: whole area. Ref.: 98, 113.

B. medium J. Erikss. 1958

Anamorph: Basal hyphae hyaline to pale yellowish, 6–7.5 μm wide, thick-walled, with clamps. Ascending hyphae and conidiophores hyaline, thin-walled, 3.5–7.5 μm wide, without or with rare clamps. Apical cells (1–3) of conidiophores conidiogenous. Conidia hyaline, narrowly ellipsoid to fusoid, thin-walled, smooth, terminated by a papilla, (12–)15–22(–28) × (4.5–)5.5–7(–8) μm, often in chains.

H. medium (Hol.-Jech.) Hol.-Jech. 1976

6b. Spores narrowly navicular, 6–10 × 2.5–4.5 μm. Anamorph unknown.


Distr.: whole area. Ref.: 113, 354.

B. subcoronatum (Höhn. & Litsch.) Donk 1931

7a. Basal hyphae very wide, some 15–20 μm wide, at least twice as wide as the subbasidial hyphae.

7b. Basal hyphae rarely up to 15 μm wide.

8a. All hyphae smooth.

Basidiocarp hypochnoid to floccose or continuous. Hymenial surface whitish to yellowish. Basal hyphae yellowish to yellowish
Distr.: whole area. Ref.: 113.

**B. laeve** (J. Erikss.) Parm. 1965

8b. At least the basal hyphae asperulate.
Basidiocarp hypochnoid to floccose or continuous. Hymenial surface whitish, greyish or yellowish. Basal hyphae yellowish to brownish, 15–20 μm wide. Subhymenial hyphae 4.5–6 μm wide. Basidia 15–25 × 7–10 μm, ovoid to subcylindrical, more or less constricted, with usually 6 sterigmata. Spores ovoid to ellipsoid, 5–8 × 2.5–3.5 μm.

**B. pruinatum** (Bres.) J. Erikss. 1958
Syn.: ?Hypochnus coronatus Schroet. apud Cohn 1888, non ~ Bon. 1876; ?H. Schroeteri Sacc. 1888; Tomentella granulata Bref. 1889; ?H. breveldii Sacc. 1891; Corticium botryoideum Overh. 1934

9a. Key to the teleomorphs. 10
9b. Key to the anamorphs (*Haplotrichum, Allescheriella*). 17

10a. Basidia at least 8 μm wide. 11
10b. Basidia narrower than 8 μm, at least on average 15

11a. Spores narrowly navicular to almost allantoid, three times as long as broad, (10–)12–14(–17) × 3–5 μm.
Anamorph: unknown.

**B. danicum** J. Erikss. & Hjortstam 1969

11b. Spores smaller, less than three times as long as broad. 12

12a. Spores at least 3.5 μm broad. 13
12b. Spores not more than 3.5 μm broad (at least on average). 16

13a. Basidia ovoid to pyriform, 12.5–17.5 × 8.5–12.5 μm, with 2–6 sterigmata. Spores narrowly ovoid, ellipsoid, navicular or subfusiform, (6–)7.5–12.5(–15) × 3.5–4.5(–6) μm.
Basidiocarp arachnoid to hypochnoid. Hymenial surface whitish to buff. Subicular hyphae with thin to somewhat thickened walls, hyaline to pale brown, 7.5–11 μm wide. Subhymenial hyphae up to 12.5 μm wide.
Anamorph: *Allescheriella crocea*, see 22a.
Distr.: N. Am. Ref.: 237.

**B. croceum** Lentz 1967
13b. Basidia ovoid to subcylindrical, 17–25 × 8–12 μm.

14a. Spores navicular, biapiculate, (7.5–)9–12 × 4.5–6 μm.
Basidiocarp reticulate to hypocloneid or subpellicular. Hymenial surface greyish white to yellowish. Basal hyphae hyaline to yellowish brown, with thickened walls, 8–10 μm wide. Subhymenial hyphae 6–8(–10) μm wide.
Anamorph: unknown.
Distr.: whole area. Ref.: 66, 113.
**B. botryosum** (Bres.) J. Erikss. 1958

14b. Spores obliquely and narrowly ovoid, apically obtuse, 7.5–12 × 3.5–5 μm.
Anamorph: unknown.
Distr.: Eur., USSR. Ref.: 113.
**B. obtusisporum** J. Erikss. 1958

15a. Spores citriform to navicular, distinctly biapiculate, (5.3–)6–8(–10) × 3–4 μm.
Anamorph: *H. capitatum*, see 20b
Distr.: whole area. Ref.: 113.
**B. canticans** J. Erikss. 1958

15b. Spores apically obtuse, not distinctly biapiculate.

**Note:** The following species, together with *B. danicum*, *B. botryosum*, and *B. obtusisporum*, form the *B. vagum*-complex. They can be distinguished by their anamorphs only; the morphological differences of the teleomorphs are faint and intergrade.
For this reason they are only enumerated.

Anamorph: *H. aureum*, see 20a
Distr.: whole area. Ref.: 113, 313.
**B. aureum** Parm. 1965

16b. Basidiocarp hypochnoid. Hymenial surface whitish. Basal hyphae 5–7 μm wide, more or less thin-walled. Subhymenial hyphae 4–5 μm wide. Basidia ovoid to subcylindrical, (11–)13–18 × (6.5–)7–9 μm. Spores navicular to cylindrical, 7–9(–10) × 2.5–3.5 μm.
Anamorph: *H. conspersum*, see 23a
Distr.: whole area. Ref.: 113.

**B. conspersum** J. Erikss. 1958

16e. Basidiocarp minutely reticulate to hypnochnoid. Hymenial surface white to cream-coloured. Basal hyphae (6–)8–9(–11) μm wide, thick-walled. Subhymenial hyphae 3.5–5(–8) μm wide. Basidia subcylindrical, (12.5–)16–18 × (6–)7–8 μm, with (4–)6–8 sterigmata. Spores ellipsoid to fusiform, (7–)8–10(–11) × (3–)3.5–4(–4.5) μm.
Anamorph: *H. ellipsosporum*, see 23b

**B. ellipsosporum** Hol.-Jech. 1969

Anamorph: *H. rubiginosum*, see 21a
Distr.: whole area. Ref.: 341.

**B. robustius** Pouzar & Jech. 1967

Anamorph: *H. simile*, see 17a

**B. simile** Pouzar & Hol.-Jech. 1969

16f. Basidiocarp arachnoïd to hypnochnoid. Hymenial surface whitish to pale buff. Spores narrow, almost allantoid, 8–9 × 2.5–3 μm (109) or subcylindrical to navicular, 9–10.5 × 3–4(–4.5) μm (354). The basidial state is insufficiently known.
Anamorph: *H. curtisii*, see 21b

**B. vagum** (Berk. & Curt.) D.P. Rogers 1935

17a. Conidiophores of two types: a) short, branched, thin-walled, more or less hyaline, up to 150(–290) × 7.5–11 μm, with inconspicuous conidiogenous vesicles and conidia in long chains, b) long, simple, thick-walled, pale to dark brown, up to 500(–680) × 4–7.5 μm with pyriform conidiogenous vesicles bearing 1–3 chains of conidia.
Colonies hypnochnoid, powdery, yellowish, rusty or dark brown. Basal hyphae hyaline to rusty, 6.5–12 μm wide. Conidia yellowish brown to dark brown, subglobose to ellipsoid, (17.5–)20–25(–30) × (13.7–)15–18.5(–22) μm.

**H. simile** (Berk.) Hol.-Jech. 1976

17b. Conidiophores of one type
18a. Conidiophores with terminal or lateral conidiogenous vesicles, globose, clavate, pyriform or fusiform, usually branched in the (upper) conidiogenous part

18b. Conidiophores without conidiogenous vesicles, the conidiogenous part usually unbranched

19a. Conidia ellipsoid, lemon-shaped or fusiform.

19b. Conidia globose to subglobose.


_H. aureum_(Pers.) Hol.-Jech. 1976

20b. Conidia ellipsoid, hyaline to pale yellow, 14.5–18.5 × 8–10 μm. Colonies cream buff to cinnamon buff. Colonies cottony to hypochnoid. Basal hyphae 5.5–9 μm wide, hyaline. Conidiophores up to 500 × 5.5–9 μm.

_H. capitatum_(Link ex Pers.) Link 1824

21a. Conidia dark brown, globose to subglobose, sometimes broadly ellipsoid, 13–17.5 × 10.5–15 μm, the inner wall ornamented with low ridges. Conidiophores much anastomosing, especially in the basal parts. Colonies cottony to hypochnoid, tawny to rusty brown. Basal hyphae brownish, 6–9 μm wide. Conidiophores pale to dark brown, thick-walled, up to 700 × 6–10(−11.5) μm.

_H. rubiginosum_(Fr.) Hol.-Jech. 1976

21b. Conidia subhyaline to brownish, globose to subglobose, (9.3–)10–14.5(−15) × (8.5–)10–14.5 μm, the inner wall smooth or minutely ornamented. Conidiophores not or rarely anastomosing. Colonies hypochnoid to tomentose, ochraceous to tawny or hazel. Basal hyphae hyaline, 5.4–9 μm wide. Conidiophores hyaline to brownish, up to 400 × 6.5–9(−11) μm.

_H. curtisi (Berk.) Hol.-Jech. 1976

22a. Conidia yellow to reddish brown, becoming thick-walled except for the thin-walled basal septum, globose to pyriform, (14–)20–28(−31) × (9–)11–18(−21) μm, with striate inner wall. Colonies cushion-like, later confluent, ochraceous to reddish brown or sienna. Basal hyphae thin- to thick-walled, hyaline to olive or brownish, (4–)7.5–9(−11) μm wide. Conidiophores hyaline, thin-walled, rarely branched, 3–5 μm wide, usually with one conidium per cell, developing right below a septum.

_Allescheriella crocea_(Mont.) Hughes apud Baker & Dale 1950

22b. Conidia with thin or uniformly thickened walls. Conidiophore with several conidia per cell.
23a. Conidia ovoid to ellipsoid, hyaline to yellowish, (12.5—15—18—20) × (8—10—15—19) μm, with minutely ornamented inner wall.
   Colonies hypnoid to tomentose, whitish, greyish, olivaceous or alutaceous. Basal hyphae 6—9 μm wide. Conidiophores (sub)hyaline, up to 360 × (3.6—6—10.5) μm.
   **H. conspersum** (Pers.) Hol.-Jech.

   Colonies hypnoid to cottony, white to yellowish or ochraceous. Basal hyphae hyaline, thick-walled, (6—6.5—8.7—11) μm wide. Conidiophores hyaline to yellowish, up to 230 × (7—8—9—10) μm.
   **H. ellipsosporum** (Hol.-Jech.) Hol.-Jech. 1976

**BOTRYOXYHOCHNUS** Donk 1931

Basidiocarp annual, resupinate, hypnoid. Hymenium not continuous. Hyphal system monomitic. Hyphae hyaline or yellowish with thin or somewhat thickened walls, rather wide, without clamps, branching at right angles. Basidia in candelabrum-like clusters, ovoid to subcylindrical, with 4 sterigmata. Spores hyaline to pale yellow, globose, ovoid, ellipsoid or biapicate, with thin or thickened walls, ornamented, not amyloid, cyanophilous.

Substrate: saprophytic on bark and wood of angiosperms and gymnosperms.

Type species: *Hypoxenus isabellinus* Fr. ex Schleicher 1821

Distribution: in the whole area.

References: 66, 113.

1a. Spores globose, yellowish, with thin or slightly thickened walls, echinulate to aculate, (5.5—7—10.5) μm in diam., cylindrical spines 1—3 μm long.
   Basidiocarp hypnoid. Hymenial surface whitish to yellowish, becoming ochraceous to brownish. Basal hyphae subhyaline to yellowish, with thickened walls, 9—12(—14) μm wide. Subhymenial hyphae hyaline, thin-walled, 6—8 μm wide. Basidia ovoid to subcylindrical, 15—22 × 8—10 μm, with 4 sterigmata up to 6 μm long.
   Distr.: whole area. Ref.: 66, 113.

**B. isabellinus** (Fr. ex Schleicher) J. Erikss. 1958

Syn.: *Hypoxenus argillaceus* P. Karst. 1881; *Zygodesmus rudis* Ellis 1882; *Z. marginatus* Cooke & Harkness 1884; *Odontia tenerrima* Wettstein 1888; *Tomentella flava* Bref. 1889; *Z. tuberculariis* Ellis & Everh. 1891; *T. ochraceo-viridis* Pat. 1893; *Z. tenuissimus* Peck 1894.

1b. Spores ovoid to subpyriform, with thickened to thick walls (up to 2 μm), aculate, (6.5—7—8.5 × 6—7 μm, cylindrical or conical spines (2.5—) 3—4 μm long.
   Basidiocarp hypnoid. Hymenial surface farinaceous, greyish yellow. Basal hyphae yellowish, with thickened to thick walls, up to
12 μm wide. Subhymenial hyphae hyaline, thin-walled, 6–12 μm wide. Basidia ovoid to clavate or cylindrical, 25–40 × 9–12 μm, with 4 sterigmata up to 7 μm long.
Distr.: USSR. Ref.: 313.
B. bondareevii Parm. 1965

BULBILLOMYCES Jülich 1974

Basidiocarp annual, resupinate, effused, adnate, membranaceous, the margin indistinct. Hymenial surface even, greyish to ochraceous. Hyphal system monomitic. Hyphae hyaline, distinct or soon collapsed, more or less thin-walled, with clamps, guttulate. Thick-walled, aseptate and heavily encrusted cystidia (lamprocystidia) present, clamped at the base. Basidia urniform or sub-urniform, with 4 sterigmata and a clamp at the base. Spores hyaline, smooth, thin- to somewhat thick-walled, subglobose to ellipsoid, not amyloid.

Substrate: saprophytic on wood and bark of angiosperms, more rarely of gymnosperms.

Type species: Kneiffia farinosa Bres. 1903

Anamorph: Aegerita Pers. ex Fr. 1821

Distribution: in the whole area.

References: 115, 191.

Monotypic. Basidiocarp effused, at first very thin, later soft-membranaceous. Hymenial surface even, under a lens hispid, light greyish to ochraceous. Hyphae hyaline, thin- to slightly thick-walled (0.3–0.4 μm), easily collapsed, 3–6 μm wide, with clamps. Lamprocystidia thick-walled (2–3 μm), cylindrical to conical, 50–100 × 8–10 μm, projecting up to 60 μm. Basidia 20–32 × 6–8 μm, with (2–)4 sterigmata. Spores hyaline, subglobose to broadly ellipsoid, slightly thick-walled (0.3–0.4 μm), 6–10 × 5–7 μm, with small apiculus.


B. farinosus (Bres.) Jülich 1974

Syn.: Peniophora aegerita Höhn. & Litsch. 1907; P. candida Lyman 1907

Anamorph: Aegerita candida Pers. ex Fr. 1821. Bulbs mostly ochraceous, sometimes pure white but becoming ochraceous in the herbarium, more or less ovoid (0.2 × 0.1 mm), composed of centrifugally arranged branching chains of progressively larger cells, with clamps at all septa and numerous anastomoses; the apical cells broadly clavate and often stalked (15–23 × 10–13 μm), at the apex with slightly thickened walls, otherwise thin-walled; the bulbs as a whole strongly dextrinoid.

BYSSOCORTICIUM Bond. & Sing. ex Sing. 1944

Incl.: Byssoporia M.J. Larsen & Zak 1978

Basidiocarp annual, resupinate, effused, thin, usually pellicular. Hymenial
surface even, bluish, greenish or olivaceous. Hyphal system monomitic. Hyphae in the hymenial part thin-walled and hyaline, in the basal part mostly slightly thick-walled and of faint bluish colour; clamps present or lacking, the basal hyphae more often without clamps. Cystidia and gloeocystidia lacking. Basidia hyaline, irregularly cylindrical to slightly clavate, usually with oil drops, clamps at the base present of lacking, 4-spored. Spores pale bluish to greenish, globose, subglobose or broadly ellipsoid, typically slightly thick-walled (0.4μm), guttulate.

Substrate: saprophytic, occurring on decayed wood or bark of gymnosperms, angiosperms, and on other plant debris.

Type species: Thelephora atrovirens Fr. 1828

Distribution: in the whole area.

References: 113, 186.

1a. Hymenial surface even, bluish, greenish or olivaceous. 2
1b. Hymenial surface smooth or poroid, yellowish. 5

2a. Spores thin-walled, hyaline, cylindrical to ellipsoid, 5–7 × 2.5–3.5 μm, with small apiculus.
   Basidioecarp greyish blue, thin, pellicular, smooth. Hyphae in the hymenial part hyaline, basally greyish blue, thin-walled, slightly thick-walled (c. 0.4 μm) at the base, without clamps. Basidia cylindrical to narrowly clavate, 14–20 × 4–5 μm, lacking clamps at the base, sterigmata 2–3 × 0.8–1.2 μm.
   Distr.: N. Am.  Ref.: 128, 188.
   **B. neomexicanum** Gilberts. & Budington 1970

2b. Spores somewhat thick-walled (c. 0.4 μm), faint bluish or greenish, globose or broadly ellipsoid to pyriform. 3

3a. Spores globose to subglobose, 2.5–4(–4.5) μm in diam.
   Basidioecarp bluish to greenish, thin, pellicular, smooth. Hyphae in the hymenial part hyaline, thin-walled and rarely with a few clamps, the basal ones bluish, slightly thick-walled and lacking clamps, 2–4 μm wide. Basidia cylindrical to narrowly clavate, 18–28 × 4–5(–5.5) μm, always some of these with clamps at the base, with oil drops, sterigmata c. 3 × 1 μm. Spores bluish with small apiculus, often guttulate.
   Common species.
   Distr.: whole area.  Ref.: 113, 186.
   **B. atrovirens** (Fr.) Bond. & Sing. ex Sing. 1944
   Syn.: *Sporotrichum aeruginosum* Schw. 1831, non ~ (Pers.) ex Pers. 1822
   Note: A form totally devoid of clamps has been described as *B. eflabiatum* Hjortstam & Ryv. 1978 (163).

3b. Spores broadly ellipsoid or pyriform. 4
4a. Spores broadly ellipsoid, 3.5–4.2 × 2.5–3.2 μm, greenish, with distinct apiculus.
   Basidiocarp greyish green, thin, pellicular, smooth. Hyphae slightly thick-walled (up to 0.5 μm), greenish, 2.5–3(–4) μm wide, lacking clamps at all septa. Basidia cylindrical to narrowly clavate, 12–15 × 3.5–4.5 μm, sterigmata c. 4–5 × 0.5–1 μm.
   Distr.: N. Am.  Ref.: 186.
   B. californicum Jülich 1973

4b. Spores subglobose to pyriform, 4.5–6 × 4–5 μm, bluish, mostly guttulate.
   Basidiocarp bluish or greenish, thin, pellicular, smooth. Hyphae hyaline, basal hyphae slightly bluish, thin- to somewhat thick-walled (up to 0.4 μm), 3–5 μm wide, clamps very rare on the basal hyphae, more abundant on the hymenial hyphae. Basidia irregularly cylindrical to slightly clavate, with oiddrops, 26–35 × 6.5–7.5 μm, sterigmata 5–6 × 2 μm.
   Distr.: whole area.  Ref.: 113, 186.
   B. pulchrum (Lundell) M.P. Christ. 1960

5a. Hymenial surface poroid, yellowish.
   Basidiocarp up to 3 mm thick, resupinate, very soft and easily separable, 2–3 pores per mm. Hyphae thin-walled, 3–4 μm wide, with few clamps. Basidia narrowly clavate, 15–20 × 5 μm, with oiddrops. Spores globose to subglobose, with thickened yellowish walls, guttulate, with small apiculus, 3.5–4.5 μm in diam. Rare species.
   B. mollicula (Bourd.) Jülich 1975
   Syn.: Poria parksii Murrill 1921; P. sartoryi Bourd. & L. Maire 1921; P. mycorrhiza Killerm. 1927; P. terrestris Bourd. & Galz. 1928


CANDELABROCHAETE Boidin 1970

Basidiocarp annual, resupinate, effused, hypochnoid to pellicular, with brown projections. Hyphal system monomitic. Hyphae hyaline, with thin to thickened walls, short-celled, without clamps, not cyanophilous, branching at right angles. Cystidia cylindrical, septate, originating from basal parts of the basidiocarp. Basidia in candle-like clusters, cylindrical to subcylindrical, with 4 sterigmata. Spores hyaline, smooth, thin-walled, ellipsoid to subcylindrical, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: Candelabrochaete africana Boidin 1970
Distribution: North America.
References: 19.

Distr.: N. Am. Ref.: 19, 354.

C. langloisii (Pat.) Boidin 1970

CEJPOMYCES Svrček & Pouzar 1970

Basidiocarp annual, resupinate, effused, hypnoidal to fleshy. Hymenial surface discontinuous to continuous, even, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin- to somewhat thick-walled, rather wide, without clamps, branching at right angles, dextrinoid, cyanophilous. Basidia in clusters, short cylindrical to subclavate, with 4 long sterigmata. Spores hyaline, thin-walled, smooth, narrowly ovoid to navicular, cyanophilous, not amyloid, sometimes slightly dextrinoid, occasionally becoming septate after detachment.

Substrate: saprophytic on soil, detritus and strongly decayed wood.

Type species: Corticium terrigenum Bres. 1903

Distribution: Europe.

References: 113, 378.

Monotypic. Basidiocarp at first hypnoidal, later almost fleshy, up to 160 μm thick. Hymenial surface even, pale ochraceous. Margin indistinct. Basal hyphae hyaline, with slightly thickened walls, 8–10.5 μm wide, without clamps; subhymenial hyphae thin-walled, 8–10 μm wide. Basidia in clusters, short cylindrical to subclavate, 12.5–35 × 7–12.5 μm, with (2–)4(–6) sterigmata 10–23(–29) μm long. Spores usually navicular, sometimes narrowly ovoid, 12–17.2(–21) × (5.5–)6–7.7(–8.3) μm.


C. terrigenus (Bres.) Svrček & Pouzar 1970

CERACEOMYCES Jülich 1975

Basidiocarp annual, resupinate, effused, ceraceous-membranaceous, adnate, hyphal strands present or absent. Hymenial surface even or meruloid, mostly yellowish or ochraceous, in two species slightly violaceous. Hyphal system monomitic. Hyphae hyaline, thin- to slightly thick-walled, with clamps. Cystidia lacking in most species, thin-walled. Basidia narrowly clavate, mostly four-spored. Spores hyaline, smooth, thin- to slightly thick-walled, subglobose to ellipsoid or cylindrical, not amyloid.
Substrate: saprophytic on decayed wood or herbaceous plants.
Type species: Corticium tessulatum Cooke 1878
Distribution: in the whole area.
References: 113, 186.

1a. Basidiocarp, especially the cinnamon-brown encrusted basal hyphae, becoming violaceous in KOH. Spores ellipsoid, 5–6 × 3–3.5 μm. 2
1b. Basidiocarp without cinnamon-brown encrusted basal hyphae, not staining in KOH. Spores different. 3

2a. Cystidia lacking.
   Distr.: whole area. Ref.: 113, 186.
C. violascens (Fr. ex Fr.) Jülich 1972

2b. Cystidia present, thin-walled, apically loosely covered with crystals, 30–50 × 5–6 μm, up to 30 μm projecting
   Other characters as in C. violascens.
C. cystidiatus (J. Erikss. & Hjortstam apud Jülich) Hjortstam 1973

3a. Spores small, subglobose to broadly ellipsoid, c. 3 μm in diam. or 2.8–3.5 × 2–2.5 μm.
   Basidiocarp membranaceous. Hymenial surface cream-coloured.
   Hyphae hyaline, rather thin-walled, 3–4 μm wide, with clamps at most septa. Few hyphoid cystidia may be present.
   Basidia 20–28 × 4–5 μm.
   Distr.: whole area. Ref.: 113, 186.
C. sublaevis (Bres.) Jülich 1972
   Note: This species is easily confused with Trechispora cohaerens which, however, has much shorter basidia.

3b. Spores longer, more or less cylindrical, ellipsoid or pyriform. 4

4a. Spores cylindrical to ellipsoid, about 3.5–5 × 1.5–3 μm. 5
4b. Spores 6–8(–10) μm long. 7

5a. Hymenial surface even, bright yellow.
   Basidiocarp slightly ceraceous. Hyphae hyaline, thin- to slightly thick-walled, 2–8 μm wide, with clamps. Leptocystidia cylindrical, thin-walled, 60–90 × 7–10 μm, the upper part encrusted. Basidia 30–35 × 5–6 μm. Spores ellipsoid, 4.5–5.5 × 2.5–3 μm.
   Distr.: whole area. Ref.: 111.
C. sulphurinus (P. Karst.) J. Erikss. & Ryv. 1978

5b. Hymenial surface merulioid. 6

6a. Hymenial surface yellowish to yellowish-brownish.
Ceraceomyces

Basidiocarp effused to effused-reflexed, slightly ceraceous. Hyphae hyaline, thin-walled, 2–5 µm wide, with clamps. Basidia 14–20 × 4–6 µm. Spores cylindrical to narrowly ellipsoid, 3.5–4.5(–5) × 1.5–2(–2.5) µm.
Distr.: whole area. Ref.: 142.

Merulius aureus Fr. 1828

6b. Hymenial surface ochraceous to pale brownish.
Basidiocarp effused, membranaceous. Hyphae hyaline, thin-walled, 2–4.5(–6.5) µm wide, inflated at some septa, with clamps. Basidia 16–33 × 3.5–5 µm. Spores cylindrical to ellipsoid, 3.5–5 × 1.5–3 µm.
Distr.: whole area. Ref.: 113, 142.

C. serpens (Fr.) Ginn 1976
Syn.: Merulius crispatus Fr. 1821; M. porinoides Fr. 1821; Xylomyzon crustosum Pers. 1825; M. ceraceus Berk. & Curt. 1872; Polyporus collabefactus Berk. & Br. 1875; M. farlowii Burt 1917; M. stratus Pilat 1936.

7a. Spores cylindrical to narrowly ovoid (the basal part of the spores somewhat broadened), 6–8 × 1.8–2 µm.
Basidiocarp at first pellicular and smooth, becoming ceraceous to membranaceous. Hymenial surface muruloid (at least in fresh condition), cream-coloured. Hyphal strands often present. Hyphae thin to slightly thick-walled, the basal ones 4–7 µm wide, the subhymenial hyphae more narrow (2–3 µm wide), always with clamps. Basidia narrowly clavate, 16–22 × 4–5 µm. Spores thin-walled.
Distr.: Eur., USSR. Ref.: 113, 142.

C. borealis (Romell) J. Erikss. & Ryv. 1973

7b. Spores pyriform to broadly ellipsoid, 6–8(–10) × 3–4(–5) µm.
Basidiocarp ceraceous to membranaceous, with white subiculum and more or less white hyphal strands. Hymenial surface cream-coloured. Hyphae slightly thick-walled (c. 0.3–0.5 µm, in the hyphal strands up to 1.0 µm), 5–8 µm wide (in the hyphal strands up to 14 µm), nearly always with medium and distinct clamps, only some septa of the large hyphae of the hyphal strands lacking clamps. Basidia cylindrical to slightly clavate, 26–36 × 5–7 µm. Spores thin-walled, with distinct apiculus.
Distr.: whole area. Ref.: 113, 186.

C. tessulatus (Cooke) Julich 1972
Syn.: Corticium apiculatum Bres. 1925; Corticium doverense Jørstad & Pilat 1936; Corticium ilaquaeum Bourd. & Galz. 1911; Corticium rhizophorum Bourd. & Galz. 1911
CERATOBASIDIUM D.P. Rogers 1935

Syn.: *Koleroga* Donk 1958

Basidiocarp annual, resupinate, effused, reticulate-pruinose, pellicular, ceraceous to subgelatinous. Hymenial surface discontinuous to continuous, even. Hyphal system monomitic. Hyphae hyaline, with thin to thickened walls, branching at right angles, without clamps. Hyphal walls sometimes layered. Sterile hymenial structures absent. Basidia terminal, single or in small clusters, typically subglobose to pyriform, abruptly narrowed at the base, about 2–3 times as wide as the supporting hyphae, with 2–4(–6) sterigmata. Spores hyaline, thin-walled, smooth, subglobose to cylindrical, repetitive, not amyloid, not cyanophilous. Sclerotia sometimes present. Hyphal cells binucleate.

Substrate: saprophytic on rotten wood, soil, organic debris or parasitic on angiosperms, gymnosperms or mosses.

Type species: *Ceratobasidium calosporum* D.P. Rogers 1935


Distribution: in the whole area.

References: 113, 353, 384.

1a. Parasitic on angiosperms, gymnosperms or mosses, forming web-blights. Sclerotia present or absent.

2

Note: This group of species, which may be regarded a separate genus (*Koleroga* Donk 1958), is insufficiently known, especially the (sub)tropical forms. Therefore only species from temperate regions are treated here.

1b. Saprophytic on rotten wood, soil or organic litter. Sclerotia absent.

4


Basidiocarp ceraceous. Hymenial surface even, whitish. Hyphae with thin to somewhat thickened walls, c. 5 μm wide. Spores narrowly ovoid to narrowly ellipsoid or subcylindrical, 13–16 × 6–8 μm.


*C. bicornis* J. Erikss. & Ryv. 1973

2b. Basidia typically with 4 or 5 sterigmata. On vascular plants.

3


Distr.: whole area. Ref.: 172, 284, 384.

*C. anceps* (Bres. & Sydow apud Sydow) H.S. Jacks. 1949

3b. Sclerotia absent. Spores ovoid, 5.2–10.5 × 3.5–7 μm.

Basidiocarp powdery or arachnoid. Hymenial surface discontinuous, whitish. Hyphae hyaline to slightly coloured, with thin to somewhat thickened walls, 5.2–7.8 μm wide. Basidia ovoid, 8–15.6 × 5.2–10.8 μm, with 4–5 sterigmata up to 15 μm long.
C. ramicola Tu, Roberts & Kimbrough 1969

4a. Spores at least 2.5 times as long as wide, at least 8 μm long.  5
4b. Spores up to twice as long as wide, or not reaching 8 μm in length.  6

5a. Spores filiform-cylindrical, arcuate or subsigmoid, widest in the middle, 23–36 × 3–3.6 μm.  
Basidiocarp pruinose to ceraceous, hardly visible when dry.  
Hymenial surface even, greyish.  Hyphae hyaline, thin-walled, 3–4.5 μm wide.  Basidia globose, 10.5–12(14) × 9.5–11 μm, with 2–3(4) sterigmata up to 18 μm long.  
Distr.: N. Am.  Ref.: 284, 353.  
C. calosporum D.P. Rogers 1935

5b. Spores cylindrical, 8–12 × 3–4 μm.  
Basidiocarp ceraceous, hardly visible when dry.  Hymenial surface even, greyish.  Hyphae hyaline, with thin to somewhat thickened walls, 4.5–7 μm wide.  Basidia globose to ovoid, 14–16 × 8–10 μm, with 4 sterigmata up to 10 μm long.  
C. pseudocornigerum M.P. Christ. 1959

6b. Spores up to 12 μm long. Basidia with (2–)4 sterigmata.  7

7a. Spores subglobose to broadly ellipsoid, less than 1.5 times as long as wide, 7.5–9.6 × 5–7 μm. Sterigmata up to 18(–20) μm long.  
Basidiocarp ceraceous to gelatinous when fresh, hardly visible when dry.  Hymenial surface even, greyish.  Hyphae hyaline, with thin to thickened walls, 4.5–9 μm wide, sometimes inflated and up to 14 μm wide.  Basidia 19–24 × 9–11 μm, with 4 sterigmata.  
Distr.: N. Am.  Ref.: 284, 353.  
C. obscurum D.P. Rogers 1935

7b. Spores ellipsoid to subcylindrical, 1.5–2 times as long as wide. Sterigmata up to 12(–14) μm long.  8

8a. Spores ellipsoid to subcylindrical, 6–7.5 × 3–3.5 μm.  
Basidiocarp very thin, almost invisible when dry.  Hymenial surface even, whitish to greyish.  Hyphae hyaline to yellowish, with thin to thickened walls, 3–4.5 μm wide, cyanophilous.  Basidia subglobose to pyriform, 8–10 × 6–8 μm, with 4 sterigmata.  
C. stridii J. Erikss. & Ryv. 1973

8b. Spores narrowly ellipsoid to subcylindrical, 6.5–11.5 × 3.5–6 μm.  
Basidiocarp pruinose to ceraceous, almost invisible when dry.  Hymenial surface even, yellowish or grey when fresh, greyish when dry.  Hyphae hyaline to slightly coloured, with thin to somewhat thickened walls, (3–)4–7(–7.5) μm wide. Basidia subglobose to
ovoid, 11–16 × 6.5–10(–11) μm, with 4 sterigmata up to 12(–14) μm long.
Distr.: whole area. Ref.: 65, 113, 284, 353.
C. corinigerum (Bourd.) D.P. Rogers 1935

CERINOMYCES G.W. Martin 1949

Basidiocarp annual, resupinate, ceraceous when fresh, brittle when dry. Hymenial surface even to grandiniod, whitish or chrome to orange. Hyphal system monomitic. Hyphae hyaline, with thin to thickened walls, with clamps. Basidia cylindrical, forked, single, with 2(–3) long and broad sterigmata. Spores cylindrical to allantoid, hyaline, smooth, not septate (with one exception), not amyloid.

Substrate: saprothetic on decayed wood of angiosperms and gymnosperms.
Type species: Cerinomyces pallidus G.W. Martin 1949
Distribution: in the whole area.
References: 113, 284.

1a. Spores 6–12 × 2.5–4.5 μm.
1b. Spores 11–16 × 4.5–6 μm.

2a. Spores (6–)7–8(–9) × (3–)4–4.5 μm, cylindrical to allantoid. Basidia cylindrical, 11–13 × 3–4 μm, with 2 sterigmata up to 10 μm long. On angiosperms.
   Basidiocarp ceraceous to arid-fleshy, effused. Hymenial surface whitish to buff or tawny olive, even to warted or odontoid. Hyphae hyaline, 2.5–4 μm wide.
   Distr.: N. Am. Ref.: 283, 284.
C. pallidus G.W. Martin 1949

2b. Spores allantoid, 7–12 × 2.5–4 μm. Basidia cylindrical, 20–25 × 5–6 μm, with 2(–3) sterigmata up to 15 μm long. On gymnosperms.
   Basidiocarp ceraceous, effused. Hymenial surface even, whitish to pale ochraceous. Hyphae hyaline, with thin to somewhat thickened walls, 2.5–4 μm wide.
C. crustulinus (Bourd. & Galz.) G.W. Martin 1949

3a. Basidiocarp ceraceous, effused, up to 200 μm thick. Hymenial surface even, chrome to light orange. Spores never septate.
   Hyphae hyaline, basally loose, not parallel to the substrate, 2–3.5 μm wide. Basidia 20–35 × 4–5.5 μm, with 2 sterigmata up to 25(–30) μm long. Spores cylindrical, often curved, 11–14(–15) × 4.5–5.5(–6) μm. On gymnosperms.
   Distr.: N. Am., USSR. Ref.: 284, 311.
C. canadensis (H.S. Jacks. & G.W. Martin) G.W. Martin 1949

Hyphae thin-walled, hyaline, basally parallel to the substrate, conglutinate, 1.5–3.5(–4.5) μm wide. Basidia 25–45 × 3.5–5 μm, with 2 sterigmata up to 25 μm long. Spores subhyaline, cylindrical, curved, 12–15(–16) × 4.5–5.5(–6) μm. On gymnosperms.

Distr.: USSR. Ref.: 311.


CEROCCRTICUM P. Henn. apud O. Warburg 1899


Basidiocarp annual, resupinate, effused or slightly effused-reflexed, adnate, membranaceous or with somewhat ceraceous hymenial layer. Hymenial surface even or odontoid to hydnoid. Hyphal system monomitic. Hyphae hyaline, thin- to slightly thick-walled, with clamps. Hyphidia typically present, hyaline, mostly unbranched, flexuous-cylindrical. Cystidia rarely present, hyaline, thin-walled, cylindrical. Basidia typically stalked-clavate, sometimes pleurobasidioid, with 4 sterigmata, contents homogeneous or guttulate. Spores hyaline, rather thin-walled, smooth, globose, ellipsoid or cylindrical, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.

Type species: Cerocorticium bogoriense P. Henn. 1899

Distribution: in the whole area.

References: 66, 191.

1a. Cystidia present, hyaline, thin-walled, cylindrical, 40–110 × 5.5–8 μm, originating in the subiculum.
   Basidiocarp effused, membranaceous or slightly ceraceous. Hymenial surface even, yellowish to cream-coloured or ochraceous. Hyphae thin-walled, 1.5–3 μm wide, with clamps. Hyphidia simple or rarely branched, 2.5–3.5 μm wide. Basidia stalked-clavate, 25–40 × 7–8 μm. Spores subglobose to broadly ellipsoid, 5–8 × 5–6 μm.
   Distr.: whole area. Ref.: 161.

C. sulfuroe-isabellinum (Litsch. apud Pilát) comb. nov.
   Bas.: Corticium sulfuroe-isabellinum Litsch. apud Pilát. in Acta Mus. nat. Prag. 2B: 43. 1940

1b. Cystidia absent.

2a. Hymenial surface merulioid or odontoid to hydnoid.

2b. Hymenial surface even or slightly warted.

3a. Hymenial surface merulioid, pale orange brown to orange yellow.
   Basidiocarp effused, membranaceous to ceraceous. Hyphae thin-walled, 2–3.5 μm wide, with clamps. Basidia stalked-clavate, 35–65 × 8–10 μm. Spores ellipsoid, 7.5–10 × 5.5–7 μm.
Cerocorticium

Distr.: N. Am.  Ref.: 142.

C. fuscom (Lloyd) comb. nov.
Bas.: Merulius fuscus Lloyd in Mycol. Writ. 7: 1348. 1925

3b. Hymenial surface odontoid to hydroid, cream-coloured to ochraceous.
Basidiocarp effused, membranaceous. Teeth 1–2 mm long. Hyphae thin- to slightly thick-walled, 1.5–4 \( \mu m \) wide, with clamps. Basidia stalked-clavate, 35–46 \( \times \) 6–8 \( \mu m \). Spores ellipsoid to subcylindrical, 9–11 \( \times \) 5.5–7 \( \mu m \).

C. molare (Chaill. ex Fr.) comb. nov.
Bas.: Radulum molare Chaill. ex Fr. in Elench. 1: 151. 1828
Syn.: Sistotrema rude Pers. 1825

4a. Spores narrowly ellipsoid to cylindrical, length : width \( \geq 2 \).  5
4b. Spores globose to ellipsoid, length : width \( \leq 1.6 \).  7

5a. Spores narrowly ellipsoid to cylindrical, 15–18 \( \times \) 5.9–7 \( \mu m \). Hymenial surface even to warted, yellowish-orange.
Basidiocarp effused, ceraceous. Hyphae hyaline, thin- to slightly thick-walled, 2–4 \( \mu m \) wide, with clamps. Hyphidia 2–3 \( \mu m \) wide. Basidia clavate to stalked-clavate, 40–70 \( \times \) 7–9 \( \mu m \).

C. molle (Berk. & Curt.) Jülich 1975
Syn.: Corticium armeniacum Sacc. 1888; Cerocorticium bogoriense P. Henn. apud O. Warburg 1899; Ce. tibodense P. Henn. apud O. Warburg 1899

5b. Spores up to 15 \( \mu m \) long, on average shorter. Hymenial surface even.  6

6a. Spores cylindrical, often slightly curved, 9–12 \( \times \) 4.3–5(–5.5) \( \mu m \).
Basidiocarp effused, membranaceous to ceraceous. Hymenial surface even, cream-coloured to ochraceous. Hyphae hyaline, thin- to slightly thick-walled, 1.5–3.5 \( \mu m \) wide, with clamps. Hyphidia 40–60 \( \times \) 2.5–3.5 \( \mu m \) wide. Basidia clavate, 30–45 \( \times \) 6.5–8(–10) \( \mu m \).
Distr.: USSR.  Ref.: 318.

C. submolare (Parm.) comb. nov.

6b. Spores narrowly ellipsoid to cylindrical, 10–15 \( \times \) 5.5–6.5(–7) \( \mu m \).
Basidiocarp effused, membranaceous to ceraceous. Hymenial surface even, pinkish red when fresh, cream-coloured when dry. Hyphae hyaline, thin-walled, 2.5–4(–5) \( \mu m \) wide, with clamps. Hyphidia up to 5 \( \mu m \) wide. Basidia clavate, 40–55 \( \times \) 6.5–8(–9) \( \mu m \).
Distr.: USSR.  Ref.: 318.

C. roseolum (Parm.) comb. nov.
7a. Spores globose to subglobose, rarely broadly ellipsoid, 10–13 μm in diam. or 10–13 × 8–12 μm.
    Basidiocarp effused, membranaceous to slightly ceraceous.
    Hymenial surface even, cream-coloured. Hyphae 1.5–3 μm wide, thin- to slightly thick-walled, with clamps. Hyphidia 2–3.5 μm wide.
    Basidia stalked-clavate, 50–75 × 10–16 μm. On gymnosperms.
    Distr.: whole area. Ref.: 66, 114.
    C. hiemale (Laurila) comb. nov.
    Syn.: Corticium obsoletum Litsch. 1941; Corticium probatum H.S.
    Jacks. 1948

7b. Spores broadly ellipsoid to ellipsoid, rarely subglobose, up to 8.5 μm broad.

8a. Spores ellipsoid, 8–9 × 5–6 μm.
    Basidiocarp effused, membranaceous. Hymenial surface even, cream-coloured to distinctly yellow. Hyphae (1.5–)2–4 μm wide, thin- to slightly thick-walled, with clamps. Hyphidia 1.5–2.5 μm wide, sometimes rare. Basidia stalked-clavate, 30–65 × 6.5–8 μm.
    On gymnosperms, rarely on angiosperms.
    C. notabile (H.S. Jacks.) comb. nov.
    1948.
    Note: Uncobasidium luteolum Hjortstam & Ryv. 1978 is very close or perhaps identical.

8b. Spores broadly ellipsoid, 6–8.5 μm broad.

9a. Basidiocarp effused, 1–5 mm thick, crustaceous.
    Hymenial surface even, greyish. Hyphae hyaline to somewhat brownish, 2–4 μm wide, with clamps. Basidia clavate, 40–60 × 6–9 μm. Spores broadly ellipsoid, 8–11 × 6–8.5 μm.
    C. lusitanicum (Torrend) comb. nov.
    Bas.: Stereum repandum var. lusitanicum Torrend in Broteria (Bot.) 
    11: 76.1913; non Stereum repandum Fr. 1828.

9b. Basidiocarp effused, up to 1 mm thick, membranaceous to ceraceous.
    Hymenial surface even to warted, greyish when fresh, cream-coloured to ochraceous when dry. Hyphae hyaline, thin- to slightly thick-walled, 2–4(–5) μm wide, with clamps. Hyphidia 1.5–3 μm wide. Basidia stalked-clavate, 30–75 × 7–11 μm. Spores broadly ellipsoid, 7–11 × 6–8.5 μm.
    Distr.: whole area. Ref.: 66.
    C. confluens (Fr. ex Fr.) comb. nov.
    Bas.: Thelephora confluens Fr. ex Fr. in Syst. Mycol. 1: 447. 1821
Syn.: Coniophora avellanea Burt 1917; Corticium rubellum Burt 1926

Note: Corticium rickii Bres. apud Rick 1898 with subglobose spores (7–9 × 6–8 μm) is very similar or perhaps identical.

CHAETODERMA Parm. 1968

Basidiocarp perennial, resupinate, small-pulvinate, rather thick, mostly separated, sometimes confluent, with abrupt margin. Hymenial surface slightly rimose, pale coloured. Hyphal system monomitic. Hyphae hyaline, slightly thick-walled, with clamps. Cystidia of tramal origin, hyaline, cylindrical, thick-walled. Basidia hyaline, narrowly clavate, 4-spored, c. 100 μm long. Spores hyaline, cylindrical, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood.
Type species: Peniophora luna Romell ex D.P. Rogers & H.S. Jacks. 1943
Distribution: in the whole area.
References: 113, 318.

Monotypic. Basidiocarp pulvinate, 0.5–2 mm thick, mostly 1–2 cm in diam., sometimes larger. Hymenial surface somewhat rimose, under a lens finely fibrillose, whitish, pale greyish to pale ochraceous. Hyphae thin- to slightly thick-walled, the surface smooth or somewhat encrusted, 2–4 μm wide, with clamps, mostly vertically arranged, forming a dense context. Cystidia up to 300 × 9 μm, projecting 15–50 μm, smooth, slightly encrusted or apically with some crystals. Basidia narrowly clavate, 70–100 × 5–7 μm, smooth or slightly encrusted, with 4 sterigmata 6–8 μm long. Spores fusiform, somewhat curved, smooth, 12–16 × 4–6 μm. On wood of gymnosperms.

Chaetoderma luna (Romell ex D.P. Rogers & H.S. Jacks.) Parm. 1968

CHONDROSTEREUM Pouzar 1959

Basidiocarp annual or perennial, resupinate or effused-reflexed, soft-coriaceous when fresh, horny when dry. Abhymenial surface tomentose-villose, becoming glabrous. Hymenial layer ceraceous, hymenial surface even to somewhat meruloid, with purplish tinge. Hyphal system monomitic. Hyphae hyaline to brown, thin- to somewhat thick-walled, often somewhat gelatinous, with clamps. Thin-walled pyriform to subglobose vesicles present. Leptocystidia may be present. Basidia in clusters, cylindrical, with 4 sterigmata. Spores hyaline, ellipsoid to cylindrical, smooth, thin-walled, not amyloid.

Substrate: saprophytic or parasitic on wood of angiosperms, rarely on gymnosperms.
Type species: Thelephora purpureum Pers. ex Fr. 1821
Distribution: in the whole area.
References: 113, 182.
Monotypic. Basidiocarp up to 1 mm thick. Abhymenial surface light buff to brownish, often becoming concentrically zoned with blackish lines. Hymenial surface even to slightly merulioid, at first light buff, later brownish with purplish, lilaceous or violaceous tinges which may become dominant. Margin paler. Hyphae hyaline to brownish, 3–6 µm wide, abhymenial ones often with thickened walls. Subhymenium and subiculum with hyaline to brownish, thin-walled vesicles, subglobose to pyriform, 13–30 × 10–15(–22) µm. Leptocystidia when present cylindrical to fusiform, 3–7.5 µm wide, projecting up to 30 µm. Basidium cylindrical, 25–50 × 4–6 µm. Spores ellipsoid to cylindrical, 5–8(–10) × (2–)3–4 µm.

Distr.: whole area. Ref.: 113, 182, 234.

C. purpureum (Pers. ex Fr.) Pouzar 1959

Syn.: Stereum vorticosum Fr. ex Fr. 1838; S. micheneri Berk. & Curt. apud Berk. 1873 sensu Massee 1890; Corticium nyssae Berk. & Curt. apud Berk. 1873; S. rugosiusculum Berk. & Curt. apud Berk. 1873; C. siparium Berk. & Curt. apud Berk. 1873

CHRISTIANSENIA Hauerslev 1969

Basidiocarp annual, resupinate, undulate or subcerebiform (or growing on cerebriform galls formed by the host), gelatinous when fresh, subinvisible when dry. Hymenial surface white to pallid or pale salmon. Hyphal system monomitic. Hyphae hyaline, thin-walled, with or without clamps. Basidia bladder-shaped when young, nearly cylindrical when mature, sometimes constricted, with 2–6 sterigmata. Spores hyaline, thin-walled, not amyloid, sometimes forming globose spore-cells. Blastocystidia present, in some species formed at both sides of a septum and fusing to form one zygoconidium. Arthroconidia sometimes present.

Substrate: parasitic on Basidiomycetes or saprophytic on wood.

Type species: Christiansenia pallida Hauerslev 1969

Anamorph: Syzygospora G.W. Martin 1937

Distribution: Europe, North America.

References: 20, 145, 202, 281.

1a. Parasitic on Aphyllophorales (Leucogyrophana, Phanerochaete). Zygoconidia usually present. 2

1b. Parasitic on Agaricales (Collybia). Zygoconidia absent. 3

2a. Basidia with (4–)6 sterigmata. Zygoconidia cylindrical, often slightly curved, 6–11 × 2.8–4.5 µm.


Basidiocarp effused. Hymenial surface even to slightly warty, pale salmon. Hyphae 1.5–2 μm wide. Basidia 18–40 × 4.5–7 μm, sterigmata up to 10 μm long. Spores subglobose, 6.5–8 × 4.5–6.2 μm, forming globose sprout-cells, 1.5–2 μm in diam. Parasitic on *Leucogyrophana mollis*.


**C. mycophaga** (M.P. Christ.) Boidin 1969

Note: The species is imperfectly known.

3a. Spores ellipsoid to ovoid or lacrimoid, 6–8(--9) × 3–4 μm. Basidia clavate, 40–70 × (6--)8–13 μm, sterigmata up to 8 μm long, lacking refractive material in the tip.

Basidiocarp on the surface of cerebriform galls. Hymenial surface pallid to hyaline. Hyphae 2–4 μm wide, with clamps. Bystoconidia subglobose to broadly ellipsoid, 2–3.5 × 1.5–2 μm, originating apically or laterally on the conidiophores, often with a basal clamp. Arthroconidia rare, up to 13 × 2 μm.


**C. tumefaciens** Ginns & Sunhede 1978

Note: Although Ginns and Sunhede (145) call the conidiophores simple-septate, they draw a conidiophore with four clamp connections and not one septum without a clamp.

3b. Spores narrowly ellipsoid to cylindrical, (5.5--)6--8(--10) × 1.5–2.5 μm. Basidia narrowly clavate to cylindrical, sterigmata up to 7 μm long with refractive material in the tip.

4a. Clamps present at all septa, except those of the conidiophores. Basidia (40--)50–80 × 6–8 μm, with (3--)4 sterigmata.

Hyphae 2–3 μm wide. Bystoconidia subglobose to broadly ellipsoid, 2–4 × 1.5–2.5 μm, originating terminally and laterally on the conidiophores. Arthroconidia 7–13 × 2 μm.


**C. mycetophila** (Peck) Ginns & Sunhede 1978


Hyphae 2–4 μm wide. Bystoconidia subglobose to broadly ellipsoid, 2–3.5 × 1.5–2 μm, originating terminally and laterally on the conidiophores. Arthroconidia up to 13 × 2 μm, originating by fragmentation of the conidiophore.


**C. efibulata** Ginns & Sunhede 1978

Note: Caryological studies are needed to prove that *C. efibulata* is not only the haploid phase of *C. mycetophila*.
CLAVULICUM Boidin 1957


Substrate: saprophytic on decayed wood of gymnosperms.

Type species: *Corticium pilatii* Boidin 1954

Distribution: in the whole area.

References: 5.

Monotypic. Basidiocarp at first adnate, later often loosening at the margin, up to 300 μm thick. Margin at first white, fibrillos. Hymenial surface even, greyish to ochraceous. Hyphae hyaline, 2–4 μm wide, with clamps. Gloeocystidia flexuous-cylindrical, thin-walled, 80–120 × 3.5–5 μm. Basidia 35–50 × 6.8–8 μm, with (1–)2(–4) sterigmata, a basal clamp present. Spores hyaline, broadly ellipsoid, 9–13 × 6.5–8 μm, guttulate.

Distr.: whole area. Ref.: 4, 113.

C. macounii (Burt) J. Erikss. & Boidin ex Parm. 1968

Syn.: *Corticium pilatii* Boidin 1954

COLUMNOCYSTIS Pouzar 1959

Basidiocarp annual or perennial, resupinate or effused-reflexed, coriaceous. Hymenial surface even, with brownish, violaceous or greyish tinges, usually with a white pruinose bloom. Abhymenial surface typically with dark tomentum. Hyphal system dimitic. Skeletal hyphae brown, generative hyphae hyaline, with or without clamps. Cystidia cylindrical to clavate, of two types: a) very thick-walled, typically slightly pigmented, with encrustations, typically projecting, originating from skeletal hyphae; b) thick-walled (1–2 μm), strongly pigmented, smooth, embedded, originating from hymenium or trama. Basidia subclavate to cylindrical, hyaline to brownish, with thin to thickened walls. Spores hyaline to yellowish, thin- to slightly thick-walled, smooth, cylindrical, not amyloid.

Substrate: saprophytic on wood of gymnosperms, mainly Picea.

Type species: *Thelephora abietina* Pers. ex Fr. 1821

Distribution: in the whole area.

References: 12, 113, 182, 337.

1a. Clamps present at nearly all septa. Hymenial surface violaceous, greyish or brownish. Spores cylindrical, 8.5–13 × 4–5 μm.

Basidiocarp resupinate or usually effused-reflexed, up to 2.5 mm thick. Abhymenial layer matted tomentose, dark red brown to fuscous, later often zoned with black lines; margin light brown.
Skeletal hyphae dark brown, 2.5–5(–6.5) μm wide, generative hyphae hyaline, 2–3.5 μm wide. Cystidia either a) very thick-walled (up to 5 μm), apically almost hyaline, 150–260 × 8–17 μm, delicately encrusted (incrustation dissolving in lactic acid and Melzer’s), typically projecting, or b) thick-walled (up to 2 μm), strongly pigmented, often with several simple septa, smooth, 50–100 × 3–6 μm. Basidia subcylindrate to cylindrical, 50–100 × 5–7 μm.

Distr.: whole area. Ref.: 113, 182, 234.

**C. abietina** (Pers. ex Fr.) Pouzar 1959

Syn.: *Thelephora crispa* Pers. ex Fr. 1821; *T. conchata* Fr. 1821; *Stereum striatum* Schrad. ex Fr. 1838 non (Fr.) 1838; *S. glaucescens* Fr. 1874; *Hymenochaete fimbriata* Ellis & Everh. 1885; *H. abnormis* Peck 1889; *?H. rugispora* Ellis & Everh. 1890; *S. pinicola* Vel. 1922

1b. Clamps absent. Hymenial surface dark ochraceous brown, greyish brown or umber, often with olivaceous tinge. Spores cylindrical to fusoid, 11–16(–17) × 3.5–4(–5) μm.

Basidiocarp resupinate or effused-reflexed, up to 3 mm thick. Abhymenial surface (layer) yellowish brown to umber. Skeletal hyphae dark brown, 2–4.5 μm wide, generative hyphae thin-to slightly thick-walled, hyaline to pale brown, 2–4 μm wide. Cystidia either very thick-walled (up to 6 μm), reddish brown, often with large crystals, 150–250 × 8–14 μm, or thick-walled (1–2 μm), reddish brown, often secondarily septate, 30–80 × 3–5 μm, smooth. Basidia subcylindrate to cylindrical, 70–120 × 5–8 μm. Rare.

Distr.: whole area. Ref.: 43, 182, 234.

**C. ambigu** (Peck) Pouzar 1959

Syn.: *Stereum carpaticum* Pilát 1930

**CONFERTOBASIDIUM** Jülch 1972

Basidiocarp annual, resupinate, effused, pellicular to ceraceous-membranaceous, separable. Hymenial surface even, whitish and distinctly contrasting with the cinnamon-brown subiculum. Hyphal system monomitic. Hyphae in the hymenial part hyaline, thin-walled and often irregularly deformed, the basal ones cinnamon-brown, straight, not discolouring in KOH, and somewhat thick-walled (0.5–1.0 μm), with clamps at nearly all septa, especially the basal hyphae often encrusted with small granules. Basidia clustered, hyaline, cylindrical, about 10–20 × 4–5 μm, with 2–4 sterigmata. Spores hyaline, more or less thin-walled, smooth, ellipsoid to cylindrical, with small apiculus, not amyloid.

Substrate: saprophytic mainly on wood and bark of gymnosperms.

Type species: *Corticium olivaceo-album* Bourd. & Galz. 1911

Distribution: in the whole area.

Reference: 113, 186.
1a. Spores relatively small, cylindrical to ellipsoid, 3.5–4 × 1.8–2.3 μm. Basidia rather small, 9–15 × 3.5–4.5 μm. Common species. Basidiocarp membranaceous to thin-ceraceous. Hymenial surface even, often cracked when dry, whitish when young, later cream-coloured. Hyphae hyaline and thin-walled in the subhymenium, brownish and thick-walled (0.5–1 μm) in the subiculum, 2.5–5 μm wide, with clamps at nearly all septa. Distr.: whole area. Ref.: 113, 186. C. olivaceo-album (Bourd. & Galz.) Jülich 1972 Syn.: Corticium fuscostatum Burt 1926; C. ochroleucum Bres. 1898, non ~ Fr. 1838


CONIOPHORA DC. ex Mérat 1821

Syn.: Coniophorella P. Karst. 1889

Basidiocarp annual, effused, resupinate, arachnoid to fleshy, separable or adnate. Hymenial surface even to tuberculate, often granulose. Subiculum loose when well developed, white or dull-coloured. Rhizomorphs and/or hyphal strands often present. Hyphal system typically monomitic. Hyphae hyaline or yellowish, typically thin-walled, some very wide (up to 15 μm). Septa usually without clamps, but wider hyphae may show one or more (up to 6) clamps per septum. Cystidia absent or present, cylindrical and septate; leptocystidia or hyphidia may also appear to be present when the hymenium is thickening. Much-branched hyphae originating directly under the basidial septum are sometimes present. Basidia typically originating from a subglobe or pyriform cell, subclavate when mature, often somewhat flexuous, with 2–4 sterigmata. Spores yellowish, ovoid, ellipsoidal, fusiform or navicular, rarely (sub)globe, typically rather large, smooth, thick-walled, typically dextrinoid and cyanophilous, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms, causing severe brown rot.

Type species: Coniophora membranacea DC. ex Mérat 1821. Distribution: in the whole area.

References: 66, 127, 141, 235.
Coniophora

Note: The species concept within Coniophora is difficult due to the lack of stable combinations of characters. Thickness of the basidiocarp, state of development of the subiculum, presence of "hypidia" are unreliable characters. Pure cultures demonstrate no significant differences within the species-complexes. The nuclear behaviour of the species suggests the possibilities of wide variation. For these reasons the C. fusispora-complex and the C. purpurea-complex are introduced.

1b. Spores not globose, at least 8 μm long

2a. Cystidia present, olivaceous to dark brown, with thickened walls, cylindrical or somewhat widened at the apex, 90–210(–300) μm, often with some encrustations, septate.
   Basidiocarp floccose to membranaceous, rather thick. Hymenial surface even to slightly warded, olivaceous to umber. Margin similar or fibrillose and paler. Subiculum pale to dark brown. Rhizomorphs or hyphal strand often present, up to 50 μm wide. Hyphae hyaline to brown, with thin to thickened walls, (1–)2–7(–10) μm wide, clamps very rare. Basidia hyaline, 25–60 × 6–9 μm. Spores olivaceous, ovoid to narrowly ellipsoid, (8–)9–12(–13) × 4–5.5 μm.
   Distr.: whole area. Ref.: 66, 127, 278.
C. olivacea (Fr.) P. Karst. 1882
   Syn.: Telephora sistotreomoides Schw. 1882; T. umbrina Fr. 1828;
   Corticium brunneolum Berk. & Curt. 1873; Cor. leucothrix Berk. & Curt. 1873; Hymenochoaetellisii Berk. & Cooke 1876;
   Coniophora atrocinerea P. Karst. 1881; Con. fumosa P. Karst. 1881; Con. furva P. Karst. 1888; Con. fulvo-olivacea Massee 1889; Con. karstenii Massee 1889; Con. sibirica Burt 1931

2b. Septate cystidia absent.

3a. Spores ovoid to ellipsoid, rarely subfusiform or cylindrical, 8–15 μm long.
3b. Spores fusiform to navicular, 13–21 × 5–8.5 μm. C. fusispora-complex.
   Key to the form-species.

4a. Hyphal system dimitic.
   Basidiocarp adnate, continuous, up to 400 μm thick. Margin cottony, fimbriate, white to cream, up to 3 mm wide. Hymenial surface even, pruinose to granulose, dull brown to grey brown; subiculum tan to brown. Hyphal strands absent. Skeletal hyphae 2.5–4 μm wide. Generative hyphae hyaline, (1.5–)3–5(–9.5) μm, some heavily granule-encrusted. Basidia about 8 μm wide. Spores pale yellow, broadly ellipsoid to ovoid, (8–)8.5–10.5 × 5.5–6.5(–7.5) μm. On angiosperms and gymnosperms.
   Distr.: Eur. Ref.: 141.
C. hanoiensis Pat. 1907

4b. Hyphal system monomitic.
5a. Spores ovoid, subfusiform or cylindrical, \((7.5–)8–11.5(–13.6) \times 3.5–5.5 \mu m\). Subiculum with pale olive tinge, dark grey next to the substratum. Hyphal strands present, up to 25 \(\mu m\) wide. Basidiocarp membranaceous, separable, up to 600 \(\mu m\) thick, margin indistinct or mucedinous, deep olive buff or concolourous with hymenium. Hymenial surface even, pruinose to pulvulrent, avellaneous, ochraceous to brown. Hyphae thin-walled, \((2.5–)4–8(–20) \mu m\) wide, often with swellings, sometimes granule-encrusted. Basidia about 8 \(\mu m\) wide, projecting up to 20 \(\mu m\).

Distr.: N. Am. Ref.: 141.

C. submembranacea (Berk. & Br.) Cooke ex Sacc. 1888

Syn.: Coniophora inflata Burt 1917

5b. Spores ovoid to broadly ellipsoid, \(9–15 \times 6–9.5 \mu m\). Subiculum white to pallid, rarely darker. Rhizomorphs often present. C. puteana-complex.

Key to the form-species

6

6a. Basidiocarp membranaceous to fleshy, separable, \(330–1000 \mu m\) thick. Hymenial surface even to tuberculate, cream, ochraceous, olivaceous-brown and finally dark brown. Subhymenial layer thick, waxy. Margin white to yellowish, granulose or composed of radiating hyphal strands. Hyphae hyaline, rarely tan, 2–6(–11) \(\mu m\) wide, often encrusted with granules. Basidia 55–75 \(\times 6.5–9 \mu m\). Spores 9.5–15 \(\times (6–)6.5–9(–9.5) \mu m\).

Distr.: whole area. Ref.: 66, 127, 141.

C. puteana (Schum. ex Fr.) P. Karst. 1868

Syn.: Coniophora membranacea DC. ex Merat 1821; Con. cerebella Pers. 1822; Thelephora laxa Fr. 1828; Thelephora luteoicrata Berk. 1872; Con. lurida P. Karst. 1881; Corticiun kalniae Peck 1893

6b. Basidiocarp floccose to membranaceous, separable or not, up to 500 \(\mu m\) thick. Hymenial surface even, pale ochraceous, sulphureous, olivaceous to olive-brown or chocolate. Subhymenial layer thin.

7

7a. Hyphae 2.5–6 \(\mu m\) wide, smooth, rarely slightly encrusted with granules. Basidiocarp floccose to submembranaceous, adnate, up to 300 \(\mu m\) thick. Hymenial surface floccose to continuous, even, pale ochraceous, sulphureous to olive-brown. Basidia 30–75 \(\times 6.5–9 \mu m\). Spores 9–14 \(\times 6–9 \mu m\).


C. arida (Fr.) P. Karst. 1882

Syn.: Coniophora cookei Massee 1889; Con. subcinnamomea P. Karst. 1889; Con. eremophila Lindsey & Gilberts. 1975

7b. Hyphae 3–6.5(–13) \(\mu m\) wide, often heavily encrusted with coarse crystals or granules. Basidiocarp pellicular to membranaceous, separable or adnate, up to 500 \(\mu m\) thick. Hymenial surface ochraceous to olivaceous to umber. Basidia 35–75 \(\times 6–10(–11) \mu m\). Spores 10–13 \(\times 6.5–9.5 \mu m\).
Coniophora

Distr.: whole area. Ref.: 141.
C. suffocata (Peck) Massee 1889
Syn.: Coniophora macra P. Karst. 1882; Con. berkeleyi Massee 1889; Con. betulae P. Karst. 1896; Hypochnus flavobrunneus
Dearness & Bisby apud Bisby et al. 1929

8a. Basidiocarp adnate, membranaceous, thick. Margin pale, fimbriate. Hyphae thin-walled, 3–10 μm wide, with inflations up to 15 μm wide, smooth or slightly encrusted. Spores fusiform to navicular, 13–21(–23) × (5.5–)6.5–8.5 (–9) μm.
Hymenial surface whitish to yellowish at first, becoming dark olive brown. Basidia 40–65 × (7–)9–12 μm.
C. bourdotii Bres. 1908
Note: C. fusca Bres. & Torrend apud Torrend 1913 with yellowish pyriform or narrowly ovoid spores, 15–18 × 6–7 μm, may be identical.

Hymenial surface tawny olive to snuff brown when dry, even, pulverulent. Hyphal strands present, up to 25 μm wide.
Distr.: N.-Am. Ref.: 54.
C. fusispora (Cooke & Ellis) Cooke apud Sacc. 1888

CONOHYPHA Jülich 1975

Basidiocarp annual, resupinate, effused, adnate, membranaceous Hymenial surface even, more or less cream-coloured. Hyphal system monomitic. Hyphae hyaline, thin-walled, with short and broad cells, with clamps. Cystidia lacking or present as leptocystidia. Basidia cylindrical, thin-walled, with a basal clamp. Spores hyaline, ellipsoid, smooth, thin-walled, not amyloid.

Substrate: on wood of gymnosperms and soil.
Type species: Corticium albocremeum Hohn. & Litsch. 1908
Distribution: Europe, North America.
References: 194.

1a. Leptocystidia lacking.
Basidiocarp effused, loosely adnate, c. 100 μm thick. Hymenial surface even, cream-coloured to ochraceous. Hyphae hyaline, the subhymenial cells inverse-conical, 8–19 × 5–11 μm, with clamps at all septa. Basidia 23–30 × 5.5–6 μm, slightly guttulate, 4-spored. Spores broadly ellipsoid, 6.6–8 × 4.6–5.2 μm, guttulate. On wood or bark of gymnosperms.
C. albocremea (Hohn. & Litsch.) Jülich 1975
1b. Leptocystidia present, thin-walled, subulate, 60–80 × 4–6 μm, projecting up to 50 μm.
    Distr.: N. Am. Ref.: 368.
    C. terricola (Burt) Jülich 1976

CORONICUM J. Erikss. & Ryv. 1975

Basidiocarp annual, resupinate, effused, adnate, membranaceous to somewhat ceraceous. Hymenial surface even, cream-coloured to ochraceous. Hyphal system monomitic. Hyphae hyaline, indistinct, thin-walled, with clamps. Leptocystidia (cystidioles) present, hyaline, thin-walled, typically with apical outgrowths. Basidia hyaline, clavate to subclaviform, often somewhat stalked, c. 20 μm long, with a basal clamp, mostly 4-spored. Spores hyaline, more or less ellipsoid to navicular, smooth, thin-walled, guttulate, not amyloid.
Substrate: on wood or bark of angiosperms and gymnosperms.
Type species: Corticium gemmiferum Bourd. & Galz. 1911.
Distribution: in the whole area.
References: 114, 194.

1a. Spores ellipsoid, 4.5–5.2 × 2.5–3.0 μm. Leptocystidia broadly clavate.
    Basidiocarp effused, membranaceous, up to 50 μm thick. Hymenial surface even, cream-coloured or greyish. Hyphae hyaline, 1.5–2 μm wide, often torulose with clamps. Leptocystidia 15–25 × 6–12 μm.
    Basidia 14–18 × 4.2–4.6 μm.
    Distr.: N. Am. Ref.: 175, 194.
    C. proximum (H.S. Jacks.) Jülich 1975

1b. Spores 6–9 μm long. Leptocystidia narrowly clavate or fusiform. 2

2a. Spores narrowly navicular, 6.5–9 × 2.5–3 μm, guttulate.
    C. alboglauca (Bourd. & Galz.) Jülich 1975

2b. Spores ellipsoid or broadly navicular, 3–4.5 μm wide 3

3a. Spores ellipsoid, 6–8 × 3–4 μm. Hymenial surface appearing homogeneous when seen through a lens.
Coronicium

C. thymicola (Bourd. & Galz.) Jülich 1975
3b. Spores broadly ellipsoid to navicular, 6–9 × 3.5–4.5 μm. Hymenial surface dotted with small, brownish particles when seen through a lens (50×).
C. gemmiferum (Bourd. & Galz.) J. Erikss. & Ryv. 1975

CRISTINIA Parm. 1968
Basidiocarp annual, resupinate, hypochnoid, farinose or floccose. Hymenial surface even to warted, reticulate, raduloid or irpicoid, whitish to ochraceous or sulphureous, sometimes incarnate. Hyphal strands usually present. Hyphal system monomitic. Hyphae hyaline, thin-walled, typically short-celled, with clamps at all septa. Cystidia absent. Basidia in clusters, subclavate to cylindrical, with 4 sterigmata. Immature basidia typically with cyanophilous granules. Spores hyaline, thick-walled, smooth, globose to broadly ellipsoid, cyanophilous, not amyloid.

Substrate: saprophytic on wood of angiosperms or more rarely gymnosperms.
Type species: Hydnum helveticum Pers. 1825
Distribution: in the whole area.
References: 114, 318.

1a. Hymenial surface even.
Basidiocarp hypochnoid to farinaceous, thin. Hymenial surface whitish to greyish-cream, sometimes incarnate. Hyphal strands present, sometimes scarce. Hyphae hyaline, thin-walled, 4–8 μm wide. Basidia 15–23 μm × 5.5–6.5 μm. Spores subglobose to broadly ellipsoid, (3.5–)4–5 × 3.5–4.2(–4.5) μm, with distinct apiculus.
Distr.: USSR. Ref.: 318.
C. sasae Parm. 1968
Note: (cf. Leptosporomyces ovoides without hyphal strands)

1b. Hymenial surface reticulate, warted, raduloid or irpicoid.

Distr.: whole area. Ref.: 66, 114.
C. helvetica (Pers.) Parm. 1968
Crustomyces

Note: *Cristina sonora* Nakasone & Gilbert, 1978 seems to be closely related. It differs in the presence of cystidioles and in the ovoid to ellipsoid spores, 4.5–5.5 × 3.5–4 μm.


*C. gallica* (Pilát) Jülich 1975

Syn.: *Radulum mucidum* (Pers.) Bourd. & Galz. 1914 sensu Bourd. & Galz.

**CRUSTODERMA** Parm. 1968

Basidiocarp annual, resupinate, effused, ceraceous to crustaceous, closely adnate; the margin more or less abrupt. Hymenial surface even, yellowish to ochraceous to cinnamon. Hyphal system mononitic. Hyphae yellowish, indistinct, slightly thick-walled, with clamps, mainly vertically arranged, forming a rather dense context. Cystidia cylindrical and clamped at the base, thick-walled, the apical part smooth or somewhat encrusted. Basidia hyaline to slightly yellowish, cylindrical to narrowly elavate, thin- to slightly thick-walled, 4-spored, with a basal clamp. Spores hyaline to yellowish, cylindrical to narrowly ellipsoid, thin- to slightly thick-walled, smooth, not amyloid.

Substrate: saprophytic on wood of gymnosperms.

Type species: *Coricium dryinum* Berk. & Curt. apud Berk. 1873

Distribution: in the whole area.

References: 114, 318.


Distr.: whole area. Ref.: 114, 368.

*C. dryinum* (Berk. & Curt. apud Berk.) Parm. 1968

Note: When spores hyaline, thin-walled, ellipsoid, 7–11 × 3.5–5.5 μm, cf. *Phlebia cornea* and *Ph. longicystidia*.

**CRUSTOMYCES** Jülich 1978

Basidiocarp annual or perennial, resupinate, effused, membranaceous or crustaceous, hyphal strands lacking. Hymenial surface even or odontoid, light coloured. Hyphal system mononitic or dimitic with skeletal hyphae.
Generative hyphae hyaline, thin- to slightly thick-walled, with clamps. Skeletal hyphae hyaline. Dendrohyphidia present, hyaline, richly branched. Gloecystidia present, hyaline, with resinous contents. Basidia narrowly clavate or suburniform, 4-spored. Spores hyaline, ellipsoid, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: *Odontia subabrupta* Board & Galz. 1928
Distribution: Europe, North America.
References: 199.

1a. Hymenial surface distinctly odontoid, pale ochraceous.
   Basidiocarp effused. Generative hyphae and skeletal hyphae 2–3 μm wide. Dendrohyphidia few or abundant, hyaline, richly branched, c. 20 μm long. Gloecystidia ellipsoid or clavate, rarely with a lateral appendix at the base or an apical outgrowth, 25–35 × 7–10 μm, thin-walled, smooth. Basidia 12–18 × 3–4 μm. Spores ellipsoid, 3.5–4.5 × 2–2.5 μm.
   **C. subabruptus** (Bourd. & Galz.) Jülich 1978

1b. Hymenial surface even or somewhat tuberculate, cream-coloured.
   Basidiocarp effused. Generative hyphae 1.5–4 μm wide. Skeletal hyphae not seen. Dendrohyphidia abundant, very difficult to see. Gloecystidia clavate, often with moniliform outgrowth at the apex, 17–57 × 6–9 μm, thin- to slightly thick-walled, smooth. Basidia 13–16 × 4–5 μm. Spores ellipsoid, 4.5–5.5 × 1.8–2.2 μm.
   Distr.: N. Am.
   **C. pini-canadensis** (Schw.) Jülich 1978
   Syn.: *Peniophora piceina* Overh. 1930

**CYANOBASIDIUM** Jülich 1979

Basidiocarp annual, resupinate, effused, hypochnoid to membranaceous. Hyphal system monomitic. Hyphae hyaline to yellowish, distinct, cylindrical, with or without clamps. Cystidia lacking. Basidia narrowly clavate or more or less cylindrical, with guttulate, cyanophilous contents, four-spored. Spores hyaline to pale yellowish, globose to subglobose, slightly thick-walled, finely warted, with cyanophilous walls.

Substrate: saprophytic on wood or bark of angiosperms.
Type species: *Pellicularia chordulata* D.P. Rogers 1943.
Distribution: North America.
References: 201.

Only one species in the area. Basidiocarp resupinate, effused, several cm large, hypochnoid to thin-membranaceous, hyphal strands only present in the subiculum. Hymenial surface even, ochraceous. Hyphae hyaline in the sub-
hymenium, often yellowish in the trama and there slightly thick-walled and 4–8 μm wide, clamps present in the subhymenium, absent in the trama. Basidia 12–23 × 6–8 μm, with a basal clamp. Spores hyaline to pale yellowish, slightly thick-walled, globose to subglobose, finely warted, 4–5 × 4–4.5 μm, cyanophilous.

Distr.: N. Am. Ref.: 201
C. chordulatum (D.P. Rogers) Jülich 1979

CYLINDROBASIDIUM Jülich 1974

Basidiocarp annual, resupinate or seldom effused-reflexed, membranaceous, with more or less fimbritate margin. Hymenial surface even, sometimes slightly tuberculate, cream-coloured to ochraceous. Hyphal system monomitic. Hyphae hyaline, the basal ones sometimes slightly yellowish, loosely interwoven, distinct, with clamps, thin- to slightly thick-walled. Gloeocystidia or cystidioles of about the same size as the basidia, but with fusiform apex. Basidia rather long, narrowly clavate, cylindrical when young, about 40–80 μm long, with clamps at the base, 4-spored. Spores hyaline, thin-walled, pyriform, smooth, not amyloid.

Substrate: saprophytic on bark and wood of angiosperms.
Type species: Thelephora evolvens Fr. ex Fr. 1821
Distribution: in the whole area.
References: 115, 191

1a. Spores 8–12 × 4.3–6 μm.

Basidiocarp at first forming rounded resupinate patches with white fimbritate margin, often with one wart in the middle, then confluent and widely effused; hyphal strands lacking. Subhymenial hyphae hyaline and thin-walled, the basal ones slightly yellowish, thick-walled (0.4–1 μm), 3–5 μm wide, guttulate. Basidia 40–80 × 5–6 μm, the sterigmata 4–6 μm long. Spores hyaline, pyriform, with large apiculus.

C. evolvens (Fr. ex Fr.) Jülich 1974
Syn.: Thelephora laevis (Pers.) ex Fr. 1821; Th. fissilis Pers. 1822; Th. laxa Pers. 1822, non – Fr. 1828; Th. populina Sommerf. 1826; Th. flocculenta Fr. 1828; Th. sarcoides Fr. 1828; Cladoderris mimima Berk. & Br. 1878; Aleurodiscus sondaensis Yasuda apud Lloyd 1922; Hyphoderma arizonicum Lindsey & Gilberts. 1977

1b. Spores 4–6 × 2.5–3 μm.

Characters of basidiocarp similar.
Distr.: N. Am. Ref.: 115.
Cystostereum

CYSTOSTEREUM Pouzar 1959

Basidiocarp annual or perennial, resupinate to somewhat effused-reflexed, corky or hard. Hymenial surface even to tuberculate, pale coloured. Hyphal system dimitic with skeletal hyphae. Generative hyphae hyaline, thin-walled, with clamps. Skeletal hyphae subhyaline to brown. Gloeocystidioid vesicles present, hyaline, filled with resinous material or oidiom, sulpho-negative. Basidia in clusters, narrowly clavate, 4-spored. Spores hyaline, thin-walled, ellipsoid to subcylindrical, smooth, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: Thelephora murraili Berk. & Curt. 1868

Distribution: in the whole area.

References: 114, 182, 337.


Distr.: whole area. Ref.: 114, 182.

C. murraili (Berk. & Curt.) Pouzar 1959

Syn.: Stereum tuberculatum Fr. 1874; ? Corticium globosum Burt 1926; S. pulverulentum Peck 1900, non ~ (Lév.) Mont. 1847; C. effusum Overholts 1930.

DACRYOBOLUS Fr. 1849

Basidiocarp annual, resupinate, effused, adnate, membranaceous to coriaceous. Hymenial surface even to odontiid or tuberculate, pale-coloured. Hyphal system monomitic or dimitic. Hyphae hyaline to pale yellowish, thin- or slightly thick-walled, the generative hyphae with clamps. Cystidia of two types: a) of trunal origin, cylindrical, thick-walled; b) of hymenial origin, cylindrical, thin-walled. Basidia long and narrowly clavate, thin-walled, 4-spored, with a basal clamp. Spores hyaline, thin-walled, smooth, allantoid, not amyloid.

Substrate: saprophytic on gymnosperms.

Type species: Hydnium sudans Alb. & Schw. ex Fr. 1821

Distribution: in the whole area.

References: 114, 304.

1a. Hymenial surface tuberculate when fresh, even when dry. Hyphal system dimitic.

Basidiocarp at first orbicular or irregularly rounded, later confluent and becoming effused, closely adnate, membranaceous or coriaceous, 0.5–1 mm thick. Hymenial surface continuous or more or less cracked when dry, pale-coloured in younger specimens
Dendrophysellum

(cream-coloured or yellowish ochraceous), in older ones darker. Hyphae hyaline, the generative ones thin-walled, with clamps, 2–3 μm wide, the skeletal hyphae thick-walled, 3–5 μm wide, with some secondary septa. Cystidia of two types: a) cylindrical, thick-walled, of trama origin, up to 250 × 5–8 μm, projecting up to 75 μm, the apical part thin-walled, the wall swelling in KOH; b) cylindrical, thin-walled, of hymenial origin, 60–80 × 3–4 μm, with a basal clamp. Basidia 35–45 × 2–3.5 μm, slightly constricted at the apex. Spores allantoid, 4.5–6 × 1.2–1.5 μm.

Distr.: whole area. Ref.: 114, 304, 405, 406.

1b. Hymenial surface odontoid. Hyphal system monomitic. Basidiocarp mostly small, sometimes confluent and effused. Hymenial surface at first pale (whitish to ochraceous), later darker, distinctly odontoid, the teeth separated, conical, up to 0.5 mm long, at the top often excreting a drop of viscid liquid (which is not always preserved in dried specimens). Hyphae thin- to slightly thick-walled, the wall somewhat swelling in KOH, 2.5–3.5 μm wide, with clamps, distinct in the trama, rather indistinct in the subhymenial layer. Cystidia of two types: a) long, cylindrical, moderately thick-walled, mainly in the teeth and then projecting, with several secondary septa lacking clamps, but the basal septum always with a clamp connection, of trama origin; b) thin-walled, cylindrical, of hymenial origin, 50–70 × 3–5 μm, projecting up to 30 μm. Basidia 25–30 × 2.5–3.5 μm. Spores allantoid, 5–6 × 1.5 μm.

Distr.: whole area. Ref.: 114, 304.

D. sudans (Fr.) Fr. 1849

DENDROPHYSELLUM Parm. 1968

Basidiocarp annual, resupinate, effused, ceraceous to somewhat crustaceous; margin mealy or indistinct. Hymenial surface even or gramininioid. Hyphal system monomitic. Hyphae thin-walled, with clamps. Dendrohypididium present, encrusted. Basidia cylindrical to clavate, small. Spores hyaline, fusiform to navicular, thin-walled, smooth, amyloid.

Substrate: saprophytic on wood of gymnosperms.

Type species: Dendrophysellum amurense Parm. 1968

Distribution: USSR.

References: 318.

Monotypic. Basidiocarp 150–250 μm thick. Hymenial surface even to somewhat gramininioid, with greyish and yellowish tinges. Hyphae 1.5–3 μm wide, with scattered clamps. Dendrohypididium abundant, densely branched in the upper part, with yellowish encrustation. Basidia flexuous-cylindrical to clavate, 12–16 × 5–5.5 μm. Spores subcylindri-
Dendrophysellum

cal-fusiform to narrowly navicular, smooth, 6.5–9(–10) × 3–4 μm.

Distr.: USSR. Ref.: 318.

**D. amurense** Parm. 1968

**DENDROTHELE** Höhn. & Litsch. 1907

Syn.: *Aleurocorticium* Lemke 1964

Basidiocarp annual, initially separate, discoid to effused, later often confluent, 50 to 3000 μm thick. Hymenial surface even, rarely with projections consisting of an aggregate of hyphae, white to ochraceous or yellow, sometimes with greyish tinges. Hyphal system monomitic, usually with abundant crystals. Hyphae hyaline, with or without clamps. Dendrophyllidium present, encrusted, delicately branched. Gloecystidia may be present, sometimes darkening in sulphobenzaldehyde, often difficult to distinguish from immature basidia. Basidia not closely arranged, typically rather large, flexuous-cylindrical to clavate, with (2–)4 sterigmata. Spores hyaline, small to large, globose to allantoid, thin- or slightly thick-walled, smooth or roughened in Melzer’s, not amyloid.

Substrate: saprophytic on bark and undecayed wood of angiosperms and gymnosperms.

Type species: *Dendrothele papillosa* Höhn. & Litsch. 1907

Distribution: in the whole area.

References: 114, 231.

1a. Spores narrowly ellipsoid to cylindrical or allantoid, smooth, at least twice as long as broad

2

1b. Spores globose to ellipsoid or angular, smooth or ornamented, less than twice as long as broad.

5

2a. Spores up to 7(–8) μm broad

3

2b. Spores at least 7.5–9.8 μm broad

4

3a. Cystidia cylindrical, sometimes slightly capitate, more or less thick-walled, 60–120 × 6–10 μm, emerging 40–50 μm.


**D. macrospora** (Bres.) Lemke 1965

Note: *Vuilleminia cystidiate* Parm. 1965 (313) differs only in having fusoid cystidia.

Spores 12–16 × 3.7–5(–5.5) μm.

3b. Cystidia absent, gloecystidia may be present, not emerging.

Basidiocarp pruinose to pulverulent, 80–100 μm thick. Hymenial surface whitish to pallid. Hyphae thin-walled, 1.5–2 μm wide,

**D. alliacea** ( Quéf.) Lemke 1965
Syn.: *Aleurodiscus subacerinus* Höhn. & Litsch. 1907.


Distr.: whole area. Ref.: 231.

**D. dryina** (Pers.) Lemke 1965


Distr.: N. Am. Ref.: 231.

**D. maculata** (H.S. Jacks. & Lemke apud Lemke) Lemke 1965

Note: Parmasto (313) described a *Vuillenimia corticula* from *Prunus padus* in the USSR at nearly the same time. This species is probably synonymous, only differing in the absence of gloeocystidia, which are often difficult to find in this genus.

5a. Spores angular.

5b. Spores globose to ellipsoid, not angular.


Distr.: N. Am. Ref.: 231.

**D. macrodens** (Coker) Lemke 1965

6b. Spores triangular or rounded with 3 subcylindrical spines, more rarely with 2 or 4 spines, 10–13 × 7–10 μm. Clamps absent. Basidiocarp pruinose to pulverulent. Hymenial surface whitish. Microscopical characters as in *D. acerina* (9a). On angiosperms.

Distr.: N. Am. Ref.: 231.

**Aleurodiscus acerina** f. tricornis Bourd. & Galz. 1928
Dendrothelle

7a. Spores up to 13 μm long. 8
7b. Spores at least 13 μm long. 12
8a. Spores ellipsoid, larger than 10 μm when ovoid. 9
8b. Spores globose, subglobose or ovoid, up to 10 μm long. 10
   Distr.: whole area. Ref.: 114, 231.
   D. acerina (Pers. ex Fr.) Lemke 1965
9b. Clamps present. Spores ellipsoid, (8.8–)10–12(–13) × (4–)5–6(–6.5) μm.
   Distr.: N. Am. Ref.: 231.
   D. pachysterigmata (H.S. Jacks. & Lemke apud Lemke) Lemke 1965
   Note: D. commixta (Höhn. & Litsch.) J. Erikss. & Ryv. 1975 also keys out here. In this species the clamps are scattered, there are no gloecystidia and the spores are 8–11 × 5–8 μm.
10a. Gloecystidia sulpho-positive. Hymenial surface even to spinulose, greyish with ochraceous tinge to violaceous drab.
   Basidiocarp pruinose to pulverulent, 50–130 μm thick, margin byssoid at first. Hyphae 1.5–2.5 μm wide, without clamps. Gloecystidia (sub)clavate, 35–60 × 6.5–10 μm. Basidia flexuous-subclavate to suburniform, 20–35 × 7.4–9.5 μm. Spores subglobose to subovoid, 7.5–10.5(–11) × 6–8 μm. Spinulose projections consisting of dendothyphidia. On angiosperms and gymnosperms.
   Distr.: whole area. Ref.: 114, 231.
   D. griseo-cana (Bres.) Bourd. & Galz. 1913
   Syn.: Dendrothele papillosa Höhn. & Litsch. 1907
10b. Gloecystidia sulpho-negative. Hymenial surface even, white to pallid. 11
11a. Spores globose to subglobose, 6–7.5(–8) × 5–6(–7) μm. Clamps absent.
Distr.: N. Am.  Ref.: 231.

D. microspora (H.S. Jacks. & Lemke apud Lemke) Lemke 1965

Note: Xenasma valsiitulvae Parm. 1965 (spores 4–5(–5.5) × 2.4–3 μm) probably belongs here.

11b. Spores globose to subpyriform, 8–10 × 8–8.5(–9.5) μm. Clamps present, scattered.


Distr.: N. Am.  Ref.: 231.

D. incrustans (Lemke) Lemke 1965

12a. Spores on average at least 22 μm long. Tramal vesicles resembling spores present 13

12b. Spores on average shorter than 20 μm. Tramal vesicles absent. 14


Distr.: N. Am.  Ref.: 231.

D. strumosa (Fr.) Lemke 1965

Syn.: Stereum mancinum Sacc. & Cuboni apud Sacc. 1888


Distr.: N. Am.  Ref.: 231.

D. seriata (Berk. & Curt.) Lemke 1965

14a. Gloecystidia sulpho-positive, ovoid, clavate or subcylindrical, 20–50 × 8–16 μm. On gymnosperms.

Dendrothele

Distr.: N. Am.  Ref.: 231.

**D. nivosa** (Berk. ex Höhn. & Litsch.) Lemke 1965

14b. Gloecystidia when present sulpho-negative. On angiosperms. 15

15a. Spores up to 12 μm broad.

15b. Spores broader.

16a. Clamps absent. Spores ovoid to broadly ellipsoid, smooth, (8−)10−13
(−15) × (6−)7−10(−11) μm. **D. acerina**, see 9a.

16b. Clamps present. Spores ovoid, ellipsoid or pip-shaped, smooth or roughened in Melzer's, 14−19(−22) × 8−11(−12) μm.

Basidiocarp discoid or confluent, pellicular to pulverulent, with or without sterile projections. Hymenial surface white to pale tan. Hyphae thin-walled, about 3.2 μm wide. Gloecystidia present, often with forked or submoniliiform apical outgrowth. Basidia clavate, 50−110 × 10−40 μm, projections consisting of interwoven dendrohyphidia.

Distr.: N. Am.  Ref.: 231.

**D. alba** Viégas 1940

Syn.: **D. dutthiae** Talbot 1956

Note: Lemke (231) suggests that the sterile **D. lepræ** (Berk. & Br.) Lemke 1965 (syn.: **Aleurodiscus albidus** Massue apud Cooke 1889; **Aleurodiscus cremese** Pat. 1915 non = Burt 1918 = **A. bertii** Lloyd 1924) is also a synonym.

17a. Clamps absent. Spores globose to ovoid, smooth to roughened in Melzer's, (13−)15−20(−22) × (11−)13−16(−20) μm.

Basidiocarp pruinose, pulverulent to crustulose, annual and 200−500 μm thick or perennial and up to 3000 μm thick; margin free to raised. Hymenial surface white. Abhymenial surface dark. Hyphae 2−3 μm wide. Gloecystidia absent. Basidia flexuous-clavate, 45−70 × (11−)13.5−16 μm.

Distr.: N. Am.  Ref.: 231.

**D. candida** (Schw.) Lemke 1965

Syn.: **Thelephora candidissima** Schw. 1832; **Aleurodiscus crassus** Lloyd 1920; **Aleurodiscus jacksonii** S. Ahmad 1962

17b. Clamps scattered, inconspicuous. Spores subglobose to subpyriform, smooth, (12−)14−17(−18) × (11.5−)13−15(−17) μm.

Basidiocarp pruinose to subceraceous, 70−100 μm thick; margin adnate. Hymenial surface white to pale ochraceous. Hyphae 1−2 μm wide. Gloecystidia rare, flexuous-subclavate to clavate, 25−45 × (7−)11−13 μm. Basidia flexuous-subclavate to clavate, 55−70 × 12−16 μm.

Distr.: N. Am.  Ref.: 231.

**D. mexicana** (Lemke) Lemke 1965
DENTIPELLIS Donk 1962

Basidiocarp annual, resupinate, effused, rarely effused-reflexed, separable, consisting of a membranaceous basal layer which is covered with fragile, slender spines. Hyphal system monomitic. Hyphae hyaline, with clamps. Gloeoplerous hyphae and gloecystidia present. Basidia in small clusters, clavate, with (2–4) sterigmata. Spores hyaline, thin- to firm-walled, subglobose to broadly ellipsoid, smooth or ornamented, amyloid.

Substrate: saprophytic on wood of angiosperms.
Type species: Hydnium fragile Pers. ex Fr. 1821
Distribution: in the whole area.
References: 95.

1a. Spores subglobose to ovoid, 4.5–6 × 4–5 μm. Generative hyphae thin-to firm-walled, 2–4.5 wide. Teeth up to 1.5 mm long. Distr.: Eur., USSR.
Basidiocarp effused, membranaceous. Hymenial surface white to ochraceous. Gloeoplerous hyphae and gloecystidia 4.5–9 μm wide, projecting up to 30 μm. Basidia 20–35 × 4.5–7.5 μm.
Ref.: 180.
D. fragilis (Pers. ex Fr.) Donk 1962
Syn.: ?Hydnium macrodon Pers. ex Fr. 1821

1b. Spores broadly ellipsoid, 3.5–5 × 3–4 μm. Generative hyphae thin- to thick-walled, 2.5–4 μm wide, wall up to 2 μm thick. Teeth up to 1 mm long. Distr.: N. Am.
Ref.: 120.
D. separans (Peck) Donk 1962
Note: Miller and Boyle (290) consider these species to be synonyms. Gilbertson (120) examined a specimen with ellipsoid spores (4–5 × 2–2.5 μm), which he considered to be conspecific with the (sterile) type specimen.

DENTOCORTIClUM (Parm.) M.J. Larsen & Gilb. 1974

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface even to warted or papillate, whitish, yellowish or brown to purple. Hyphal system monomitic or seemingly dimitic. Hyphae hyaline to coloured, thin- to thick-walled, with clamps. Dendrohyphidia present, cystidia or gloecystidia absent. Basidia clavate, with 4 sterigmata. Spores hyaline, smooth, thin-walled, ellipsoid to allantoid, not amyloid.

Substrate: saprophytic on wood of angiosperms.
Type species: Laetiporus ussuriensis Parm. 1965
Distribution: North America, USSR.
References: 223, 224.
Dentocorticium

1a. Spores allantoid, 7–9.5 × 2.5–4 μm. Hymenial surface even to warded, yellow when fresh, becoming almost white when dry.
   Distr.: N. Am. Ref.: 120, 224.
   D. sulphurellum (Peck) M.J. Larsen & Gilberts. 1974

1b. Spores cylindrical to allantoid, 5–7 × 2–2.5 μm. Hymenial surface warded to papillate, violaceous fuscous to violet when fresh, dark ochraceous brown when dry.
   Distr.: USSR. Ref.: 224, 313.
   D. ussuricium (Parm.) M.J. Larsen & Gilberts. 1974

DIGITATISPORA Doguet 1962

Basidiocarp annual, resupinate, becoming cushion-shaped. Hymenial surface even. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps at all primary septa. Basidia terminal, single or in small clusters, cylindrical to narrowly clavate, bearing 4 spores directly on their apices. Spores cylindrical with 3 apical appendages, hyaline, thin-walled smooth, not amyloid, not actively discharged.

Substrate: saprophytic on wood which is regularly or permanently in contact with sea-water.

Type species: Digitatispora marina Doguet 1962

Distribution: Europe.

Reference: 79a.

Monotypic. Basidiocarp small, cushion-shaped, up to 300 μm thick. Hymenial surface greyish. Hyphae 2–3 μm wide. Cystidia absent. Basidia cylindrical to narrowly clavate, up to 50 μm long, without sterigmata. Spores cylindrical, slightly tapering toward the base, 30–45 × 3–4 μm, apically with 3 cylindrical to filiform appendages up to 45 × 2–3 μm.


D. marina Doguet 1962

ECHINOTREMA Parker-Rhodes 1955

Substrate: on soil in old rabbit-hole (humus?).
Type species: *Echinotrema clanculare* Parker-Rhodes 1955
Distribution: Europe.
References: 310.


*E. clanculare* Parker-Rhodes 1955

**EPITHELE** (Pat.) Pat. 1900

Basidiocarp annual, resupinate, effused, soft-membranaceous. Hymenial surface odontoid (sterile hyphal fascicles), cream-coloured to pale ochraceous. Hyphal system monomitic. Hyphae hyaline, cylindrical to torulose, often rather indistinct, with clamps. Cystidia lacking. Basidia hyaline, stalked-clavate, rather large, thin-walled, with a basal clamp, 4-spored. Spores hyaline to slightly yellowish, large, ellipsoid to fusiform, smooth, finally thick-walled, not amyloid.

Substrate: saprophytic on angiosperms, mainly Carex.
Type species: *Atelia typhae* Pers. 1822
Distribution: Europe.
References: 66, 191.

Monotypic. Basidiocarp effused, membranaceous, 100–150 μm thick, adnate. Hymenial surface odontoid, the sterile hyphal fascicles 100–200 μm long, cream-coloured to pale ochraceous. Hyphae hyaline, rather indistinct, often torulose, thin-walled, 1–2 μm wide, with clamps at all septa. Basidia 55–70 × 8–11 μm, clamped, with four, rather large sterigmata. Spores thick-walled, slightly yellowish when fully mature, 16–28 × 5.5–8 μm. On Carex, Scirpus, Typha.

*E. typhae* (Pers.) Pat. 1900

**ERYTHRICUM** J. Erikss. & Hjortstam 1970

Basidiocarp annual, resupinate, effused, soft-membranaceous to pellicular, separable. Hymenial surface even or wrinkled, pink when fresh, whitish to yellowish when dry. Subiculum and margin white. Hyphal system monomitic. Subicular hyphae wide and short-celled, the basal and marginal ones straight and somewhat thick-walled; subhymenial hyphae narrow. Clamps absent. Cystidia absent. Basidia clavate, often somewhat constricted, with 4 sterigmata. Spores hyaline, ovoid to ellipsoid, smooth, slightly thick-walled, cyanophilous, not amyloid.
Substrate: saprophytic on angiosperms and mosses.
Type species: *Hyphoderma laetum* P. Karst. 1889
Distribution: Europe.
References: 110, 114.

1a. Spores ovoid to ellipsoid, 11–13(–15) × 6–7.5 μm. On angiosperms.
   **E. laetum** (P. Karst.) J. Erikss. & Hjortstam 1970

1b. Spores ovoid to ellipsoid, 9–11 × 4.5–6 μm. On mosses in gymnospermous woods.
   Basidiocarp pellicular to membranaceous. Hymenial surface even, pink. Subicular hyphae up to 10 μm wide. Basidia 30–40 × 7–10 μm.
   **E. hypnophilum** (P. Karst.) J. Erikss. & Hjortstam 1970

**FIBRICIELLUM** J. Erikss. & Ryv. 1975


Substrate: saprophytic on wood of angiosperms.
Type species: *Fibriciellum silvae-ryae* J. Erikss. & Ryv. 1975
Distribution: Europe.
Reference: 114.

Monotypic. Basidiocarp 100–200 μm thick. Hymenial surface even to somewhat tuberculate, whitish to ochraceous. Generative hyphae 2–3 μm wide. Skeletal hyphae 1.5–2.5 μm wide. Cystidia lacking, but outgrowths of hyphae or basidia may be present. Basidia 10–12 × 4–5 μm. Spores ellipsoid, thin- to slightly thick-walled, 3–4 × 1.5–2 μm. On angiosperms.
**F. silvae-ryae** J. Erikss. & Ryv. 1975

**FIBRICIUM** J. Erikss. 1958

Basidiocarp annual, resupinate, effused, membranaceous, often with small hyphal strands. Hymenial surface even, pale coloured. Hyphal system dimitic, with skeletal hyphae. Generative hyphae hyaline, thin-walled, with clamps.
Fibrodontia

Skeletal hyphae hyaline, not cyanophilous. Cystidia present, not very thick-walled, encrusted or not. Basidia hyaline, clavate, with 4 sterigmata. Spores hyaline, smooth, thin-walled, ellipsoid, not amyloid.

Substrate: saprophytic on wood of gymnosperms.
Type species: Corticium rude P. Karst. 1882
Distribution: in the whole area.
References: 105, 114.

1a. Cystidia heavily encrusted with crystals. Spores narrowly ellipsoid, 6–6.5 × 3–3.5 µm, guttulate.
Basidiocarp membranaceous, with small hyphal strands around the margin or in the substrate. Hymenial surface mostly even, cream-coloured to ochraceous. Generative hyphae 2.5–4 µm wide, with clamps. Skeletal hyphae 1.5–2.5 µm wide. Cystidia hyaline, conical, somewhat thick-walled, 40–70 × 7–11 µm, the upper half encrusted. Basidia 25–30(–45) × 5–6 µm.
Distr.: whole area. Ref.: 114.
F. lapponicum J. Erikss. 1958

1b. Cystidia smooth or covered with non-crystalline material. Spores narrowly ellipsoid, 4.5–5.5 × 1.2–2 µm.
Basidiocarp membranaceous, with small hyphal strands around the margin and in the substrate. Hymenial surface even, whitish or cream-coloured. Generative hyphae 2.5–3.5 µm wide, with clamps. Skeletal hyphae 1.5–2 µm wide. Cystidia hyaline, more or less cylindrical with the apical part narrower, somewhat thick-walled, 45–60 × 5–7 µm. Basidia 12–17 × 3–5 µm.
F. rude (P. Karst.) Julich 1974
Syn.: Corticium greschikii Bres. 1890; Peniophora alba Burt 1926

FIBRODONTIA Parm. 1968

Basidiocarp annual, resupinate, effused, membranaceous to thick-coriaceous. Hymenial surface odontioid, cream-coloured to ochraceous or isabelline. Hyphal system dimitic. Generative hyphae hyaline, thin- to thick-walled, with clamps. Cystidioles rare, often with resinous cap. Basidia suburniform, with 4 sterigmata. Spores hyaline, thin-walled, smooth, ovoid to ellipsoid, not amyloid.

Substrate: saprophytic on wood of angiosperms.
Type species: Fibrodontia gossypina Parm. 1968
Distribution: USSR.
References: 318

Monotypic. Basidiocarp effused, membranaceous to soft coriaceous, up to 350 µm thick. Hymenial surface odontioid, cream-coloured to
Fibrodontia

ochraceous, often with dark greyish tinges. Teeth fimbriate. Skeletal hyphae yellowish, 2–3.5(–4) μm wide. Generative hyphae hyaline, thin-to-thick-walled, 2–4 μm wide. Cystidia rare, clavate to capitate, often with a resinous cap. Basidia suburniform to urniform, 10–18 × 3.5–5.5 μm. Spores ovoid to broadly ellipsoid, (3–)3.5–4.2 × 2.5–3.7 μm.

Distr.: USSR. Ref.: 318.

F. gossypina Parm. 168

FIBULOMYCES Jülich 1972

Basidiocarp annual, resupinate, thin, membranaceous with mostly distinct subiculum, whitish to yellowish. Hymenial surface smooth to only slightly meruloid when fresh. Hyphal strands often present. Hyphal system monomitic. Hyphae hyaline, cylindrical, in the hymenial region sometimes irregularly shaped, with clamps. Cystidia and gloeocystidia lacking. Basidia more or less cylindrical, with (2–)4 sterigmata, clamped at the base. Spores hyaline, ellipsoid to narrowly cylindrical, thin-walled, smooth, not amyloid.

Substrate: saprophytic on angiosperms and gymnosperms.

Type species: Corticium mutabile Bres. 1892.

Distribution: in the whole area.

References: 114, 186.

1a. Spores ovoid, the basal part somewhat broadened. 2

1b. Spores tapering towards the base or cylindrical to ellipsoid. 3

2a. Spores 5–6 × 1.5–2 μm. Hyphal strands typically present.

Hymenial layer almost ceraceous, cracked when dry, loosely connected with a distinct whitish subiculum, separable. Hyphae thin- to slightly thick-walled (up to 0.4 μm), 5–8 μm wide. Basidia cylindrical to almost clavate, 14–21 × 4–7 μm, sterigmata 2–3.5 μm long. Spores with distinct, lateral apiculus.

Distr.: whole area. Ref.: 114, 186.

F. septentrionalis (J. Eriks.) Jülich 1972

2b. Spores 6.5–7.5 × 2–2.5 μm. Hyphal strands lacking.

Basidiocarp thin, membranaceous, with almost indistinct subiculum, separable in small pieces. Hyphae thin- to slightly thick-walled (up to 0.4 μm), 3–4 μm wide. Basidia cylindrical, 13–16 × 3.8–4.5 μm, sterigmata 3.5–4 μm long. Spores with distinct, lateral apiculus.

Distr.: N. Am. Ref.: 186.

F. canadensis Jülich 1972

3a. Spores cylindrical to ellipsoid, with rounded base and lateral apiculus, 3.5–5.5 × 1.8–2.8 μm.

Basidiocarp membranaceous to thin-ceraceous, with mostly distinct subiculum, separable in small pieces. Hyphal strands (in the substrate) present. Hyphae thin- to slightly thick-walled (up to 0.4 μm),
2–4 μm wide, often covered with crystals. Basidia almost cylindrical, 10–20(-25) × 4–5 μm, sterigmata (2–)4, c. 3 μm long (up to 6 μm long in 2-spored basidia). Common.

Distr.: whole area. Ref.: 114, 186.

F. mutabilis (Bres.) Jülich 1972

3b. Spores cylindrical, tapering towards the base, 7–8 × 2.3–2.6 μm.
Basidiocarp thin, membranaceous, without distinct subiculum, separable. Hyphal strands lacking. Hyphae with up to 0.4 μm thick walls, 3.5–4.5 μm wide. Basidia cylindrical, often with oiddrops, 12.5–15.5 × 4.3–5.2 μm, with (2–)4 sterigmata, 3–5 μm long. Rare.

Distr.: whole area. Ref.: 114, 186.

F. fusoides (Jülich 1972

GALZINIA Bourd. 1922

Basidiocarp annual, resupinate, effused, ceraceous to gelatinous, subinvisible when dry. Hymenial surface even, often with greyish tinge. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled, with or without clamps. Cystidia or gloecystidia sometimes present. Basidia single or in clusters, at first ovoid or vesicular, then elongating and becoming narrowly uniformal, with (2–)4 sterigmata. Basidial repetition common in some species. Pleurobasidia often present. Spores hyaline, thin-walled, smooth, ovoid, ellipsoid, cylindrical or allantoid, in one species furcate, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms or parasitic on grasses.

Type species: Galzinia pedicellata Bourd. 1922

Distribution: in the whole area.

References: 114, 355.

1a. Clamps present. Basidiocarp thin, typically up to 50 μm thick, ceraceous to gelatinous, pruinose when dry. Hyphidia absent. 2

1b. Clamps absent. Basidiocarp thicker, mucous-gelatinous. Hyphidia present. 5

2a. Spores ovoid to ellipsoid, 13–16 × 7–9.5 μm. On grasses.
Basidiocarp subinvisible, thin. Hymenial surface even, hyaline to pinkish. Hyphae 2–4 μm wide. Basidia uniformal, 25–55 μm long, 3.5–4.5 μm in the middle, 7–9 μm wide at the inflations, with (1–)2(–3) sterigmata up to 12 μm long.

Distr.: Eur., N. Am. Ref.: 1, 308.

G. culmigena (Webster & D. Reid apud D. Reid) Johri & Bandoni apud Bandoni & Johri 1975

2b. Spores cylindrical to allantoid. On wood. 3

3a. Gloecystidia thin-walled, clavate to subcylindrical, often ventricose, 55–125 × 6–12 μm.
Galzinia

2–4 μm wide, often covered with crystals. Basidia almost cylindrical, 10–20(--25) × 4–5 μm, sterigmata (2–)4, c. 3 μm long (up to 6 μm long in 2-spored basidia). Common.
Distr.: whole area. Ref.: 114, 186.

**F. mutabilis** (Bres.) Jülich 1972

3b. Spores cylindrical, tapering towards the base, 7–8 × 2.3–2.6 μm.
Basidiocarp thin, membranaceous, without distinct subiculum, separable. Hyphal strands lacking. Hyphae with up to 0.4 μm thick walls, 3.5–4.5 μm wide. Basidia cylindrical, often with oidiodrops, 12.5–15.5 × 4.3–5.2 μm, with (2–)4 sterigmata, 3–5 μm long. Rare.
Distr.: whole area. Ref.: 114, 186.

**F. fusoides** Jülich 1972

**GALZINIA** Bourd. 1922

Basidiocarp annual, resupinate, effused, ceraceous to gelatinous, subinvisioble when dry. Hymenial surface even, often with greyish tinge. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled, with or without clamps. Cystidia or gloeocystidia sometimes present. Basidia single or in clusters, at first ovoid or vesicular, then elongating and becoming narrowly urniform, with (2–)4 sterigmata. Basidial repetition common in some species. Pleurobasidia often present. Spores hyaline, thin-walled, smooth, ovoid, ellipsoid, cylindrical or allantoid, in one species furcate, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms or parasitic on grasses.

Type species: **Galzinia pedicellata** Bourd. 1922

Distribution: in the whole area.

References: 114, 355.

1a. Clamps present. Basidiocarp thin, typically up to 50 μm thick, ceraceous to gelatinous, pruinose when dry. Hyphidium absent. 2

1b. Clamps absent. Basidiocarp thicker, mucous-gelatinous. Hyphidium present. 5

2a. Spores ovoid to ellipsoid, 13–16 × 7–9.5 μm. On grasses.
Basidiocarp subinvisioble, thin. Hymenial surface even, hyaline to pinkish. Hyphae 2–4 μm wide. Basidia urniform, 25–55 μm long, 3.5–4.5 μm in the middle, 7–9 μm wide at the inflations, with (1–)2(–3) sterigmata up to 12 μm long.
Distr.: Eur., N. Am. Ref.: 1, 308.

**G. culmigena** (Webster & D. Reid apud D. Reid) Johri & Bandoni apud Bandoni & Johri 1975

2b. Spores cylindrical to allantoid. On wood. 3

3a. Gloeocystidia thin-walled, clavate to subcylindrical, often ventricose, 55–125 × 6–12 μm.
Galzinia

Basidiocarp ceraceous. Hymenial surface whitish. Hyphae 2–4 μm wide. Basidia urniform, 23–55(–100) μm long, 4.5–5 μm wide in the middle, 6–11.5 μm wide at the inflations, with 4 sterigmata. Spores cylindrical to allantoid, (9–)10–12.5 × 4.5–5(–6) μm.
G. occidentalis D.P. Rogers 1944

3b. (Gloeo)cystidia absent.

4a. Spores allantoid, 4.5–6 × 1.5–2.5 μm. Hymenial surface even, greyish, often with pink or violaceous tinge.
Distr.: whole area. Ref.: 114.
G. incrustans (Höhn. & Litsch.) Parm. 1965

4b. Spores allantoid, 8–11 × 2–4(–4.5) μm. Hymenial surface even, subhyaline to greyish or bluish.
Basidiocarp ceraceous to gelatinous. Hyphae thin-walled, 2–4 μm wide. Basidia urniform, 15–80 μm long, 2.5–4 μm wide in the middle, 5–7 μm wide at the inflations, with 4 sterigmata. Basidial repetition and pleurobasidia often frequent.
G. pedicellata Bourd. 1922

5a. Spores forked, with twin branches, each part 7.2–10 × 2.5–3.7 μm.
Basidiocarp mucous-gelatinous, up to 125 μm thick. Hymenial surface even. Hyphae thin-walled, 1.5–7.7 μm wide. Hyphidia simple or branched, 1.5–3.7 μm wide. Basidia urniform to nearly cylindrical, 15–70 × (2.5–)3–6.5 μm, with (2–)4 sterigmata.
Distr.: N. Am. Ref.: 306.
G. geminispora Olive 1954

5b. Spores allantoid, 6.3–7.8 × 2.7–3.3(–4) μm.
Basidiocarp mucous-gelatinous, up to 150 μm thick. Hymenial surface even, sordid tan to plumbeous. Hyphae thin-walled, 1.5–5.5 (–7) μm wide. Hyphidia simple or sparingly branched, 2.5–4 μm wide. Basidia urniform, 15–50 × 4.5–6.8 μm, with 4 sterigmata.
G. cymosa D.P. Rogers 1944

GLOEOCYSTIDIELLUM Donk 1931

Basidiocarp annual, more rarely perennial, resupinate, effused, hypochond, membranaceous, ceraceous or coriaceous. Hymenial surface even to tuberculate, often strongly cracked when dry. Hyphal system monomitic. Hyphae hyaline, with thin or thickened walls, with or without clamps. Gloeocystidia present, typically darkening in sulphobenzaldehyde, thin-walled, with granular or oily appearance. Gloeocystidia clavate to cylindrical, 1.5–4 μm thick, often several in a group.

Substrates.
Type species: G. cymosa D.P. Rogers 1944

Distr.: Amazonia.
or oily contents. Encrusted cystidia rarely found. Basidia in small clusters, clavate to sometimes urniform, with (2–)4 sterigma. Spores hyaline, thin-walled, smooth or ornamented, globose to cylindrical, amyloid, ornamentation often soluble in KOH.

Substrate: saprophytic on angiosperms and gymnosperms.

Type species: *Corticum porosum* Berk. & Curt. apud Berk. & Br. 1879

Distribution: in the whole area.

References: 86, 114.

1a. Clamps absent. 2
1b. Clamps present. 9

2a. Spores ornamented in Melzer’s. 3
2b. Spores smooth. 6

3a. Encrusted cystidia present, conical, 30–60 × 6–12(–15) μm, immersed or projecting up to 40 μm.
   Basidiocarp effused, membranaceous to somewhat ceraceous. Hymenial surface typically strongly tuberculate, whitish to yellowish or pale ochraceous. Margin fibrillose, often with white hyphal strands. Hyphae thin- to somewhat thick-walled, 2–4(–5) μm wide. Gloeocystidia sulpho-positive, 50–120(–200) × 6–13(–15) μm.
   Basidia 20–30 × 4–6(–7) μm. Spores ellipsoid, warted, 4–6 × 2.5–3.5(–4) μm. On angiosperms and gymnosperms.
   Distr.: whole area. Ref.: 114, 368.
   *G. convolvens* (P. Karst.) Donk 1956
   Syn.: *Peniophora lundellii* Litsch. apud Lundell & Nannf. 1938

3b. Encrusted cystidia absent. 4

4a. Spores ellipsoid to cylindrical, minutely warted, 6–7(–8) × 3.5–4.5 μm.
   On *Populus tremula*.
   Basidiocarp effused, ceraceous to thick membranaceous, often layered. Hymenial surface even when young, deeply cracked when dry, pale ochraceous to isabelline. Hyphae thin- to somewhat thick-walled, 2–3(–4) μm wide. Cystidia sulpho-positive, cylindrical, 30–90 × 8–12 μm. Basidia clavate, 20–30 × 4–5 μm.
   Distr.: Eur., USSR. Ref.: 114.
   *G. karstenni* (Bourd. & Galz.) Donk 1956

4b. Spores globose to broadly ellipsoid, up to 6 μm long. On gymnosperms. 5

5a. Spores subglobose to broadly ellipsoid, 3.5–4 × 3–3.5 μm, warted.
   Basidiocarp effused, soft-membranaceous. Hymenial surface even, later cracked, cream-coloured. Hyphae thin-walled. Gloeocystidia cylindrical to subclavate, often basally swollen, 50–90 × 6–8.5 μm.
   Basidia narrowly clavate to somewhat urniform, 20–25 × 4.5–5.5 μm.
   *G. propinquum* (H.S. Jacks. & Dearden) Parm. 1965
Glacieystidiellum

5b. Spores globose to broadly ellipsoid, 4.5–6 × 3.7–5 μm, warted.
   Basidiocarp effused, at first farinaceous, later continuous. Hymenial surface even, later cracked, whitish to cream coloured. Margin arachnoid to fibrillose. Hyphae thin-walled, 2–3.5(-4) μm wide. Glacieystidiellum clavate to subfusciform, (40–)50–100 × 7–16(–18) μm, rarely cylindrical, 80–130 × 6–8 μm. Basidia narrowly clavate, 18–25(-30) × 5–6.5 μm.
   Distr.: USSR. Ref.: 313.
   G. sibiricum Parm. 1965

6a. Spores globose to ovoid or broadly ellipsoid, at least 4 μm wide, on average broader. Simple hyphidia often present. 7
6b. Spores ellipsoid, up to 4 μm broad. Hyphidia absent. 8

7a. Glacieystidiellum bladder-shaped to fusiform with inflated portions, sulpho-negative, with hyaline contents, 35–100(–150) μm long, 10–20 μm wide in the subiculum, 5–10(–14) μm in the hymenium. Cf. Vesiculomyces citrinus.
7b. Glacieystidiellum narrowly cylindrical, sulpho-positive, with granular yellowish contents, (120–)150–250 × 4–10 μm.
   Basidiocarp effused, ceraceous to fleshy. Hymenial surface even, cracked to furrowed when dry, at first whitish, later ochraceous or reddish yellow. Hyphae thin-walled, 1–2.5 μm wide. Hyphidia numerous, 1–2 μm wide. Basidia clavate, sometimes stalked, (20–)40–60 × 5–7 μm. Spores subglobose, ovoid or broadly ellipsoid, (5–)6–8 × 4–5(–6) μm. Mainly on angiosperms.
   Distr.: whole area. Ref.: 66, 114.
   G. lactescens (Berk.) Boidin 1951
   Syn.: ?Corticium epigaeum Ellis & Everh. 1885; Glacieystidiellum orientale Parm. 1965
   Note: Glacieystidiellum torrendii (Bres.) Donk is probably very close or identical.
   The insufficiently known species differs in the subglobose to broadly ellipsoid spores, 7–10 × 6–8 μm and (? absence of hyphidia, fide Bourdot & Galzin (32).

8a. Spores narrowly ovoid to ellipsoid, 3–5 × 2–3 μm. On angiosperms.
   Distr.: Eur., USSR. Ref.: 32.
   G. insidiosum (Bourd. & Galz.) Donk 1956
8b. Spores narrowly ovoid to ellipsoid, 4.5–6 × 3–4 μm. On gymnosperms.
   Basidiocarp effused, ceraceous to thick membranaceous, hard when dry, layered. Hymenial surface even to tuberculate, cracked when dry, cream-coloured to ochraceous or ochraceous brown. Hyphae thin- to thick-walled, 2–3.5 μm wide. Glacieystidiellum cylindrical, sulpho-positive, with yellowish contents, (30–)40–70 × 4–6 μm.
**Gloeocystidiellum**

Basidia subclavate, 20–30 × 4–5 μm. Spores narrowly ovoid to narrowly ellipsoid, 4.5–6 × 3–3.5 μm.

Distr.: Eur., USSR. Ref.: 114.

**G. ochraceum** (Fr. ex Fr.) Donk 1956

Syn.: *Gloeocystidium friesii* Lundell apud Lundell & Nannf. 1950

9a. Spores ornamented in Melzer’s (sometimes difficult to see). 10

9b. Spores smooth. 13

10a. Spores globose to subglobose, echinulate, 5–7 μm wide.

Basidiocarp effused, arachnoid to granulose, later continuous. Hymenial surface even, farinaceous, whitish to cream or somewhat greyish. Hyphae thin-walled, sometimes ampullate, 1.5–3 μm wide. Gloeoscytidiella cylindrical, with yellowish contents, 30–70(–90) × 4–10 μm, sulpho-positive. Basidia clavate to distinctly urniform, 22–35 × 4–5.5(–6) μm.

Distr.: whole area. Ref.: 66, 114.

**G. furfuraceum** (Bres.) Donk 1956

10b. Spores ellipsoid to subcylindrical or reniform, minutely to distinctly warted. 11

11a. Spores reniform, warted, 3.5–4.5 × 2–2.5 μm.

Basidiocarp effused, membranaceous to subceraceous. Hymenial surface even, whitish to pale ochraceous or pinkish buff. Hyphae thin-walled, 1.5–2.5 μm wide. Gloeoscytidiella 20–30 × 3–5 μm, often with 1 or 2 apical bulbs, sulpho-positive. Basidia urniform to subcylindrical, 20–30 × 2.5–4 μm. On gymnosperms.

Distr.: whole area. Ref.: 114, 171.

**G. subasperisporum** (Litsch.) J. Erikss. & Ryv. 1975

Syn.: *Corticium electum* H.S. Jacks. 1948; *Xenasma amylosporum* Parm. 1968

11b. Spores broadly ellipsoid to subcylindrical. 12

12a. Spores broadly ellipsoid to ellipsoid, warted, 4.5–5.5(–6) × 3–3.8(–4) μm.

Basidiocarp farinaceous to thin membranaceous, separable. Hymenial surface even, white to cream-coloured. Hyphae thin-walled, (1–)1.5–2.5 μm wide, not all septa with clamps. Gloeoscytidiella subcylindrical or with basal swelling, 18–30 × 5.5–8.5 μm, often with apical bulb or digitiform outgrowth. Basidia urniform to clavate, 12–23 × 4–5.5 μm. On gymnosperms.

Distr.: USSR. Ref.: 318.

**G. percuriosum** Parm. 1968

12b. Spores ellipsoid to subcylindrical, warted, (3.5–)4.5–6(–8) × 2.5–3.5(–4) μm. Basidiocarp membranaceous to ceraceous, adnate. Hymenial surface even to tuberculate, whitish to pale ochraceous. Hyphae thin-walled, 2–3 μm wide. Gloeoscytidiella cylindrical to
**Gloeocystidiellum**

Distr.: whole area    Ref.: 66, 114.
**G. porosum** (Berk. & Curt. apud Berk. & Br.) Donk 1931
Syn.: ?*Xerocarpus letendrei* P. Karst. 1884; *Corticium stramineum* Bres. apud Brinkm. 1900; *C. vesiculosum* Burt 1926; *C. pruni* Overh. 1929

Distr.: whole area    Ref.: 66, 114.
**G. leucoxanthum** (Bres.) Boidin 1951

13b. Spores ellipsoid, 7–10(–12) × 4.5–5.5(–6) μm.
Basidiocarp effused, ceraceous to fleshy, often cracked when dry. Hymenial surface even to tuberculate, whitish or greyish-white to ochraceous or pale brown. Hyphae with thin or slightly thickened walls, 2–3.5 μm wide. Hyphidia often present. Gloeocystidia cylindrical, often apically moniliform, with yellowish contents, 50–150 × 6–14 μm, sulpho-positive. Basidia clavate, 40–60 × 5–7 μm. On angiosperms.
Distr.: whole area    Ref.: 66, 114.
**G. liridum** (Bres.) Boidin 1951

**GLOEODONTIA** Boidin 1966

Basidiocarp annual, resupinate, effused, membranaceous to crustaceous, covered with slender teeth. Hymenial surface pale yellow to greyish orange. Hyphal system monomitic or dimitic. Generative hyphae hyaline, with thin to thickened walls, with clamps. Skeletal-like hyphae pale yellow to brownish, sometimes branched, rarely septate; some may be encrusted. Gloeocystidia present in hymenium and subiculum (often rare), sulpho-positive. Cystidia thick-walled, originating in subiculum, heavily encrusted. Basidia subclavate to urniform, with 4 sterigmata. Spores hyaline to yellowish, with thin to slightly thickened walls, ornamented, ovoid to ellipsoid, amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: *Irpec discolor* Berk. & Curt. 1873
Distribution: North America.
References: 16, 49.
1a. Spores ovoid to ellipsoid, minutely warted, (3−)3.5−4.5(−5.5) × 2.5−3(−3.5) μm. Skeletal-like hyphae present.
   Basidiocarp effused, membranaceous to crustaceous, covered with slender teeth. Teeth acute or somewhat flattened, pale yellow to greyish orange, up to 3 mm long. Margin almost white. Generative hyphae hyaline to yellowish, thin- to somewhat thick-walled, 1−4 μm wide, with clamps. Skeletal-like hyphae pale to strongly yellow, thick-walled, 1.8−4 μm wide, sometimes encrusted, rarely branched or septate. Gloecystidia rare in subiculum, abundant in hymenium, thin-walled, cylindrical to clavate, often with an apical bulb, 25−70 × 5−10 μm, sulpho-positive. Cystidia thick-walled, heavily encrusted, 6−9 μm wide. Basidia subclavate to urniform, 12−20 × 3.5−4 μm.
   Distr.: N. Am. Ref.: 16, 49.
   G. discolor (Berk. & Curt.) Boidin 1966
   Syn.: Odontia eriozona Bres. 1925

1b. Spores ovoid to elliptoid, minutely warted, 5.5−6.5 × 3.5−4(−4.5) μm. Skeletal-like hyphae absent.
   Basidiocarp effused, crustaceous, often cracked, covered with teeth. Teeth irregularly shaped, often concrescent at the base, sometimes branched, fimbriate at the apex, yellowish. Margin white. Generative hyphae hyaline to yellowish, thin- to thick-walled, 2−3 μm wide, occasionally encrusted. Gloecystidia originating in subiculum or subhymenium, thin-walled, cylindrical, often with apical bulb, 25−60 × 5−10 μm, sulpho-positive. Cystidia heavily encrusted, 7−10 μm wide. Basidia cylindrical to urniform, 20−27 × 5−6 μm.
   Distr.: N. Am. Ref.: 49.
   G. colombiensis Burt ex Burdsall & Lombard 1976

GLOIODON P. Karst. 1879

Syn.: Sclerodon P. Karst. 1889; Leaia Banker 1906

Basidiocarp annual, occasionally perennial, effused, effused-reflexed or pileate (sessile), tough, consisting of a dark brown tomentum which may embed ramifying processes, strands or veins. Teeth slender, acute, dark brown, often with whitish bloom. Hyphal system monomitic or imperfectly dimitic. Generative hyphae hyaline, thin-walled, with clamps. Skeletal-like hyphae hyaline to brown, thick-walled to solid, occasionally branched and sometimes septate. Strands consisting of skeletal-like hyphae. Gloecystidia present in subiculum and hymenium, sulpho-negative. Basidia clavate, with 4 sterigmata. Spores hyaline to pale brownish, thin-walled, subglobose to broadly ellipsoid, minutely ornamented, amyloid.

Substrate: saprophytic on wood of angiosperms.
Type species: Hydnum strigosus Swartz ex Fr. 1821
Gioiodon

Distribution: in the whole area.
References: 273.

Only one species in the area. Basidiocarp consists of dark brown tomentum surrounding ramifying processes, strands or veins. Teeth arising from the lower strands, slender, acute, up to 3 x 0.2 mm, mummy brown to light grey. Margin fimbriate or tomentose. Abhymenial surface (when exposed) covered with long stiff hairs, consisting of bundles of agglutinated brown hyphae. Generative hyphae hyaline, thin- to thick-walled, 1.8–3.5(–5) µm wide, with clamps. Skeletal-like hyphae hyaline to brown, with sometimes irregularly thickened walls or solid, 2.5–5 µm wide. Gloecystidia with oily contents, parallel with the central axis, then curving outward and becoming somewhat inflated, up to 8 µm wide. Basidia clavate, with a clamp at the base. Spores hyaline, thin-walled, roughened to warted, subglobose to ellipsoid, 4.5–5.8 x 3.5–4.5 µm, amyloid.
Distr.: whole area. Ref.: 273.

G. strigosus (Swartz ex Fr.) P. Karst. 1879
Syn.: Hydnum stratum Berk. 1845; Leaia piperata Banker 1906

HYPHODERMA Wallr. 1833

Syn.: Kneiffia Fr. 1836; Kneiffiella Underw. 1897; Kneiffiella P. Henk. 1897; Pycnodon Underw. 1898; Neochnifia Sacc. 1899; Atheloderma Farn. 1968; Metulodontia Parm. 1968; Mutatoderma (Parm.) Gómez apud Gómez & Loewenbaum 1976

Basidiocarp annual, resupinate, effused, membranaceous or somewhat cera- ceous, in some species pellicular. Hymenial surface mostly even, in some species tuberculate, grandinioid or odontoid. Hyphal system monomitic. Hyphae hyaline, thin- to somewhat thick-walled, sometimes inflated, with clamps at all primary septa (lacking in one species). Cystidia present in most species, hyaline, thin- or thick-walled, with or without oily material in the contents, smooth or encrusted, some species with echinocysts or stephanocysts. Basidia in clusters, cylindrical to narrowly clavate when young, suburniform when mature, 20–45 µm long, often guttulate, with (2–)4 sterigmata. Spores hyaline, subglobose or ellipsoid to cylindrical, typically thin-walled and longer than 7 µm, with or without guttules, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms, on leaves and occasionally on soil.
Type species: Hyphoderma spiculatum Wallr. 1833
Distribution: in the whole area.
References: 114, 191.

Note: The difference between gloeo- and leptocystidia is not always distinct and therefore only the term leptocystidia is used in the key.
1a. Clamps lacking at all primary septa.
   Basidiocarp membranaceous, thin (c. 50 μm). Hymenial surface even, whitish when fresh, often pale yellowish when dry. Hyphae thin-walled, 2–3 μm wide. Leptoscytidia thin-walled, capitata, the basal part widened, 50–125 μm long, the apical head 6–8 μm wide, the basal part 8–12(–15) μm, basal clamp lacking, smooth or apically with some hyaline, amorphous material, projecting up to 50 μm. Basidia suburniform, the basal part somewhat stalk-like, 30–50 × 9–12 μm, guttulate. Spores subglobose to broadly ellipsoid, thinly to slightly thick-walled, 8–11(–13) × 7–9 μm, guttulate. On gymnosperms.
   H. capitatum J. Erikss. & Strid 1975

1b. Clamps present at all primary septa.

2a. lamprocystidia or leptocystidia absent, but hyphidia sometimes present (cf. also Cerocorticium).

2b. Lamprocystidia and/or leptocystidia present.

3a. Basal hyphae very thick-walled.
   Basidiocarp membranaceous, adnate. Hymenial surface even, cream-coloured. Hyphae hyaline or slightly yellowish, with 1–2 μm thick walls, 4–5 μm wide. Basidia 26–35 × 7–8 μm. Spores broadly ellipsoid, 6–7.5 × 4.5–5.5 μm. On burnt wood.
   H. anthracophilum (Bourd. & Galz.) Jülich 1974

3b. Basal hyphae thin- or only slightly thick-walled.

4a. Hymenial surface odontoid or raduloid.

4b. Hymenial surface even.

5a. Hymenial surface odontoid. Spores 5.5–7.2 × 3.2–4.8 μm. H. pruni, see 28a.


   Distr.: Eur., USSR. Ref.: 114, 318.
   H. sibiricum (Parm.) J. Erikss. & Strid apud J. Erikss. & Ryv. 1975

6b. Spores cylindrical to narrowly ellipsoid. Hyphidia lacking.

7a. With echinocysts. H. echinocystis, see 30b.
Hyphoderma

7b. Without echinocysts.

8a. Spores ellipsoid, 10–14 × 5–6.5 μm.
   Basidiocarp effused, membranaceous, c. 100 μm thick. Hymenial surface even, whitish to cream-coloured. Hyphae hyaline, thin-walled, 3–4 μm wide, with clamps, smooth or covered with crystals.
   Basidia 35–50 × 7–10 μm. Spores guttulate.
   H. cremeoalbum (Höhn. & Litsch.) Jülich 1974

8b. Spores 7–9 × 3–4 μm.
   Basidiocarp effused, ceraceous to crustaceous, thin, adnate. Hymenial surface even, cream-coloured. Hyphae distinct, thin-walled, 2–4 μm wide. Basidia 30–40 × 5.5–6.5 μm.
   Distr.: Eur.
   H. griseo-flavescens (Litsch. apud Pilát & Lindtner) Jülich 1974

9a. Septocystidia (i.e. with several septa and clamps) present.

9b. Septocystidia absent.

10a. Spores cylindrical, thin-walled.
   Basidiocarp effused, adnate, thin (100 μm) to thick (up to 5 mm). Hymenial surface even or odontoid, often cracked when dry, young white, cream-coloured to ochraceous when old. Hyphae distinct, hyaline, thin: to slightly thick-walled, 3–4 μm wide, with clamps, smooth. Septocystidia hyaline, thick-walled, cylindrical, 70–200 × 8–12 μm, mostly with many clamped septa, often loosely encrusted, projecting up to 100 μm. Basidia 25–30 × 6–7 μm, guttulate. Spores 7–10 × 3–4.5 μm, guttulate.
   Distr.: whole area. Ref.: 66, 114, 191, 368.
   H. setigerum (Fr.) Donk 1957
   Syn.: Hydnium cristulatum Fr. 1821; Thelephora granulosa Pers. ex Fr. 1821; T. aspera Pers. 1822; H. spiculorum Wallr. 1833; Corticium myxosporum P. Karst. 1882; C. latians P. Karst. 1888; C. berkeleyi Cooke apud Massee 1890; C. chusqueae Pat. 1893; Peniophora trachytricha Ellis & Everh. 1895; Odontia acerina Peck 1900; P. subtestacea Litsch. 1928; O. vesiculosa Burt apud Povah 1929.

10b. Spores ellipsoid, somewhat thick-walled (c. 0.4 μm).
   Basidiocarp effused, adnate, soft-membranaceous, 200–300 μm thick (incl. cystidia). Hymenial surface even, hairy, whitish to pale yellowish. Hyphae hyaline, thin-walled and 3–5 μm wide in the hymenial part, thick-walled and 6–10 μm wide near the substrate, with clamps, smooth. Septocystidia somewhat yellowish, thick-walled, cylindrical, 100–200 × 6–10 μm, with several clamped septa, encrusted with small crystals, projecting up to 150 μm. Basidia 17–35 × 4–5 μm. Spores 7–8 × 4–6 μm.
111

Hyphoderma

Distr.: whole area. Ref.: 66, 115.

H. polonense (Bres.) Donk 1957
Syn.: Peniophora canadensis Burt 1926

11a. Lamprocystidia (i.e. thick-walled and encrusted) present, more or less conical or clavate.

12

11b. Lamprocystidia absent, other cystidia thin-walled (if somewhat thick-walled, then apically blunted).

20

12a. Lamprocystidia and leptocystidia present.

13

12b. Only lamprocystidia present.

17

13a. Spores 7–11 μm long.

14

13b. Spores 10–16 μm long, on average exceeding 11 μm.

15

14a. On Typha.


Distr.: N. Am. Ref.: 368.

H. typhicola (Burt) Donk 1962
Note: Perhaps identical with H. puberum.

14b. On wood of angiosperms or gymnosperms.

Basidiocarp somewhat gelatinous to soft-membranaceous when fresh (resembling a Phlebia), ceraceous when dry, up to 300 μm thick. Hymenial surface even, whitish when young, becoming greyish-ochraceous; under a lens velutinous. Hyphae hyaline, thin-walled, 3–4 μm wide, with clamps. Lamprocystidia conical, 60–130 × 10–18 μm, heavily encrusted, immersed or projecting up to 70 μm. Leptocystidia few, irregular-cylindrical, 30–60 × 7–10 μm. Stephanocycts sometimes developed. Basidia 20–40 × 5–7 μm. Spores cylindrical to narrowly ellipsoid, 7–11 × 3.5–5 μm, granular or with small guttules.

Distr.: whole area. Ref.: 114, 368.

H. puberum (Fr.) Wallr. 1833
Syn.: Peniophora puberula Sacc. 1891; Hypocnus subtilis Schroet. 1888; P. tenella Burt 1926; P. tenuissima Peck 1912

15a. Section of basidiocarp white in colour. On angiosperms (incl. of Populus).

Basidiocarp effused, membranaceous, 100–300 μm thick. Hymenial surface even or rarely somewhat tuberculate, whitish to cream-coloured when fresh, ochraceous and cracked when dry. Hyphae thin- to somewhat thick-walled (up to 0.8 μm), 3–4 μm wide, with clamps. Lamprocystidia few, 30–70 × 7–12 μm, immersed.
Leptocystidia abundant, of very variable shape, cylindrical, moniliform, pyriform, clavate, or capitulate, 30–120 × 5–10 µm, immersed or slightly projecting (10–20 µm). Basidia 30–45(–56) × 5–9 µm. Spores cylindrical to slightly allantoid, 12–16 × 3–4.5 µm, contents homogeneous.

Distr.: whole area. Ref.: 114, 289, 368.

**H. mutatum** (Peck) Donk 1957

Syn.: *Corticium allescheri* Bres. 1898

15b. Section of basidiocarp yellowish-brown, at least the hymenial part.


Distr.: N. Am. Ref.: 289, 368.

**H. populneum** (Peck) Donk 1957

16b. On angiosperms, but not on Populus. In section two-layered, the hymenial part brown, the lower part white.

Basidiocarp membranaceous. Hymenial surface even or somewhat tuberculate, ochraceous. Hyphae thin-walled, 4–6 µm wide, the basal ones hyaline, in the subhymenium yellowish. Lamprocystidia often yellowish, clavate or conical, 25–60 × 7–11 µm, immersed or slightly projecting. Leptocystidia hyaline, except for the basal part which is often yellowish, irregularly cylindrical or clavate, 30–80 × 8–16 µm. Basidia 20–45 × 5–7 µm. Spores hyaline, cylindrical or slightly allantoid, 11–16 × 3.5–5 µm.

Distr.: Eur., N. Am. Ref.: 289, 368.

**H. heterocystidium** (Burt) Donk 1957

Syn.: *Peniophora kauflmanii* Burt 1925

17a. Spores 7–11 µm long.

17b. Spores 3–6 µm long.


18b. Cystidia with thinner walls (0.4–1 µm). *H. guttuliferum*, see 37b.

19a. Spores ellipsoid, 4–6 × 2.5–3.5 µm.

Basidiocarp membranaceous. Hymenial surface even to somewhat tuberculate, cream-coloured to ochraceous. Hyphae hyaline, thin-walled, 2–4 µm wide. Lamprocystidia clavate, 20–100 × 5–12 µm, projecting up to 50 µm. Some subulate cystidioles, probably young stages of lamprocystidia, c. 20 × 6 µm, are sometimes present. Basidia 18–25 × 4–5 µm.


**H. karstenii** Jülich 1974
Hyphoderma

Syn.: *Knieffia nivea* P. Karst. 1896, non *H. niveum* Fockel 1869

Note: *Hyphoderma fouquieriae* Nakasone & Gilberts. 1978 also keys out here. It has straw yellow hyphal strands, mainly present under the basidiocarp and in the decayed wood. The spores are ellipsoid to subcylindrical, 5–6 × 3–4 μm.

19b. Spores ellipsoid to subcylindrical, slightly curved, 3.5–4.5(–5) × (1.8–)2–2.5 μm. Cf. *Phlebia cremeo-alutacea*

20a. Leptocystidia often constricted to somewhat monilioid. 21
20b. Leptocystidia not constricted. 23

21a. Hymenial surface even. 22
21b. Hymenial surface raduloid. Cf. *Basidioradulum radula*

22b. Spores cylindrical, 8–10(–12) × 3–4 μm.

Basidiocarp effused, soft-membranaceous, 100–300 μm thick. Hymenial surface even, whitish to cream-coloured. Hyphae hyaline, thin- to slightly thick-walled, 3–4 μm wide, with clamps. Leptocystidia thin-walled, cylindrical, but with several constrictions, some more or less monilioid, 50–120 × 5–7 μm. Basidia 20–25 × 5–6 μm. Spores guttulate.


**H. litschaueri** (Burt) J. Erikss. & Strid apud J. Erikss. & Ryv. 1975

Syn.: *Coricium niveum* Bres. 1903, non *Hyphoderma niveum* Fockel 1869; *Basidioradulum alienum* Parm. 1968; *Hyphoderma bresadolae* Jülich 1974

23a. Basal hyphae very large, up to 8–10 μm wide, slightly thick-walled, distinct, the cells rather short, with clamps.

Basidiocarp thin, ceraceous. Hymenial surface even, white to ochraceous. Hyphae of the subhymenium 3–4 μm wide. Leptocystidia thin- to slightly thick-walled, smooth or loosely encrusted, 45–60 × 8–12 μm, projecting up to 30 μm. Basidia 20–30 × 4.5–5.5 μm, guttulate. Spores cylindrical and adaxially flattened or ellipsoid, 4–6 × 2.5–3 μm.

Distr.: N. Am. Ref.: 170.

**H. probatum** (H.S. Jacks.) Jülich 1974

23b. Basal hyphae not conspicuous, distinct or indistinct, 2–6 μm wide (in some species the septal part of the hypha is inflated to up to 10 μm, the rest of the hypha remaining narrow).

24a. All leptocystidia distinctly capititate; encrusted hyphal tips also present in the hymenium.

Basidiocarp effused, ceraceous, thin (50 μm). Hymenial surface even, greyish. Hyphae thin-walled, 2–2.5 μm wide, with clamps. Leptocystidia 40–80 × 6–14 μm, widest at the base, the apical heads often surrounded by non-crystalline substances. Basidia 20–35 × 6–9 μm, guttulate. Spores broadly ellipsoid, 7–10 × 5–6 μm, guttulate.
Hyphoderma


**H. orphanellum** (Bourd. & Galz.) Donk 1957

24b. Leptocystidia not capitate, or if capitate, then occurring with other forms of cystidia.  
25

25a. Leptocystidia (gloeocystidia) narrow, the basal part not wider than 3–5 μm.  
26

25b. Leptocystidia (gloeocystidia) wider, the basal part 6–14 μm wide.  
29

26a. Echinocysts present on the hyphae, consisting of a globose or subglobose cell 3.5–5.5 μm in diam., sessile or terminal on short branches, with spines (0.7–1.5 μm long) on the surface, and a basal clamp. Basidiocarp subpellicular to soft-membranaceous, 80–150 μm thick. Hymenial surface even, cream-coloured, not cracked when dry. Hyphae hyaline, thin-walled and 2.5–3.5 μm wide in the subhymenium, thick-walled (0.5–1.0 μm) and 3.5–5.0 μm wide in the trama, with clamps. Leptocystidia hyaline, thin-walled or slightly thick-walled near the base, subulate, 30–45 × 3–4.5 μm, projecting up to 20 μm. Basidia 14–26 × 5.5–8 μm. Spores ellipsoid, 6–8 × 4–5 μm, guttulate. On gymnosperms.
Distr.: N. Am.  Ref.: 170.

**H. comptum** (H.S. Jacks.) Jülich 1976

26b. Echinocysts absent.  
27

27b. Spores not exceeding 8 μm in length.  
28


**H. pruni** (Lasch apud Rabenh.) Jülich 1974

Syn.: **Odontia bugellensis** Ces. apud Rabenh. 1855

28b. Hymenial surface even, mostly chalky white. Spores broadly ellipsoid, 4.5–6 × 3.5–4.5 μm, guttulate. Basidiocarp effused, soft-membranaceous when fresh, somewhat crustaceous when dry, 100–300 μm thick. Hymenial surface in old collections often ochraceous. Hyphae hyaline, thin- to slightly thick-walled, 2.5–4 μm wide, with clamps. Leptocystidia hyaline, thin-walled, subulate or capitate, 20–50 × 3.5–5 μm, immersed or slightly projecting. Basidia 20–30 × 4–5.5 μm. Mainly on Sambucus.
Hypoderma

Distr.: whole area.  Ref.: 66, 115, 368.

H. sambuci (Pers. ex Pers.) Jülich 1974

Syn.: Thelephora sera Pers. ex Pers. 1822; Curticium cretaceum (Fr. ex Sacc.) Cooke 1891; C. chrysanthemi Ploetz 1905; C. harioti Bres. 1920; Peniophora irregularis Burt 1926; P. thujae Burt 1926

29a. Echinocysts present.
29b. Echinocysts absent.

30a. Hymenial surface even. Leptocystidia fusiform, 50–60(−90) μm long, distinctly projecting; capitate cystidia in the trama, apically surrounded with reddish brown material. Spores cylindrical, 7–9(−10) × 2.5–3.5(−4) μm. H. pallidum, see 41a.

30b. Hymenial surface odontoid. Leptocystidia cylindrical, 30–50 × 5–10 μm, not or only slightly projecting; no capitate cystidia in the trama. Spores slightly allantoid, 9–11 × 2.5–3 μm, guttulate.

Basidiocarp effused, membranaceous. Hymenial surface odontoid, the teeth 1–2 μm long, cream-coloured to ochraceous. Hyphae hyaline, thin-walled, 3–4 μm wide, with clamps. Echinocysts laterally on subhymenial and trama hyphae, subglobose, c. 10 μm in diam., with 1–2 μm long warts on the surface, contents dense, with brownish material. Basidia 25–30 × 6–7 μm. On angiosperms.


H. echinostis J. Erikss. & Strid apud J. Erikss. & Ryv. 1975

31a. Spores up to 10 μm long and up to 3 μm wide.
31b. Spores 10–13–15 μm long or broader than 3 μm.

32a. Basidiocarp pellicular to thin-membranaceous, with narrow hyphal strands.

Hymenial surface even, whitish. Hyphae hyaline, thin-walled, 3–4 μm wide, with clamps. Leptocystidia more or less cylindrical, the basal part slightly thick-walled, 40–80 × 6–8 μm, 20–30 μm projecting. Basidia 24–30 × 5.5–6.5 μm. Spores cylindrical, 6.5–8.5 × 2.5–3 μm, guttulate.

Distr.: USSR.  Ref.: 186, 318.

H. orientale (Parm.) Jülich 1974

32b. Basidiocarp membranaceous, hyphal strands lacking.

33a. Leptocystidia somewhat thick-walled, the basal part often furcate. H. deserticola, see 37a.
33b. Leptocystidia thin-walled, the basal part not furcate.

34a. Spores cylindrical, 7–9(−10) × 2.5–3.5(−4) μm. Leptocystidia 50–60(−90) × 6–8 μm. H. pallidum, see 41a.
34b. Spores somewhat allantoid, 6–8 × (1.5−)2–2.5 μm, guttulate. Leptocystidia 60–120 × 6–8(−10) μm, projecting up to 80 μm.
**Hyphoderma**

Basidiocarp effused, soft-membranaceous, c. 100 \( \mu m \) thick. Hymenial surface even, young whitish, ochraceous when mature. Hyphae 3–4 \( \mu m \) wide. Sometimes small capitate cystidioles present in the hymenium. Basidia 16–27 \( \times 4–5(–6) \mu m \).

**H. macedonicum** (Litsch.) Donk 1957

35a. Leptocystidia distinctly clavate or somewhat thick-walled.

35b. Leptocystidia thin-walled or only the basal part somewhat thick-walled, cylindrical or basally widened to fusiform.

36a. Leptocystidia somewhat thick-walled.

36b. Leptocystidia clavate, thin-walled, 40–120 \( \times 10–16 \mu m \), smooth, but apically often covered with brownish, amorphous material. Basidiocarp effused, membranaceous. Hymenial surface even or rarely somewhat tuberculate, white to cream-coloured. Hyphae hyaline, 3–4 \( \mu m \) wide, with clamps. Basidia 25–35 \( \times 6–8 \mu m \). Spores cylindrical, 8–12 \( \times 4.2–4.8 \mu m \), guttulate.

Distr.: Eur., N. Am.  Ref.: 114, 368.  
**H. clavigerum** (Bres.) Donk 1957

37a. Leptocystidia fusiform, the basal part may be furcate, 40–100 \( \times 4.5–12 \mu m \), with a basal clamp, smooth, projecting up to 60 \( \mu m \).

Basidiocarp membranaceous. Hymenial surface even, pinkish cinnamon. Hyphae hyaline, the basal ones thick-walled (0.7–1(–2) \( \mu m \)), 4–5(–9) \( \mu m \) wide. Basidia 20–24 \( \times 4.7–6 \mu m \). Spores narrowly ellipsoid, 5–7 \( \times 2.5–3.8 \mu m \), some guttulate. On gymnosperms (Juniperus).

Distr.: Eur., N. Am.  Ref.: 114, 133.  
**H. deserticola** Gilberts. & Lindsey 1975


Note: When spores and basidia larger, cf. **H. amoenum** under 39a.

37b. Leptocystidia cylindrical, the basal part not furcate, 60–80 \( \times 10–20 \mu m \), with a basal clamp, the apical part densely covered with crystals, projecting up to 40 \( \mu m \).

Basidiocarp effused, membranaceous. Hymenial surface even, whitish to ochraceous. Hyphae hyaline, thin-walled, 3–4(–5) \( \mu m \) wide, with clamps. Basidia 20–30 \( \times 5–6 \mu m \). Spores cylindrical to slightly allantoid, 9–12 \( \times 3–4 \mu m \), guttulate.

Distr.: Eur., N. Am.  Ref.: 114, 368.  
**H. guttuliferum** (P. Karst.) Donk 1962

38a. Leptocystidia fusiform, or the basal part distinctly widened.

38b. Leptocystidia more or less cylindrical.

39a. Spores cylindrical, 11–16 \( \times 4.5–6.5 \mu m \), with small apiculus.
Basidiocarp membranaceous. Hymenial surface even, yellowish-ochreous. Hyphae thin to slightly thick-walled, 3–4(–5) μm wide, with clamps. Leptocystidia fusiform, the basal part often rather wide, 70–110 × 6–12 μm. Basidia 28–45 × 8–10 μm, guttulate.

Distr.: N. Am. Ref.: 249, 368.

H. amoenum (Burt) Donk 1957

Syn.: Peniophora investiens Burt 1926; P. montana Burt 1926; Corticum subalbium Burt 1926; C. pilosum Burt 1926

39b. Spores up to 11 μm long.

40a. Spores up to 4 μm broad.

40b. Spores 4–5 μm broad.

41a. Leptocystidia more or less fusiform, 50–60(–90) × 6–8 μm. Echinocysts sometimes present.

Basidiocarp effused, soft-membranaceous when fresh, firm-membranaceous when dry, thin (up to 100 μm). Hymenial surface even, at first whitish, later ochreous, under higher magnification dotted with some reddish-brown material. Hyphae hyaline, thin-walled, 3–4 μm wide. Small, capitulate cystidioles present in the trama, apically always with excreted masses of reddish-brown material. Echinocysts rare, on short side branches of the hyphae, c. 10 × 5 μm, with a basal clamp. Basidia 22–25(–30) × 5–6 μm. Spores cylindrical, 7–9(–10) × 2.5–3.5(–4) μm, guttulate.

Distr.: whole area. Ref.: 66, 114, 127.

H. pallidum (Bres.) Donk 1957

Syn.: Corticum ochrofarctum Burt 1926; Peniophora gilva Bourd. & Galz. 1928

41b. Leptocystidia cylindrical or somewhat fusiform, the apical part sometimes broadened, the basal part somewhat thick-walled, 80–160 × 10–13 μm, projecting up to 100 μm.

Basidiocarp effused, firm-membranaceous, 100–200 μm thick. Hymenial surface even, whitish to pale ochreous. Hyphae hyaline, thin- to slightly thick-walled, 3–4 μm wide, with clamps. Basidia 23–32 × 5–6.5 μm, guttulate. Spores cylindrical to narrowly ellipsoid, 5.5–7 × 3–3.5 μm, guttulate.


H. deviatum (Lundell) Parm. 1968

42a. Leptocystidia very wide at the base, the apical part more or less cylindrical, 100–200 × 10–20 μm, thin-walled, projecting up to 120 μm.

Basidiocarp effused, membranaceous, 100–200 μm thick. Hymenial surface even, whitish, greyish or ochreous, pilose under a lens. Hyphae hyaline, thin-walled, 2.5–3.5 μm wide. Basidia 25–30 × 5–6 μm, some guttulate. Spores ellipsoid, 6–9 × 4–5 μm, some guttulate.

Distr.: whole area. Ref.: 66, 114, 127, 368.

H. argililaceum (Bres.) Donk 1957
**Hyphoderma**

Syn.: *Kneiffia carneola* Bres. 1903; *Peniophora fusca* Burt 1926; *P. reticulata* Wakef. 1952

42b. Leptocystidia 50–100 μm long.

43a. Leptocystidia of two kinds, one fusiform (50–80 × 6–9 μm), the other capitate (30–50 × 5–8 μm), the latter always with a large cap of brown, resinous, amorphous material.


   **H. tsugae** (Burt) J. Erikss. & Strid apud J. Erikss. & Ryv. 1975

43b. Leptocystidia of two or three kinds, but not as above.

   Basidiocarp effused, ceraceous, 100–200 μm thick. Hymenial surface even, whitish to ochraceous. Hyphae hyaline, thin-walled, 3–4 μm wide. Leptocystidia thin-walled: a) cylindrical to slightly fusiform, enclosed, 50–100 × 8–12 μm; b) capitate, the apical part sometimes with crystals, projecting, 10–90 × 6–10 μm; c) stephanocysts mostly very rare, ellipsoid to pyriform, 10–12 μm in diam. Basidia 22–28 × 6–7 μm. Spores narrowly ellipsoid, 8–11 × 4–5 μm, guttulate.

   Distr.: whole area. Ref.: 2, 42, 66, 114.

   **H. praetermissum** (P. Karst.) J. Erikss. & Strid apud J. Erikss. & Ryv. 1975

44a. Spores broadly ellipsoid.

44b. Spores allantoid to cylindrical or narrowly ellipsoid.

45a. Spores with somewhat thickened walls, broadly ellipsoid, 6–9 × 4–5 μm.

   Basidiocarp effused, soft-membranaceous. Hymenial surface even, cream-coloured to ochraceous. Hyphae hyaline, thin- to slightly thick-walled, 2–4 μm wide. Leptocystidia somewhat thick-walled over the whole length, the apical part somewhat monilioid, 60–90 × 6–10 μm, projecting up to 30 μm. Basidia 20–35 × 5–7 μm.


   **H. pilosum** (Burt) Gilberts. & Budington 1970

45b. Spores thin-walled.

46a. On gymnosperms

   Basidiocarp effused, ceraceous, up to 100 μm thick. Hymenial surface even, whitish, greyish or cream-coloured. Hyphae hyaline, thin-walled, 3–4 μm wide. Leptocystidia broadly cylindrical to
slightly clavate, 50–70(–90) × 8–10(–15) μm. Basidia 30–35 × 6–8 μm. Spores broadly ellipsoid, 8–10 × 5–6.5 μm.

Distr.: Eur., USSR. Ref.: 105, 114.

H. obtusum J. Erikss. 1958

Note: Very similar to H. lapponicum, which has slightly larger spores.

46b. On angiosperms.

Basidiocarp effused, ceraceous, up to 100 μm thick. Hymenial surface even, yellowish grey to ochraceous. Hyphae hyaline, thin-walled, 3–4 μm wide. Leptocystidia more or less cylindrical, 30–80 × 5–12 μm. Basidia 20–25 × 6–7 μm. Spores broadly ellipsoid, 8–12 × 6–7 μm.


H. lapponicum (Litsch.) Ryv. 1971

47a. Spores broadly cylindrical to ellipsoid, 7–8.5 × 3–3.7 μm. Hyphal strands thin, white.

Basidiocarp effused, pellicular to slightly ceraceous, thin. Hyphae hyaline, thin-walled, 3–4 μm wide. Leptocystidia more or less cylindrical, thin-walled, except for the up to 0.5 μm thick basal part, 40–90 × 5.5–6.5 μm, projecting up to 40 μm. Basidia 22–30 × 5.5–6.5 μm.†

Distr.: USSR. Ref.: 115, 186.

H. mirabile (Parm.) Jülich 1974

47b. Spores at least 9 μm long.

48a. Spores 3–4 μm broad.

48b. Spores 4–5.5(–7) μm broad.

49a. Basidiocarp thin (c. 50 μm). Leptocystidia cylindrical, 50–75 × 6–7 μm.


H. definitum (H.S. Jacks.) Donk 1957

49b. Basidiocarp thicker (c. 100 μm). Leptocystidia cylindrical, 50–130 × 6–8 μm.


Distr.: Eur., USSR. Ref.: 114.

H. roseocremeum (Bres.) Donk 1957

50a. Leptocystidia 80–150 μm long

50b. Leptocystidia up to 80 μm long.
Hyphoderma

51a. Leptocystidia 60–100 µm long.
51b. Leptocystidia more or less cylindrical, the basal part somewhat thicken-
      walled, 90–150 × 10–12 µm, projecting up to 60 µm.
      Basidiocarp effused, membranaceous. Hymenial surface even,
      cream-coloured to ochraceous. Hyphae hyaline, thin-walled, 2.5–3.5
      µm wide. Leptocystidia as above or also some immersed, clavate,
      cylindrical, 10–14 × 4.5–5 µm, guttulate.
      Distr.: Eur. Ref.: 162.
      H. subclavigerum K.-H. Larsson & Hjortstam 1978
      Note: Perhaps identical with H. medioburiense.

52a. Spores narrowly ellipsoid, 8–11 × 4–5.5 µm. H. praetermissum, see 43b.
52b. Spores cylindrical to slightly allantoid, 10–17 × 4–5.5 µm, guttulate.
      Basidiocarp effused, membranaceous. Hymenial surface even,
      yellowish ochraceous. Hyphae hyaline, thin-walled, 3–4 µm wide.
      Leptocystidia thin-walled, cylindrical, 60–100 × 7–10 µm. Basidia
      30–40 × 7–8 µm, guttulate with (2–)4 sterigmata.
      Distr.: Eur., N. Am. Ref.: 114, 368.
      H. medioburiense (Burt) Donk 1957
      Syn.: Gloeoecystidium subargillaceum Litsch. 1938

53a. Spores narrowly ellipsoid, 10–14 × 5–7 µm, guttulate.
      Basidiocarp effused, membranaceous, c. 100 µm thick. Hymenial
      surface even, white to cream-coloured. Hyphae hyaline, thin-walled,
      3–4 µm wide. Leptocystidia thin-walled, cylindrical, 50–80 × 8–12
      µm, projecting up to 50 µm. Basidia 30–40 × 8–9 µm, guttulate.
      H. obtusiforme J. Erikss. & Strid apud J. Erikss. & Ryv. 1975

53b. Spores slightly allantoid to cylindrical or narrowly ellipsoid, 13–15 ×
      4.5–5.5 µm.
      Basidiocarp effused, membranaceous. Hymenial surface even,
      cream-coloured to ochraceous. Hyphae hyaline, thin-walled, 3–4 µm
      wide. Leptocystidia irregularly cylindrical or slightly capitate,
      Distr.: Eur., N. Am. Ref.: 177.
      H. assimile (H.S. Jacks. & Dearden) Donk 1957
      1975

HYPHODERMELLA J. Erikss. & Ryv. 1976

Basidiocarp annual, resupinate, effused, crustaceous, rhizomorphs lacking.
Hymenial surface odontoid, pale coloured. Hyphal system monomitic.
Hyphae hyaline, thin-walled, without clamps. Cystidia lacking, but teeth
with encrusted hyphal fascicles present. Basidia suburniform, 4-spored.
Spores hyaline, ellipsoid, thin-walled, smooth, not amyloid.
Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: *Grandinia corrugata* Fr. 1874
Distribution: Europe.
References: 115.

**H. corrugata** (Fr.) J. Erikss. & Ryv. 1976

**HYPHODONTIELLA** Strid 1975


Substrate: saprophytic on wood of angiosperms.
Type species: *Hyphodontiella multisepattata* Strid 1975
Distribution: Europe.
References: 115.

Monotypic. Basidiocarp effused, at first orbicular, later confluent. Hymenial surface even, whitish to pale yellowish. Hyphae hyaline, distinct, slightly thick-walled in the subiculum, 2–3 μm wide, with scattered clamps and numerous secondary septa lacking clamps. Cystidia absent. Basidia narrowly clavate, 12–15(–20) × 4.5–6 μm. Spores ovoid to subfusiform, 5.5–6.5 × 3–3.5 μm.
**H. multisepattata** Strid 1975

**HYPOCHNIELLA** J. Schroet. apud Cohn 1888

Basidiocarp annual, resupinate, hypochnoid, separable. Hymenial surface even to discontinuous. Hyphal system monomitic. Hyphae hyaline to brownish, thin- to slightly thick-walled, branching at right angles, without clamps. Cystidia absent. Basidia in candelabrum-like clusters, short-cylindrical to sub-clavate, often somewhat sinuous, more rarely somewhat constricted, with 4 sterigmata. Spores violaceous when fresh, yellowish brown when dry, ellipsoid to subcylindrical, smooth, with thickened walls. Reaction with Melzer’s indistinct.

Substrate: saprophytic on wood of angiosperms.
Hypochnella

Type species: *Hypochnella violacea* (Auersw.) ex J. Schroet. 1888
Distribution: Europe, North America.
References: 115.

Monotypic. Basidiocarp hypochond, separable. Hymenial surface even, sometimes discontinuous, violaceous when fresh, yellowish brown when dry. Subiculum whitish, loose. Subicular hyphae thin- to slightly thick-walled, hyaline, 4–8(–9) μm wide, often with small crystals, branching at right angles. Subhymenial hyphae 4–6 μm wide. Basidia subclavate to short cylindrical, 17–25(–35) × 5–7.5 μm, sterigmata up to 7 μm long. Spores violaceous when fresh, yellowish brown when dry, ellipsoid to cylindrical, 6–8 × 3–4.5(–5) μm, not reacting with KOH.

**H. violacea** (Auersw.) ex J. Schroet. 1888

**HYPOCHNICIUM** J. Erikss. 1958

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface even, warty or odontoid, pale-coloured. Hyphal system monomitic. Hyphae hyaline, thin- to somewhat thick-walled, with clamps. Leptocystidia or gloecystidia often present. Basidia narrowly clavate, with a basal clamp and 4 sterigmata. Spores hyaline, globose to ellipsoid or pyriform, with smooth or warted thickened walls, not amyloid, cyanophilous.

Substrate: saprophytic on wood of angiosperms or gymnosperms, rarely on soil.
Type species: *Thelephora bombycina* Sommerf. ex Fr. 1828
Distribution: in the whole area.
References: 66, 115.

1a. Cystidia absent.

1b. Cystidia present.

2a. Spores globose, roughened, 7–8 μm in diam.


**H. vellereum** (Ellis & Cragin) Parm. 1968

2b. Spores ellipsoid.

3a. Spores broadly ellipsoid, smooth, 6–7 × 5–5.5 μm.

Hypochninum

H. lundellii (Bourd.) J. Erikss. 1958
3b. Spores broadly ellipsoid to somewhat pyriform, smooth, 8–11 × 6–8 μm. Basidiocarp effused, membranaceous, sometimes thick (up to 2.5 mm). Hymenial surface even to tuberculate, whitish to cream-coloured. Hyphae thin- to thick-walled, 3–6 μm wide. Basidia narrowly clavate, 30–65 × 6–8.5 μm.
H. bombycinum (Sommerf. ex Fr.) J. Erikss. 1958

4a. Spores smooth.
4b. Spores roughened or warted.

5a. Spores globose to subglobose, 5–7.5 × 4–6 μm.
H. sphaeosporum (Höhn. & Litsch.) J. Erikss. 1958

5b. Spores ellipsoid.

6a. Cystidia at least apically with several constrictions, thin-walled, 60–85 × 5–10 μm, smooth or slightly encrusted.
Basidiocarp effused, membranaceous. Hymenial surface even to tuberculate, whitish to cream-coloured or pale ochraceous. Hyphae thin-walled, 2.5–4 μm wide. Basidia clavate, 40–45 × 8–11 μm. Spores broadly ellipsoid, 9–12 × 5.5–8.5 μm.
Distr.: N. Am.  Ref.: 132.
H. prosopidis Burdsall apud Gilberts. Burdsall & Canfield 1976

6b. Cystidia without bead-like constrictions.

7a. Spores ellipsoid, 6–7.5(–9) × 4–4.5(–5) μm.
H. geogenium (Bres.) J. Erikss. 1958
Syn.: Gloeocystidium inaequale Höhn. & Litsch. 1907; Peniophora albostraminea Bres. 1925
7b. Spores broadly ellipsoid, 8–10(–12) × 6–7(–9) μm. H. eichleri, see 9b.

8a. Gloeocystidia numerous, sulpho-positive, fusiform, c. 200 × 10 μm.
Basidiocarp effused, membranaceous to subceraceous. Hymenial surface even or tuberculate, whitish to pale ochraceous. Hyphae
**Hypochnicium**

thin-walled, 2–4 µm wide. Basidia narrowly clavate, 50–75 × 6–9 µm. Spores subglobose to broadly ellipsoid, warded, 7.5–10 × 7–8 µm.

Distr.: whole area. Ref.: 66, 115.

**H. analogum** (Bourd. & Galz.) J. Erikss. 1958

8b. Sulpho-positive gloecystidia absent, but leptocystidia present.

9a. Spores broadly ellipsoid, warded, (5–)5.5–7(–7.5) × 4.5–5 µm.


**H. punctulatum** (Cooke) J. Erikss. 1958

Syn.: *Hypochnus cremicolor* Bres. 1903; *Corticium wakefieldii* Bres. 1920; *Hypochnium caucasicum* Parm. 1967

9b. Spores broadly ellipsoid, warded, 8–10(–12) × 6–7(–9) µm.

Basidiocarp effused, membranaceous. Hymenial surface even to slightly tuberculate, whitish to cream-coloured. Hyphae thin- to somewhat thick-walled, 3–5 µm wide. Cystidia with thin to somewhat thickened walls, fusiform, smooth, 100–150 × 7–10 µm. Basidia narrowly clavate, 25–40 × 6–8 µm. Mainly on angiosperms, but also on gymnosperms.


**H. eichleri** (Bres.) J. Erikss. & Ryv. 1976

Syn.: *Hypochnus albostramineus* Bres. 1903

**HYPOCHNOPSIS** P. Karst. 1889

Basidiocarp annual, effused, hypochnoid, separable. Hymenial surface discontinuous to continuous, even to granular to finely papillose. Subiculum loose. Hyphal system monomitic. Hyphae hyaline, thin-walled, with large clamps. Basidia single or in small clusters, clavate, the basal part usually abruptly narrowed (podobasidia), the upper part often constricted. Spores yellowish, thick-walled, smooth, subglobose to ellipsoid, amyloid, violet in KOH.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Hypochnus mustialaensis* P. Karst. 1871

Distribution: Europe, North America.

References: 127.

Monotypic. Basidiocarp effused, hypochnoid, separable. Hymenial surface even to granular or finely papillose, sulphur yellow, yellowish green to olivaceous; margin narrow, white. Subiculum white, loose. Hyphae hyaline, thin-walled, (2–)2.5–4.5(–5.5) µm wide, with large

**IRPELIA**

Basidiocarp annual, effused, hypochnoid, separable. Hymenial surface discontinuous to continuous, even to granular to finely papillose. Subiculum loose. Hyphal system monomitic. Hyphae hyaline, thin-walled, with large clamps. Basidia single or in small clusters, clavate, the basal part usually abruptly narrowed (podobasidia), the upper part often constricted. Spores yellowish, thick-walled, smooth, subglobose to ellipsoid, amyloid, violet in KOH.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Hypochnus mustialaensis* P. Karst. 1871

Distribution: Europe, North America.

References: 127.
clamps. Cystidia absent, but protruding immature basidia might be mistaken for them. Basidia 20–35(--40) × 5–7 μm, the basal part 2.5–3.5 μm wide, with 2–4 sterigmata. Spores yellow, thick-walled, subglobose to ovoid or ellipsoid, flattened at one side, rarely minutely reniform, (4.5–)5–6.3(--7) × 3.5–4.5(--5) μm, amyloid (but not all spores), violet in KOH. On angiosperms (mainly Betula) and gymnosperms.


H. mustialaensis (P. Karst.) P. Karst. 1889

INTEXTOMYCES J. Erikss. & Ryv. 1976

Basidiocarp annual or perennial, resupinate, effused, ceraceous. Hymenial surface even, warted or odontoid, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin-walled, densely interwoven, with clamps. Cystidia absent. Basidia stalked, suburniform, with 4 sterigmata. Spores hyaline, thick-walled, smooth, ellipsoid to ovoid, sometimes subangulate, not amyloid.

Substrate: saprophytic on wood of angiosperms.

Type species: Corticium contiguum P. Karst. 1881

Distribution: in the whole area.

References: 115.

Monotypic. Basidiocarp effused, ceraceous when fresh, becoming hard when dry. Hymenial surface even when young, often becoming warted or odontoid, white to greyish, often with pinkish tinge. Hyphae thin-walled, 1–3 μm wide, some irregular with swellings, others more or less gelatinized. Basidia typically stalked, suburniform, 10–20 × 4–6(--8) μm (without stalk). Spores thick-walled, ellipsoid to ovoid, often subangulate, 4.5–5(--6) × 3.5–4 μm.

Distr.: whole area. Ref.: 115.

I. contiguus (P. Karst.) J. Erikss. & Ryv. 1976

IRPEX Fr. 1825

Basidiocarp annual, effused, effused-reflexed or pilate, coriaceous. Abhymenial surface velutinous to hisrtle, pale coloured. Hymenial surface poroid, irpicoid or hydroid, pale coloured. Hyphal system dimitic. Generative hyphae hyaline, thin- to thick-walled, without clamps. Cystidia thick-walled, encrusted, typically cylindrical to fusiform, originating from skeletal or generative hyphae. Basidia in small clusters, clavate to subcylindrical, with 4 sterigmata. Spores hyaline, thin-walled, smooth, ellipsoid to cylindrical or allantoid, not amyloid.

Substrate: saprophytic on wood of angiosperms or gymnosperms.

Type species: Hydnum lacteum Fr. ex Fr. 1821

Distribution: in the whole area.

References: 276.
Irpepx

1a. Spores ellipsoid to cylindrical, sometimes slightly curved, (4.9–)5.5–6.5 × (2.2–)2.5–3 μm.
   Basidiocarp effused to pileate, sometimes even flabellate. Abhymenial surface velutinous to hirsute, whitish to ochraceous. Hymenial surface irpicoid, hydnoid or poroid, coriaceous to subceraceous, whitish to ochraceous. Ridges or spines up to 5 mm long. Generative hyphae 3–5.5 μm wide, thin- to thick-walled. Skeletal hyphae 3.5–7.2 μm wide. Cystidia thick-walled, encrusted, cylindrical to fusiform, 4–7.5 μm wide. Basidia clavate to subcylindrical, 18–25 × 3–6 μm. On angiosperms, rarely on gymnosperms.
   Distr.: whole area. Ref.: 276.

Irpepx lacteus (Fr. ex Fr.) Fr. 1825
   Syn.: ?Hydnum occarium Batsch ex Fr. 1821; ?H. pectinatum Fr. 1821; H. arboiculatum Pers. ex Fr. 1821; Boletus tulpiferae Schw. 1822; Irpepx sinuosus Fr. 1828; I. canescens Fr. 1828; H. subresupinatum Schw. 1832; I. pallescens Fr. 1838; I. hirsutus Kalchbr. 1879; I. bresadolae Schuler 1885; I. rimosus Peck 1890; I. raduloides Pilát 1937

1b. Spores ellipsoid, 2.5–4 × 2–3 μm. Cf. Steccherinum subcrinale

IRPICODON Pouzar 1966

Basidiocarp annual, effused to effused-reflexed or dimidiate, coriaceous to fleshy. Hymenial surface warted to irpicoid, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps. Sterile hymenial structures absent. Basidia in clusters, clavate, with 4 sterigmata. Spores hyaline, thin-walled, subcylindrical, smooth, amyloid.

Substrate: parasitic on wood of gymnosperms.
Type species: Hydnum pendulum (Alb. & Schw.) ex Fr. 1821
Distrib.: Europe, USSR.
References: 115.

Monotypic. Basidiocarp resupinate to dimidiate, rarely more or less stipitate, thin. Abhymenial surface rugose, often zonate, later glabrous, white to yellowish. Hymenial surface warted to irpicoid with flat or lamellate teeth, white to yellowish or pale ochraceous; margin fimbriate. Hyphae 2.5–3.5 μm wide. Basidia clavate, 12–15 × 3–4 μm. Spores subcylindrical, 4.5–5 × 2–2.5 μm.
Distr.: Eur., USSR. Ref.: 115.

I. pendulus (Alb. & Schw. ex Fr.) Pouzar 1966

JAAPIA Bres. 1911

Syn.: Coniobotrys Pouzar 1958

Basidiocarp annual, resupinate, effused, floccose or hypochnoid. Hymenial surface even, whitish to yellowish. Hyphal system monomitic. Hyphae hyaline, thin-walled, subcylindrical, smooth, amyloid.

Substrate: parasitic on wood of gymnosperms.
Type species: Hydnum pendulum (Alb. & Schw.) ex Fr. 1821
Distrib.: Europe, USSR.
References: 115.
thin-walled, with clamps at all septa. Cystidia hyaline, cylindrical or subfusiform, smooth, asceptate, with thin or thickened walls. Basidia in clusters, clavate to cylindrical, somewhat constricted in the middle. Spores hyaline to yellowish, smooth, fusoid to navicular, thin- to thick-walled, cyanophilous, not amyloid, contents sometimes contracting, leaving the ends of the spore empty.

Substrate: saprophytic on wood of angiosperms and especially gymnosperms.

Type species: *Jaapia argillacea* Bres. 1911

Distribution: Europe, North America.

References: 115, 292, 336.

1a. Spores narrowly fusoid, hyaline to yellowish, with thickened walls when mature (ripening process continues after detachment), contents often contracted, leaving the ends of the spore empty, 16–25 × 5–7 μm. Cystidia thin-walled, 60–120 × 5–8 μm.

Basidiocarp hypnochnoid to floccose, loosely adnate. Hymenial surface even, whitish to pale ochraceous. Hyphae 2.5–5 μm wide. Basidia 30–65 × 6–8 μm.


*J. argillacea* Bres. 1911

1b. Spores fusoid, hyaline to yellowish, thick-walled, contents never contracted, (9.5–)12–18 × 4–6(–8) μm. Cystidia at least basally with thickened walls, 95–360 × 6–12 μm.


*J. ochroleuca* (Bres. apud Brinkmann) Nannf. & J. Erikss. 1953

**KAVINIA** Pilát 1938

Incl.: *Hydnocrisella* Petersen 1971.

Basidiocarp annual, resupinate, effused, byssoid to pellicular, green in 10% FeSO₄₃. Hymenial surface typically hydnoid. Hyphal strands usually present. Hyphal system mononitic. Hyphae hyaline, with thin to somewhat thickened walls, often distinctly swollen at the septa, with clamps, smooth or encrusted, often cyanophilous. Cystidia absent. Basidia single or in small clusters, clavate to subcylindrical, with 4 sterigmata. Spores hyaline to greenish, smooth or warted, with thin or somewhat thickened walls, narrowly ellipsoid, ovoid or cylindrical, cyanophilous, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Caldeesiella sajanensis* Pilát 1936

Distribution: in the whole area.

References: 115, 325.
**Kavinia**

1a. Spores narrowly ovoid to narrowly ellipsoid, warted, ochraceous to greenish, 6–10 × 3–4 μm. Basal hyphae typically smooth. Teeth olive green on white subiculum.

   Basidiocarp bryssonid, loosely adnate, with teeth up to 1.5(–3) mm long. Margin with white hyphal strands. Hyphae hyaline, up to 9 μm wide at the swellings. Basidia 20–25 × 5–7 μm.

   Distr.: whole area.  Ref.: 115, 127.

   **K. alboviridis** (Morgan) Gilberts. & Budington 1970

   Syn.: *Clavaria bourdottii* Bres. 1908; *Caldesiella sajanensis* Pilát 1936

1b. Spores hyaline, cylindrical, smooth, 8–12 × 3–5 μm. Basal hyphae with cyanophilous warts. Teeth ochraceous on whitish subiculum, darker when old.

   Basidiocarp soft-membranaceous, with teeth up to 2 mm long. Margin with abundant white hyphal strands. Hyphae hyaline, up to 9 μm wide at the swellings. Basidia 30–40(–55) × 7–10 μm.

   Distr.: whole area.  Ref.: 115, 325.

   **K. himantia** (Schw.) J. Erikss. 1958

   Syn.: *Hydnum subfuscum* Peck 1887; *Clavaria hyssacea* Roth ex Pers. 1822; *Hydnum serpens* Lasch apud Klotzsch 1850

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**Kneiffiella** P. Karst. 1889

Syn.: *Hyphodontia* J. Erikss. 1958

Basidiocarp annual, resupinate, effused, adnate, membranaceous, rhizomorphs lacking. Hymenial surface even, tuberculate, grandinoid or odontoid, rarely ippicoid, whitish to pale ochraceous. Hyphal system monomitic. Hyphae hyaline, slightly thick-walled in the subiculum, in almost all species with clamps. Cystidia present, very variable in shape. Basidia subbiform, up to 20 μm long in most species, (2–)34-spored. Spores hyaline, allantoid, cylindrical, ellipsoid or subglobose, thin-walled, smooth, often guttulate, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.

Type species: *Hydnum barba-jovis* Bull. ex Fr. 1821

Distribution: in the whole area.

References: 115.

Note: There is no holotype available for the type species and a neotype should be selected. According to Eriksson & Ryvarden (1976, p. 621) this is not difficult: "The tradition is unanimous and Fries's description matches our species rather well, why there should be no problem in choosing a neotype."


   Basidiocarp effused. Hymenial surface variable, from nearly even to odontoid or raduloid, cream-coloured to pale ochraceous. Hyphae 2–3 μm wide, with cyanophilous walls. Cystidia long-cylindrical,
150 × 6 µm, thick-walled, smooth. Spores narrowly ellipsoid, 5–5.5 × 2–2.5 µm.


**K. efibulata** (J. Erikss. & Hjortstam apud J. Erikss. & Ryv.) comb. nov.


1b. Clamps present. Basidia 4-spored.

2a. Lagenocystidia present.

2b. Lagenocystidia absent.

3a. Hymenial surface even or slightly tuberculate.

3b. Hymenial surface odontoid.


**H. arguta** (Fr.) comb. nov.


4b. Lagenocystidia abundant. Spores ellipsoid, 4.5–5 × 3–3.5 µm.


Distr.: whole area. Ref.: 115.

**K. alutaria** (Burt) comb. nov.


5a. Cystidia long-cylindrical, thick-walled. 6

5b. Cystidia different. 12

6a. Spores narrowly ellipsoid to subglobose. 7

6b. Spores allantoid. 10

7a. Spores subglobose, 4.5–5.5(-6) × 3.5–4.5 µm.


**K. barba-jovis** (Bull. ex Fr.) P. Karst. 1889

Syn.: *?Peniophora prominens* H.S. Jacks. & Dearden 1951
Kneiffiella

7b. Spores narrowly ellipsoid.

8a. Hymenial surface odontoid.
8b. Hymenial surface even, cream-coloured to ochraceous.
   K. alienata (Lund. apud Lund. & Nannf.) comb. nov.

9a. Spores ellipsoid, 2.5–3.5 × 1.5–1.8 μm.
   K. microspora (J. Erikss. & Hjortstam apud J. Erikss. & Ryv.) comb. nov.

9b. Spores ellipsoid, 5–6 × 3–3.5 μm.
   K. abieticola (Bourd. & Galz.) comb. nov.

10a. Hymenial surface even.

10b. Hymenial surface odontoid, cream-coloured to ochraceous.
   K. floccosa (Bourd. & Galz.) comb. nov.
   Bas.: Odontia alutacea subsp. floccosa Bourd. & Galz. 1928, Hyménomycètes de France, p. 423.

11a. Spores slightly allantoid, 5.5–6.5(–7) × 2–2.5(–3) μm.
   K. cineracea (Bourd. & Galz.) comb. nov.

Note: *Hyphodonia altaica* Parm. 1968 differs only in having a slightly thicker basidiocarp.

11b. Spores allantoid, 6–8 × 1.5–2 μm.


Distr.: whole area. Ref.: 115.

**K. subalutacea** (P. Karst.) comb. nov.


12a. Spores ellipsoid to subglobose.

12b. Spores cylindrical to allantoid.

13a. Hymenial surface even.

13b. Hymenial surface odontiod.

14a. Leptocystidia subulate or slightly fusiform.

14b. Leptocystidia moniliform, 80–120 × 4–6 μm.

Basidiocarp effused. Hymenial surface even, ochraceous. Hyphae 2–3 μm wide. Basidia 10–18 × 3–4.5 μm. Spores ellipsoid to sub-globose, 3.5–4.5(–5.5) × 2–2.5(–3) μm.


**K. pallidula** (Bres.) comb. nov.

Bas.: *Gonatobotrys pallidula* Bres. 1903 in Annls mycol. 1: 127.

Syn.: *Gloeocystidium oleosum* Höhn. & Litsch. 1907

15a. Leptocystidia fusiform, 40–50 × 4 μm.


**K. juniperi** (Bourd. & Galz.) comb. nov.


Note: See also *Hyphoderma sambuci*.

15b. Leptocystidia wider, slightly fusiform, 60–70 × 7–12 μm.


Distr.: Eur., N. Am. Ref.: 164, 177.

**K. involuta** (H.S. Jacks. & Dearden) comb. nov.

Bas.: *Peniophora involuta* H.S. Jacks. & Dearden 1951 in Mycologia 43: 54.
16a. With large, projecting, capitate leptocystidia, 50–80 × 7–10 µm, thin-walled, smooth.
   **K. pilaezystidiata** (Lundell apud Lundell & Nannf.) comb. nov.

16b. Cystidia different, but sometimes narrow, capitate hyphal ends present. 17


17b. Sterile apices of teeth mainly with obtuse or capitate cystidia. 18

18a. Teeth not densely crowded, resupinate part well visible.
   **K. aspera** (Fr.) comb. nov.
   Bas.: *Grandinina aspera* Fr. 1874, Hym. europ., p. 627.

18b. Teeth densely crowded, resupinate part scarcely visible. 19

19a. Teeth 1–2 mm long.
   Dist.: whole area. Ref.: 115.
   **K. spathulata** (Schrad. ex Fr.) comb. nov.
   Syn.: *Hydnium rimosissimum* Peck 1896

19b. Teeth less than 1 mm long. 20

**Kneiffiella**


**K. breviseta** (P. Karst.) comb. nov.

20b. Hymenial surface ochraceous to reddish. Moniliform leptocystidia absent.


**K. verruculosa** (J. Erikss. & Hjortstam apud J. Erikss. & Ryv.) comb. nov.

21a. Hymenial surface even.  
21b. Hymenial surface odontoid.

22a. Leptocystidia subulate and moniliform.


**K. hastata** (Litsch.) comb. nov.
Bas.: *Peniophora hastata* Litsch. 1928 in Österr. bot. Z. 77: 130.

22b. Leptocystidia capitate and moniliform.


Distr.: Eur., USSR. Ref.: 115.

**K. halonata** (J. Erikss. & Hjortstam) comb. nov.

23a. Spores cylindrical, 2–3 μm broad.  
23b. Spores allantoid, 1–1.5 μm broad.

24a. Spores cylindrical, 4–6.5 × 2–2.5 μm.

Kneiffiella

cylindrical, only at apex of teeth, 50–80 × 4.5–5.5 μm, thin-walled, smooth or loosely encrusted; b) leptocystidia capitata, 40–60 × 3–4 μm, thin-walled, smooth or loosely encrusted. Basidia 12–25 × 4–4.5 μm.
Distr.: Eur., USSR. Ref.: 115.
K. nespori (Bres.) comb. nov.
Bas.: Odontia nespori Bres. 1920 in Annls mycol. 18:43.
24b. Spores 2.5–3 μm broad.

25a. Spores cylindrical, 5–6.5 × 2.5–3 μm. Teeth less than 1 mm long.
K. crustosa (Pers. ex Fr.) comb. nov.
Syn.: ?Grandivia burtii Peck 1900.
25b. Spores cylindrical, 6–7.5 × 2.5–3 μm. Teeth 1–3 mm long.
K. quercina (Fr.) comb. nov.
Syn.: Hydnum fallax (Fr.) ex Fr. 1821.

26a. Spores allantoid, 6–8 × 1.5(−2) μm.
Distr.: whole area. Ref.: 115.
K. alutacea (Fr.) comb. nov.

26b. Spores strongly curved, 4–5 × 1–1.5 μm.
K. curvispora (J. Erikss. & Hjorstam) comb. nov.
LAETICORTICIUM Donk 1956

Syn.: Dendro cortici um M.J. Larssen & Gilberts. 1974

Basidiocarp annual or biennial, resupinate, effused to rarely effused-reflexed. Hymenial surface even to granulose, generally vividly coloured when fresh, paler when dry. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled, typically with clamps. Cystidia and gloecystidia typically absent. Dendrohyphidia present. Basidia single or in small clusters, often originating from a vesicular probasidium, urniform to narrowly clavate, with (1–2–4) sterigmata. Spores hyaline, thin- or rarely thick-walled, smooth, globose to ellipsoid or subcylindrical, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: Thelephora rosea (Pers.) ex Fr. 1821
Anamorph: Hyphelia Fr. 1825
Distribution: in the whole area.
References: 115, 224.

1a. Basidia with 1–2 sterigmata. 2
1b. Basidia with 4 sterigmata. 3

Basidiocarp effused. Hymenial surface even to tuberculate, pinkish buff to reddish purple. Hyphae thin- to thick-walled, 2.5–5.5 μm wide. Dendrohyphidia 1.5–2.5 μm wide. Basidia up to 150 μm long, thick-walled and 8–15 μm wide at the probasidial bladder, thin-walled and 4.5–6 μm wide at the upper part.
Distr.: N. Am. Ref.: 255, 256.
L. simplicibasidium Lindsey & Gilberts. 1977

Basidiocarp orbicular, gelatinous, small. Hymenial surface reddish. Hyphae 2.5–5 μm wide, thin- to slightly thick-walled. Dendrohyphidia absent or rare, 1.5–2 μm wide. Basidia urniform, 50–100 μm long, 3–4 μm wide in the middle, 6–10 μm wide at the inflations. On or around fruitbodies of Colpoma (Taphrinales) on Quercus.
L. quercinum J. Erikss. & Rv. 1976

3a. Spores longer than 12 μm on average. 4
3b. Spores less than 12 μm long on average. 9

4a. On angiosperms. 5
4b. On gymnosperms. 7

5a. Spores ellipsoid to subcylindrical, 12–24 × 8–12 μm.
Basidiocarp 100–500 μm thick. Hymenial surface pinkish buff to reddish, paler when dry. Hyphae (2–)2.5–4.5(–5) μm wide. Basidia 40–100 × 7–12 μm. Mainly on Populus and Salix, but also on other angiosperms.

Distr.: whole area. Ref.: 115, 227.

**L. roseum** (Pers. ex Fr.) Donk 1956

**Syn.: Corticium roseolum** Massée 1890

Note: Larsen & Gilbertson (1977) describe *L. roseum* with very large spores (17–24 × 8–12 μm), while when European authors distinguish a small-spored and a large-spored form, they give 12–20 × 8–11 μm for the latter. Lentz (in Larsen & Gilbertson, 1974) gives a description of *L. mississippiense*, which is indiscernable from the concept here adopted for *L. roseum*.

5b. Spores narrower than 8 μm on average.

6a. Dendrothyphidia with capitulate cystidiod branches, swellings becoming up to 7 μm wide.

Basidiocarp up to 250 μm thick. Hymenial surface pale yellow to greyish yellow when dry (pinkish when fresh?). Hyphae 2–4 μm wide. Basidia 70–125 × 10–12 μm, probasidia 12–18 μm wide. Spores ovoid to ellipsoid, 12–15(–18) × 7–8 μm.


**L. appalachiensis** Burdsall & M.J. Larsen apud Burdsall 1976

6b. Dendrothyphidia with narrow branches, never cystidiod.

Basidiocarp up to 250 μm thick. Hymenial surface pinkish buff. Hyphae 2.5–4 μm wide. Basidia 90–120 × 8–9 μm, probasidia up to 15 μm wide. Spores ovoid to ellipsoid, 13–15 × 6–8.5 μm.


**L. canfieldiae** M.J. Larsen & Gilberts. 1974

7a. Spores subglobose to broadly ellipsoid, 12–16 × 8.5–11 μm. Sclerotial state (*Minnsia*) often present.


**L. minnsiae** (H.S. Jacks.) Donk 1956

7b. Spores ellipsoid to cylindrical, (16–)19–24 μm long.


Basidiocarp up to 200 μm thick. Hyphae 1.5–2(–2.5) μm wide. Basidia 65–80(–100) × 10–12 μm.


**L. griseo-effusum** M.J. Larsen & Gilberts. 1974

**L. durangense** M.J. Larsen & Gilberts. 1974


**L. lundelli** J. Erikss. 1958

9b. Hyphal strands absent. Spores different.

10a. Spores smaller than 8 μm on average.

10b. Spores at least 8 μm long.


11b. Spores larger.


12b. Subicular hyphae not amyloid. On angiosperms. Distr.: Eur., USSR.

Basidiocarp up to 1 mm thick. Hymenial surface violaceous to brownish or dark buff, sometimes becoming whitish. Hyphae 2–4.5 μm wide. Basidia 35–80 × 4–7(–8.5) μm. Spores ovoid to ellipsoid, 6–9 × 4–6 μm. Ref.: 115, 227.

**L. polygonoides** (P. Karst.) Donk 1956
Laeticorticium

Basidiocarp up to 200 μm thick. Hymenial surface pinkish buff to pale buff. Hyphae 2–4(–5.5) μm wide. Basidia 65–100 × (5–)6–9 μm.
L. pini (H.S. Jacks.) Donk 1956

13b. On angiosperms.

14a. Spores up to 6 μm broad, ellipsoid to subcylindrical.

14b. Spores at least 6 μm broad, ovoid to ellipsoid.

L. pulverulentum J. Erikss. & Ryv. 1977
Anamorph: Hyphelia rosea Fr. 1825.

15b. Hymenial surface violaceous when fresh. Anamorph absent. Distr.: N. Am., USSR.
Basidiocarp effused to effused-reflexed, up to 1500 μm thick. Hymenial surface even, purplish brown to vinaceous when fresh, becoming cinnamon to fawn when dry. Hyphae 2–3.5(–4) μm wide. Basidia 45–60 × 7–9 μm. Spores 8–12 × 4–6 μm.
Ref.: 8, 227, 234.
L. roseocarneum (Schw.) Boidin 1958
Syn.: Corticium lilacino-fuscum Berk. & Curt. 1873; C. subrepandum Berk. & Cooke 1878; Stereum sendaiense Lloyd 1917

16a. Hymenial surface pink or rosy when fresh. Probasidia hibernating. Sporeprint pink.
L. lombardiae M.J. Larsen & Gilberts. 1978
Note: Laeticorticium roseum B as distinguished by Boidin et al. (1968) is morphologically indistinguishable, but intersterile.

16b. Hymenial surface violaceous to lilaceous when fresh. Probasidia not hibernating. Sporeprint white.
Basidiocarp effused to effused-reflexed, up to 300 μm thick. Hymenial surface becoming buff when dry. Hyphae 2–3.5 μm wide, some gelatinizing in KOH. Basidia 60–90(–110) × 5–8 μm.

Laeticorticium

138

Laeticorticium

139

Laeticorticium

LAGARODON

Basidioles clamps.
Hymenial surface dry. Spores 2–10 μm, thick, or less, usually thick-walled, hyaline.

Reference: 136

1a. Hymenial surface hyaline - 54
1b. Hymenial surface pink

LAGARODON

1a. Hymenial surface hyaline

Laeticorticium

138

Laeticorticium

139

Laeticorticium

LAGARODON

Basidioles clamps.
Hymenial surface dry. Spores 2–10 μm, thick, or less, usually thick-walled, hyaline.

Reference: 136

1a. Hymenial surface hyaline - 54
1b. Hymenial surface pink

LAGARODON
Lagarobasidium

Distr.: Eur., USSR. Ref.: 227.
L. ionides (Bres. apud Brinkm.) Donk 1956

LAETISARIA Burdsall 1979

Basidiocarp annual, resupinate, effused, adnate, membranaceous to pellicular. Hymenial surface even, pinkish when fresh, ochraceous to pale orange when dry. Sterile fascicles often present, clavarioid, ceraceous, pinkish to orange, up to 10 mm long. Hyphal system monomitic. Hyphae hyaline, with thin to thickened walls, without clamps. Simple hyphidia may be present. Basidia more or less urniform, often originating from probasidia, with 4 sterigmata. Spores hyaline, thin-walled, smooth, ellipsoid to ovoid, not amyloid.

Substrate: parasitic on grasses.
Type species: Hypocnus fuciformis McAlpine 1906
Distribution: Europe.
References: 45a.

Monotypic. Basidiocarp effused, membranaceous to pellicular, up to 100 μm thick. Hymenial surface even, pinkish when fresh, pale ochraceous to pale orange when dry. Clavarioid fascicles often present, ceraceous, pinkish to orange, 2–10 μm long. Hyphae hyaline, thin- to thick-walled, 5–8(–10) μm wide, with multi-nucleate cells. Hyphidia sometimes rare, hyphoid, 15–25 × 3–4 μm. Basidia urniform, 35–50 × 6–8 μm. Spores ovoid to ellipsoid, 9–12 × 5–6.5 μm. On grasses, mainly Lolium and Festuca.
Distr.: Eur. Ref.: 45a, 196.
L. fuciformis (McAlpine) Burdsall 1979

LAGAROBASIDIUM Julich 1974

Basidiocarp annual, resupinate, effused, membranaceous to slightly ceraceous. Hymenial surface even, grandinoid or odontoid, more or less cream-coloured. Hyphal system monomitic. Hyphae hyaline, thin- to slightly thick-walled, with clamps. Cystidia hyaline, thin- to somewhat thick-walled, smooth. Basidia hyaline, suburniform to narrowly clavate, 10–20 μm long, with a basal clamp. Spores hyaline, ellipsoid, smooth, thick-walled, not amyloid.

Substrate: on plant debris.
Type species: Odontia pruinosa Bres. apud Bourd. & Galz. 1914
Distribution: in the whole area.
References: 191.

Basidiocarp effused, often very thin and rather inconspicuous. Hyphae in the basal part somewhat thick-walled, 3–7.5 μm wide. Basidia 10–15 × 4–6 μm, 4-spored. Spores subglobose, thick-
Lagarobasidium

walled, c. 5 × 4 µm, guttulate, cyanophilous. On gymnosperms.
1b. Hymenial surface even to odontoid, ochraceous. Cystidia narrowly clavate, 80–110 × 8–12 µm.

2a. Spores ellipsoidal, 5–6 × 4–5 µm, guttulate.
Basidiocarp effused, thin-membranaceous, somewhat pruinose. Hyphae slightly thick-walled in the basal part (up to 0.6 µm), 2–4 µm wide. Cystidia narrowly clavate, 80–110 × 8–10 µm, projecting up to 50 µm. Basidia 14–20 × 4.5–6 µm, 4-spored.
L. detriticum (Bourd. & Galz.) Jülich 1979
Syn.: Odontia pruinosa Bres. apud Bourd. & Galz. 1914

2b. Spores ellipsoidal, 4.5–5.7(–6.2) × 3–4.2 µm, guttulate.
Basidiocarp effused, soft-membranaceous, adnate. Hyphae 2–4.5 (–5) µm wide. Cystidia narrowly clavate to cylindrical, 60–100 × 7–12 µm, projecting up to 50 µm. Basidia 12–20 × 4–5 µm, (2–)4-spored.
Distr.: USSR.  Ref.: 318.
L. nikolajevae (Parm.) Jülich 1974
Note: This species may be identical with L. detriticum.

Laurilia Pouzar 1959

Basidiocarp perennial, resupinate or effused-reflexed, corky. Hymenial surface typically even. Hyphal system seemingly dimitic. Generative hyphae with clamps. Cystidia hyaline to yellowish, thick-walled, encrusted, at various levels in the basidiocarp, sometimes minutely emerging. Basidia clavate, with 4 sterigmata. Spores hyaline, globose to subglobose, thin-walled, smooth or ornamented, amyloid.

Substrate: on wood of gymnosperms.
Type species: Stereum suicitum Burt apud Peck 1901
Distribution: in the whole area.
References: 115, 147, 182, 337.

globose to subglobose, smooth or minutely echinulate, 5–6.5 × 4.5–6 μm. On Pinaceae.

Anamorph: Spiniger sp.

Distr.: whole area. Ref.: 115, 147, 182.

*L. sulcata* (Burt apud Peck) Pouzar 1959


Basidiocarp up to 4 mm thick. Abhymenial surface velutinous to tomentose, dark brown. Skeleton hyphae yellowish to brown, 4–7(–8.5) μm wide. Generative hyphae hyaline, thin- to somewhat thick-walled, 2.5–5.5 μm wide. Cystidia hyaline to brownish, conical to fusiform, 40–80 × 6–14 μm. Basidia clavate, 25–40 × 5–7 μm (147) or 50–75 × 8 μm (79). Spores globose to subglobose, smooth or minutely echinulate, 5.5–8.5 × 5–7 μm. On Cupressaceae and Taxodiaceae.

Distr.: N. Am. Ref.: 79, 147.

*L. taxodii* (Lentz & McKay) Parm. 1968

**LAXITEXTUM** Lentz 1955

Basidiocarp annual, resupinate, effused or typically effused-reflexed, soft-coriaceous, fragile when dry. Hymenial surface even, whitish. Hyphal system monomitic. Hyphae hyaline to brown, thin- to somewhat thick-walled, with clamps. Gloeocystidia abundant, slender, with refractive, hyaline contents. Basidia subcylindrical, with 4 sterigmata. Spores hyaline, thin-walled, smooth or slightly ornamented in Melzer’s, ovoid to ellipsoid, amyloid.

Substrate: saprophytic on wood of angiosperms.

Type species: *Thelephora bicolor* Pers. ex Fr. 1821

Distribution: in the whole area.

References: 115, 182.

Monotypic. Basidiocarp 800–1500 μm thick. Abhymenial surface wrinkled-membranaceous to appressed-strigose, often concentrically sulticate, dark brown. Hymenial surface white when fresh, buff when dry. Hyphae hyaline to brown, thin- to somewhat thick-walled, often encrusted, (1–)2–3.5(–4.5) μm wide. Gloeocystidia immersed or slightly protruding, narrowly fusoid to somewhat conical, 50–110 × 4–8.5 μm. Basidia subcylindrical, 16–24 × 3–5 μm. Spores ovoid to ellipsoid, (3.5–)4–6 × (2–)2.5–3.5 μm.

Distr.: whole area. Ref.: 115, 182.

*L. bicolor* (Pers. ex Fr.) Lentz 1955

Syn.: *Stereum fuscescens* (Schrad.) ex P. Karst. 1885; *S. coffeatum* Berk. & Curt. apud Berk. 1873; *S. pannosum* Cooke & Massee apud Cooke 1892 non ~ Cooke 1879; *S. laxum* Lloyd 1915.
LAZULINOSPORA Burdsall & M. J. Larsen 1974

Basidiocarp annual, resupinate, effused, arachnoid to byssoid, adherent or loosely attached, thin. Hymenial surface discontinuous to continuous, blue to greenish blue, margin similar. Hyphal system monomorphic. Hyphae hyaline to pale yellow, with thin to thickened walls, smooth or slightly encrusted. Clamps absent. Sterile hymenial structures absent. Basidia clavate to cylindrical, somewhat constricted just below the apex, with 4 sterigmata. Basidiospores subglobose to ovoid, irregular, thin-walled, warted to sparsely echinulate, hyaline to subhyaline in H₂O, blue in KOH.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: Lazulinospora wakefieldii Burdsall & M.J. Larsen 1974
Distribution: Europe, North America.

Note: The only character distinguishing this genus from Tomentella (incl. Tomentellastrum) is the blue reaction in KOH. This may be insufficient reason for separation.

1a. Spores irregularly ovoid, warted to sparsely echinulate, 5–7 × 2.5–4 µm.
Subicular hyphae thin-walled.
Basidiocarp arachnoid to byssoid, very thin. Hymenial surface deep dull violaceous blue to glaucous green when fresh, greyish yellow when dry. Subicular hyphae smooth or slightly encrusted, (2–)2.5–4 (–5) µm wide. Basidia 25–35(–40) × 4.5–6 µm, sterigmata 4–6 µm long.
Distr.: Eur.
Ref.: 48.
L. cyannea (Wakef.) Burdsall & M.J. Larsen 1974

1b. Spores irregularly subglobose, rarely ovoid, strongly warted, 5–5.5 × 3.5–5 µm. Subicular hyphae with thickened walls.
Basidiocarp pseudosclerotoid, thin. Hymenial surface somewhat discontinuous, pale turquoise to light green. Subicular hyphae smooth, (2.5–)4–5(–6) µm wide. Basidia (15–)20–30 × 4–6.5 µm, sterigmata 3–4 µm long.
Distr.: N. Am.
Ref.: 48, 390.
L. wakefieldii Burdsall & M.J. Larsen 1974

LEPTOSPOROMYCSES Júlich 1974

Basidiocarp annual, resupinate, effused, thin, pellicular, with or without hyphal strands. Hymenial surface even, pale coloured. Hyphal system monomorphic. Hyphae hyaline, cylindrical to somewhat torulose, thin- to slightly thick-walled, with clamps. Cystidia present in one species, hyaline, slightly thick-walled. Basidia hyaline, narrowly clavate, up to 14 µm long, with a basal clamp, mostly 4-spored. Spores hyaline, smooth, thin-walled, ellipsoid to cylindrical, small, not amyloid.

Substrate: on plant debris or soil.
Type species: *Corticium galzinii* Bourd. 1910
Distribution: in the whole area.
References: 115, 186.

1a. Spores broadly ellipsoid, somewhat thick-walled, 4–5 × 3–3.5 μm.
   Distr.: Eur., N. Am. Ref.: 115, 186.
   **L. ovoideus** Jülich 1972

1b. Spores cylindrical or ellipsoid, thin-walled.

2a. Spores broadly ellipsoid to pyriform, with relatively large, prominent apiculus, 3–4 × 1.8–2.3 μm. Leptocystidia present.
   Basidioecarp thin-membranaceous, loosely adnate, hyphal strands lacking. Hymenial surface even, whitish to cream-coloured. Hyphae hyaline, somewhat thick-walled in the subculicium, 1.5–3 μm wide, with clamps. Cystidia present, sometimes few, hyaline, slightly thick-walled, cylindrical, 30–40 × 3–4 μm, with a basal clamp, smooth, projecting up to 30 μm. Basidia 6.5–10 × 3.5–4 μm.
   Distr.: N. Am. Ref.: 186.
   **L. mundus** (H.S. Jacks. & Dearden) Jülich 1972

2b. Spores cylindrical to ellipsoid, with small, inconspicuous apiculus. Cystidia lacking.

3a. Spores narrowly cylindrical, 4.2–5.5 × 1.5–1.8(–2) μm.
   Basidioecarp pellicular, loosely adnate, hyphal strands lacking. Hymenial surface even, whitish to pale greyish. Hyphae hyaline, slightly thick-walled in the subculicium, 2.5–5.5 μm wide, with clamps. Basidia 7–10 × 3.5–4.5 μm, with (2–)4 sterigmata.
   Distr.: whole area. Ref.: 115, 186.
   **L. raunkiaerii** (M.P. Christ.) Jülich 1972

3b. Spores ellipsoid, somewhat shorter.

4a. Spores narrowly ellipsoid, 3–4.2 × 1.8–2.2(–2.4) μm. Hyphal strands lacking.
   Distr.: whole area. Ref.: 115, 186, 293.
   **L. galzinii** (Bourd.) Jülich 1972

4b. Spores broadly ellipsoid to ovoid, 3.5–4.5 × 2–2.5 μm. Thin hyphal strands present.
   Basidioecarp pellicular, loosely adnate. Hymenial surface even, pale rose or whitish. Hyphae hyaline, slightly thick-walled in the
Leptosporomyces

subiculum, 2.5–3.5 μm wide, with clamps. Basidia 9–11 × 3–3.5 μm.
Distr.: Eur. Ref.: 115, 186.
L. roseus Jülich 1972

LEUCOXYROPHANA Pouzar 1958

Basidiocarp annual, resupinate, effused, pellicular, membranaceous or fleshy, hymenium easily separable from subiculum. Hymenial surface even to merulioid, rarely irpicoid, white to yellow, orange, olive or brown. Hyphal strands typically present, sclerotia sometimes present. Hyphal system monomitic. Hyphae hyaline or pale yellow, with thin- or somewhat thickened walls, sometimes inflated or ampullate at the septa. Clamps always present. Cystidia typically absent. Basidia in small clusters, clavate. Spores hyaline to yellowish, smooth, thick-walled when mature, ovoid to ellipsoid, rarely subglobose, typically cyanophilous, dextrinoid, amyloid or unchanged in Melzer’s.

Substrate: saprophytic on gymnosperms, but also occurring on angiosperms.

Type species: Merulis mollis Fr. 1821

Distribution: in the whole area.

References: 115, 190.

1a. Hymenial surface even, rarely merulioid when fresh, white to pale ochraceous.
1b. Hymenial surface folded or merulioid to hydnoid, ochraceous, orange, olive or brown.

2a. Spores grey in Melzer’s.
2b. Spores not grey in Melzer’s.

3a. Cystidia rare, cylindrical to clavate, 50–150 × 5.5–9 μm, with thin to thickened walls. Spores ellipsoid to subcylindrical, (4.5–)5.5–7(–7.5) × 2.5–3.5(–4) μm, not cyanophilous when mature.
Basidiocarp pellicular. Hymenial surface merulioid when fresh, even when dry, whitish to pale ochraceous. Hyphal strands often present. Hyphae hyaline, thin- to thick-walled, 4–7 μm wide. Basidia clavate, 12–22 × 3.5–4.5 μm. On gymnosperms.
Distr.: whole area. Ref.: 115.
L. mollis (Bres.) Parm. 1967

3b. Cystidia absent. Spores ovoid to ellipsoid, 3–5 × 2–3.5(–4) μm, cyanophilous.
Basidiocarp pellicular. Hymenial surface even, cream to pale ochraceous. Hyphal strands often present. Hyphae hyaline, thin-walled, 2–5 μm wide, often ampullate at the septa and then up to 7 μm wide. Basidia clavate, 14–25(–40) × 3.5–5(–6) μm. On gymnosperms.
L. subilaquatum (Litsch.) Jülich 1974
Leucothyrophypha

4a. Spores subglobose to ellipsoid, 2.8–3.5 × 2–2.5 μm. Cf. Ceraceomyces sublaevis.

4b. Spores at least 4 μm long.

5a. Spores dextrinoid. Hymenial surface even, but becoming tuberculate, orange yellow and often with an olivaceous tinge. L. olivascens, see 10a.

5b. Spores not dextrinoid. Hymenial surface even, white to pale ochraceous or pale isabelline.


   Basidiocarp pellicular to membranaceous. Hymenial surface even, cream to pale ochraceous or pale isabelline. Hyphae thalpally present. Hyphae hyaline, thin- to thick-walled, 2–5(–8) μm wide.

   Distr.: Eur., USSR. Ref.: 115.

   L. cremen-isabellina (Litsch.) Parm. 1967

   Syn.: Athelia subtesulata Parm. 1967

7a. Spores up to 3(–3.2) μm broad.

7b. Spores at least 3 μm broad, on average broader.

8a. Spores ellipsoid, (3–)3.3–4(–4.5) × (2–)2.3–2.6 μm. Hymenial surface lilac to dark brownish when dry.


   Distr.: N. Am. Ref.: 143.

   L. montana (Burt) Domán. 1975

8b. Spores ellipsoid, 3.8–4.5(–5.5) × 2.4–3(–3.2) μm. Hymenial surface pale orange to pale ochraceous when dry.


   Distr.: Eur., N. Am. Ref.: 143.

   L. sororia (Burt) Ginnns 1976

9a. Basidiocarp up to 400 μm thick, aethelioid. Hymenial surface even to tuberculate or with low ridges but not merulioid, often pale coloured.

9b. Basidiocarp up to 1000 μm or more thick, ceraceous. Hymenial surface becoming merulioid or spiny, often brightly coloured.

10a. Hymenial surface becoming minutely tuberculate, yellow to olive-yellow or olive-green.

   Hyphal strands present. Hyphae hyaline to yellowish, thin- to thick-
Leucogyrophana

walled, sometimes inflated, sometimes encrusted, 2–7(–10) μm wide. Hyphoid thin-walled cystidoles occasionally present, projecting up to 50 μm. Basidia 20–27(–40) × 5.5–6.5(–7) μm. Spores ovoid to ellipsoid, 4.5–6(–7.6) × (3)–3.5–4.5(–6) μm. On angiosperms and gymnosperms.

Distr.: Eur., N. Am. Ref.: 143, 146.
L. olivascens (Berk. & Curt. apud Berk.) Ginns & Weresub 1976
Syn.: Corticum prasinum Berk. & Curt. apud Berk. 1873; C. chlorinum Berk. & Curt. apud Berk. 1873; Coniophora subochracea Peck 1897
10b. Hymenial surface with branched ridges, pale yellow to ochraceous, sometimes becoming ochraceous-brown or orange-yellow.

Hyphal strands present, sometimes rare. Hyphae hyaline, thin-walled, sometimes encrusted, 2.5–5(–6.5) μm wide. Cystidoles rare or absent. Basidia (17–)20–28 × 5–7(–8) μm. Spores ovoid to ellipsoid, 4.4–6.0 × 3.2–4.4 μm. On gymnosperms or rarely angiosperms.

Distr.: whole area. Ref.: 143.
L. romelli Ginns 1978

11a. Hymenial surface at first covered with low ridges which form a reticulum, finally covered with conical spines. Sclerotia often present in the decayed wood.

Basidiocarp ceraceous, up to 1(–2) mm thick. Hymenial surface yellowish to olive-yellow or brownish, darker when dry. Hyphal strands present. Hyphae hyaline, thin-walled, 3–8(–12) μm wide. Cystidoles present, projecting up to 10 μm. Basidia 18–38 × (4–)5–7.5(–9) μm. Spores ovoid to ellipsoid, rarely subglobose, (4.5–)5–7 × 3.5–4.5(–5.5) μm. On gymnosperms, rarely on angiosperms.

Distr.: whole area. Ref.: 143, 146.
L. pinastri (Fr.) Ginns & Weresub 1976
Syn.: Hydnium sordidum Weinn. 1836; ?Merulius giganteus Sauter 1877; M. candidans Roum. 1886; M. irpicinus Peck 1894; M. hydnoides P. Henn. 1903; M. sclerotiorum Falck apud Möller 1907; M. byssoides Burt 1917; M. atrovirens Burt 1917

11b. Hymenial surface meruloid, never reticulate or with spines. Sclerotia absent (except in L. mollusca).


Ref.: 143.
L. arizonica Ginns 1978
12b. Spores without an apical germ pore. Distr.: whole area
13
13a. Spores not dextrinoid, distinctly yellow, ovoid to ellipsoid, (4.5–)5–6.8
(–8) × 3–4.5(–5) μm. Basidiocarp (1–)2–6.5 mm thick. Hymenial
surface merulioid to pitted, brown. Sclerotia absent.

Hyphal strands present. Hyphae hyaline, thin-walled, 2–7(–18) μm
wide. Cystidioles rare or absent. Basidia 20–52 × 6–8 μm. On
gymnosperms, rarely on angiosperms.
Distr.: whole area. Ref.: 143.

L. pulverulenta (Fr.) Ginns 1978
Syn.: Merulius minor Falck apud Möller 1912; M. tignicola Harmsen
1952
13b. Spores typically dextrinoid, subhyaline to pale yellow, ovoid to ellipsoid,
5.5–7.5 × (3.8–)4–4.8(–5.2) μm. Basidiocarp up to 1(–2) mm thick.
Hymenial surface merulioid, orange-yellow to orange-brown, more rarely
yellowish brown. Sclerotia often present in decayed wood.

Hyphal strands present. Hyphae hyaline, thin- to somewhat thick-
walled, (2.5–)3–7.5(–10) μm wide. Sometimes encrusted. Cystidioles
often present. Basidia (20–)25–35(–45) × 6–9(–10) μm. On gymno-
sperm, more rarely on angiosperms.
Distr.: whole area. Ref.: 143, 146.

L. mollusca (Fr.) Pouzar 1958
& Br. 1878; M. subaurantiacus Peck 1885; M. pseudomol-
luscanus Parm. 1962; ?Leucogrypona pouzarri Parm. 1967

MICROSTROMA Lemke 1964
Basidiocarp annual, resupinate, effused or effused-reflexed, confluent, membranaceous;
margin adnate to reflexed. Hymenial surface even, pale coloured.

Hyphal system seemingly dimitic with binding hyphae. Hyphae thin-
to thick-walled, clamps absent. Hyphidia and gloeocystidia present. Basidia scattered,
cylindrical, large. Spores hyaline, (sub)globose, thick-walled, smooth, not
amyloid.

Substrate: saprophytic on wood of angiosperms.

Type species: Corticium subgiganteum Berk. 1873
Anamorph: Michenera Berk. & Curt. 1868
Distribution: North America.

References: 231.

Monotopic. Basidiocarp up to 1 mm thick, membranaceous to toughly

ceraceous. Hymenial surface even, cream to ochraceous-buff, later often

aluaceous. Abhymenial surface even, concolorous or lighter. Trama
Leucogyrophana

layered when well developed. Skeletoid hyphae branching at right angles, 2–3 μm wide; generative hyphae thin to partially thick-walled, 2.5–4 μm wide. Cystidia sulphopositive, of tramal origin, flexuous-cylindrical to subclavate, 100–250 × (8–)12–18(–23) μm, becoming secondarily septate and thick-walled. Hyphidia simple or branched, 3–5 μm wide. Basidia cylindrical, 70–100 × 13–18 μm. Spores hyaline, globose to subglobose, smooth, with thickened walls, 16–19 × 14–16 μm.
Distr.: N. Am. Ref.: 231.
L. subgiganteum (Berk.) Lemke 1964
Syn.: Aleurodiscus orientalis Lloyd 1920
Anamorph: Michenera artocreas Berk. & Curt. 1868

LINDTNERIA Pilát 1938

Basidiocarp resupinate, effused, soft-membranaceous. Hymenial surface even, irpicoid or irregularly poroid. Hyphal system monomitic. Hyphae hyaline, thin-walled, with or without clamps, often inflated near the septa. Cystidia lacking. Basidia hyaline, clavate to subniform, with strongly cyanophilous globules or guttules in the cytoplasm, 4-spored. Spores hyaline to often pale brown, somewhat thick-walled, globose to broadly ellipsoid, with an ornamentation of spines or wing-like crests, sporode-wall ornamentation strongly cyanophilous, not amyloid.

Substrate: saprophytic on plant debris and wood of gymnosperms and angiosperms.

Type species: Poria trachyspora Bourd. & Galz. 1925

Distribution: in the whole area.

References: 115, 198.

1a. Spores globose, 6–8 μm in diam.
   L. trachyspora (Bourd. & Galz.) Pilát 1938

1b. Spores ellipsoid.

2a. Clamps present at all septa.
   Basidiocarp effused, soft-membranaceous. Hymenial surface even, cream-coloured to ochraceous. Basidia 35–55 × 6–12 μm. Spores ellipsoid, 7–9 × 5.5–6.5 μm.
   L. leucobryophila (P. Henn.) Jülich 1977

2b. Clamps absent from many septa.
LOPHARIA Kalchbr. & MacOwan apud Kalchbr. 1881

Syn.: Thwaitesiella Massee 1892; Lloydella Bres. apud Lloyd 1901; Poro-stereum Pilát 1936; Licentia Pilát 1940

Basidiocarp annual or perennial, resupinate to effused-reflexed, membranaceous to coriaceous when fresh. Hymenial surface even, sometimes irpicoid or poroid. Abhymenial surface tomentose to hisolute. Hyphal system dimitic with skeletal hyphae. Generative hyphae with or without clamps. Skeletal hyphae wide, (3–)4–6(–10) μm. Cystidia hyaline to brown, thick-walled, often encrusted, originating from skeletal as well as from generative hyphae. Basidia in clusters, clavate to cylindrical, with 4 sterigmata. Spores hyaline, thin-walled, smooth, ovoid, ellipsoid or subcylindrical, not amyloid.

Substrate: on wood of angiosperms.

Type species: Lopharia lirillosa Kalchbr. & MacOwan apud Kalchbr. 1881

Distribution: in the whole area, but mainly tropical.

References: 12, 18, 383, 404.

1a. Clamps present at all septa.  
1b. Clamps absent or rare. L. crassa-complex.  
2

2a. Spores ovoid, ellipsoid or subcylindrical, 8–14(–15.5) × (4–)5.5–8(–10) μm. Basidia 35–65(–80) × (6–)9–11 μm.

Basidiocarp coriaceous. Hymenial surface even, warted, with ridges or slightly irpicoid to poroid, greyish brown to avellaneous. Abhymenial surface tomentose to hisolute, buff to grey. Cuticle well developed. Generative hyphae hyaline, 1.5–4 μm wide. Skeletal hyphae (3–)4–6 μm wide. Cystidia hyaline to dark brown, thick-walled, conical to fusoid, 65–175 × 10–26(–34) μm.


L. cinerascens (Schw.) G.H. Cunn. 1956

Syn.: Corticium aschistum Berk. & Curt. 1858; Radulum mirabilis Berk. & Br. 1873; Stereum disjunctum Berk. 1873; C. ephelitum Berk. & Curt. apud Berk. 1873; Peniophora berkeleyi Cooke 1879; S. neglectum Peck 1880; Lopharia lirillosa Kalchbr. & MacOwan apud Kalchbr. 1881; P. deglubens Berk. 1881; P. schweinitzii Masse 1889; S. caperatum Lloyd 1916 non (Berk. & Mont.) Masse 1881; P. occidentalis Ellis & Everh. 1897; L. javanica P. Henn. & Nym. apud P. Henn. 1889; S. purpurascens Lloyd 1914; S. turgidum Lloyd 1916; Licentia yao-chanica Pilát 1940

Note: When spores up to 4 μm wide, cf. Peniophora.
Lophaaria

2b. Spores up to 8.5(−9) μm long. Basidia rarely reaching 40 μm in length, never 9 μm in width.

3a. Cuticle present, consisting of interwoven skeletal hyphae. N. Am.
   Distr.: N. Am. Ref.: 404.
   L. sharpiana Welden 1970

3b. Cuticle absent. Eur., USSR.
   Distr.: Eur., USSR. Ref.: 115, 182, 404.
   L. spadica (Pers. ex Fr.) Boidin 1959
   Syn.: Stereum sponheimeri Pilát 1937; S. retirugum Cooke 1882; S. venosum Quélt. 1883
   Note: L. phellodendri (Pilát) Boidin differs only in the shallowly poroid hymenial surface (when fresh). There is no agreement on the spore dimensions of the type specimen. Pilát (328) and Boidin (12) give 8–9 × 4–5 μm, Welden (404) gives 4.5–6.5 × 3.5 μm.

4a. Tramal layer poorly developed. All skeletal hyphae form cystidia. Temperate region and tropical highlands. Cystidia 75–250 × 7–13.5 μm.
   Basidiocarp effused to effused-reflexed, membranaceous to coriaceous. Hymenial surface even, umber to purplish brown. Abhymenial surface tomentose, buff to vinaceous lilac to snuff brown. Generative hyphae 3–6 μm wide. Skeletal hyphae 4–6(−9) μm wide. Cystidia yellowish brown, obtuse or acute. Basidia sub-clavate, 18–33 × 4–6 μm. Spores ellipsoid to subcylindrical, 5.5–7.5(−8.5) × 3–4 μm.
   Distr.: N. Am. Ref.: 12, 234, 404.
   L. crassa (Lév.) Boidin 1959
   Syn.: Corticium vinosum Berk. 1845; Stereum unbrinum Berk. & Curt. apud Berk. 1873; Hymenochaete multiispinulosa Peck 1882; H. scabriseta Cooke apud Ravenel 1882; H. purpurea Cooke & Morgan apud Cooke 1883; Peniophora intermedia Masson 1890; H. kalchbrenneri Masson 1890; H. agathicola P. Henn. 1894; H. kwangensis P. Henn. 1907

4b. Tramal layer well developed. Some skeletal hyphae form cystidia, which
also originate from generative hyphae. Cystidia ventricose, 30–75 × 8–20(–25) μm. (Sub)tropical lowlands.


Distr.: N. Am. Ref.: 404.

L. papyrina (Mont. apud de la Sagra) Boidin 1959

Note: L. crassa and L. papyrina may be conspecific. A species such as Stereum earlei Burt may represent an intermediate taxon.

ARSELIUS K.-H. Larsson & Hjortstam 1974

Basidiocarp anual, resupinate, effused, hypochnoid, pellicular or membranaceous, adnate. Hymenial surface even, ochraceous or brown. Hyphal system monomitic. Hyphae hyaline or yellowish brown in KOH, slightly thick-walled in the trama and smooth or encrusted with yellowish material. Cystidia absent, but simple hyphidia present in the hymenium. Basidia broadly clavate, rather abruptly narrowed towards the base, with 2–4 sterigmata, clamps present or absent. Spores hyaline, navicular, smooth, thin-walled, not amyloid.

Substrate: saprophytic on decayed wood of angiosperms and gymnosperms.

Type species: Corticium reconditum H.S. Jacks. 1948

Distribution: in the whole area.

References: 115, 228.


Basidiocarp hypochnoid to pellicular. Hymenial surface brownish.


L. furcata K.-H. Larsson & Hjortstam 1974

1b. Clamps present. Basidia with 4 sterigmata

2a. Basal hyphae yellowish-brownish, encrusted with yellowish material.


Distr.: whole area. Ref.: 115, 228.

L. recondita (H.S. Jacks.) K.-H. Larsson & Hjortstam 1974

2b. Basal hyphae hyaline, not encrusted.

Basidiocarp membranaceous. Hymenial surface cream-coloured to ochraceous. Hyphae thin- to slightly thick-walled, 1.5–4 μm wide.


**Luella**


*L. lembospora* (Bourd.) Jülich 1975

**MELZERICIUM** Hauerslev 1974

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface even, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin- to slightly thick-walled, sometimes inflated, with clamps. Sterile hymenial structures absent. Basidia in small clusters, terminal, some with a pleural appendix at the base, clavate, often more or less stalked, with (2–)4 sterigmata and a basal clamp. Spores hyaline, smooth, thin-walled, ellipsoid to cylindrical, more or less constricted in the middle, amyloid.

Substrate: saprophytic on decayed wood of angiosperms.

Type species: *Corticium uducola* Bourd. 1910

Distribution: Europe.

References: 115, 155.

1a. Spores cylindrical to narrowly ellipsoid, 8–10 × 3–4 μm.

Basidiocarp small, 50–150 μm thick, membranaceous. Hymenial surface cream-coloured. Hyphae hyaline, cylindrical to torulose, 2–4 μm wide, inflated up to 6 μm, thin- to slightly thick-walled, with clamps. Basidia clavate, often stalked, 20–25 × 6.5–7 μm.


*M. uducola* (Bourd.) Hauerslev 1975

1b. Spores ellipsoid, distinctly constricted in the middle part, 8–10.5 × 4–5 μm.

Basidiocarp small, 50–150 μm thick, membranaceous. Hymenial surface cream-coloured. Hyphae hyaline, cylindrical to torulose, 2–4 μm wide, inflated up to 8 μm. Basidia clavate, often stalked, 15–20 × 5–6 μm, with a basal clamp.


*M. bourdottii* Jülich 1976

**MEMBRANOMYCES** Jülich 1975

Basidiocarp annual, resupinate, effused, adnate, membranaceous to subceraceous, the margin thinning out. Hymenial surface even, yellowish, ochraceous or pale brown. Hyphal system monomitic. Hyphae hyaline to slightly yellowish, cylindrical, thin- to slightly thick-walled, clamps lacking. Cystidia and glocozystidia absent. Basidia large, hyaline or slightly yellowish with age, flexuous-cylindrical to narrowly clavate, guttulate, 4-spored. Spores hyaline to pale yellowish, smooth, becoming slightly thick-walled, subglobose to ellipsoid, guttulate, not amyloid.

Substrate: on the stem of *Merulius lacrymans*.

Type species: *Merulius lacrymans* (Bourd.) Jülich 1976

Distribution: Europe.

References: 115, 155, 195.

**MERULITHEA** Jülich 1975

Basidiocarp annual, resupinate, effused, adnate, membranaceous to subceraceous, the margin thinning out. Hymenial surface even, yellowish, ochraceous or pale brown. Hyphal system monomitic. Hyphae hyaline to slightly yellowish, cylindrical, thin- to slightly thick-walled, clamps lacking. Cystidia and glocozystidia absent. Basidia large, hyaline or slightly yellowish with age, flexuous-cylindrical to narrowly clavate, guttulate, 4-spored. Spores hyaline to pale yellowish, smooth, becoming slightly thick-walled, subglobose to ellipsoid, guttulate, not amyloid.
Substrate: on decayed wood.
Type species: *Corticium spurius* Bourd. 1922
Distribution: Europe, North America.
References: 194.

Monotypic. Hymenial surface pale yellowish, ochraceous or pale brown.
Basidiocarp membranaceous to submembranaceous. Hyphae hyaline to slightly yellowish in the subiculum, 3–4 μm wide. Basidia flexuous-cylindrical to narrowly clavate, 35–75 × 6.5–9.5 μm, guttulate, with 4 rather large sterigmata. Spores hyaline to slightly yellowish, subglobose to broadly ellipsoid, 7.5–9.5 × 6–7.5 μm, guttulate.

**M. spurius** (Bourd.) Jülich 1975

Note: *Corticium detectabile* H.S. Jacks. 1948 is probably identical; the only difference is its lemon-yellow hymenial surface.

**MERULICIO**M J. Erikss. & Ryv. 1976


Substrate: saprophytic on wood or herbaceous plants.
Type species: *Merulius fusisporus* Romell 1911.
Distribution: Europe.
References: 115.


**M. fusisporus** (Romell) J. Erikss. & Ryv. 1976

**MERULIO**PS Bond. apud Parm. 1959

Syn.: *Byssomerulius* Parm. 1967; *Ceraceomerulius* (Parm.) J. Erikss. & Ryv. 1973

Basidiocarp annual, resupinate, effused to effused-reflexed or slightly pileate, membranaceous. Hymenial surface at first even, then meruloid, more or less ochraceous. Hyphal system monomitic. Hyphae hyaline, thin- to slightly thick-walled, without clamps. Cystidia sometimes present. Basidia narrowly clavate,
Meruliopsis

four-spored. Spores hyaline, more or less cylindrical, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: Xylomyzon taxicola Pers. 1825
Distribution: in the whole area.
References: 142.

1a. Spores up to 2 μm broad.
2
1b. Spores 2–3.5 μm broad.
3

2a. Spores curved-cylindrical to allantoid, 3–5 x 1.5–1.5 μm.
   Distr.: Eur., N. Am. Ref.: 142, 150.
   M. taxicola (Pers.) Bond. apud Parm. 1959
   Syn.: Xylomyzon pulchrum Pers. 1825; Merulius ravenellii Berk. 1872

2b. Spores cylindrical, slightly curved, 4.5–6 x 1.5–2 μm.
   Basidiocarp effused, membranaceous. Hymenial surface even to meruloid, bright orange to red when fresh, paler when dry. Hyphae hyaline, thin- to slightly thick-walled, 2.5–5 μm wide. Cystidia hyaline, cylindrical, 25–50 x 4–7 μm, thin-walled, smooth. Basidia 18–25 x 4–5.5 μm.
   Distr.: whole area. Ref.: 113, 372.
   M. albostramineus (Torrend) comb. nov.
   Bas.: Merulius albostramineus Torrend, Brotèria (Bot.) 11: 70. 1913.
   Syn.: Merulius armeniacus Bres. 1925; M. rubicundus Litsch. in Pilát 1934; M. atropurpureus W.B. Cooke 1971

3a. Hymenial surface dark blackish-purple, meruloid.
   Basidiocarp sometimes effused, mostly effused-reflexed, membranaceous to slightly ceraceous. Hyphae hyaline, thin- to slightly thick-walled, 2–6.5 μm wide. Cystidia absent. Basidia 17–30 x 4–5.5 μm. Spores cylindrical to narrowly ellipsoid, 5–8 x 2–3 μm.
   Distr.: whole area. Ref.: 142.
   M. ambiguus (Berk.) Ginns 1976
   Syn.: Merulius succinesus Lloyd 1924

3b. Hymenial surface pale ochraceous.

4a. Basidiocarp effused, membranaceous.
   Spores ellipsoid, 4–5.5 x 2–2.5(–3) μm.
Distr.: whole area. Ref.: 127, 142.

**M. birellus** (Burt) Ginns 1976

Syn.: *Merulius macedonicus* Pilát & Lindtner 1938; *Byssomerulius armeniacus* Parm. 1967

4b. Basidiocarp often effused-reflexed, membranaceous.


Distr.: whole area. Ref.: 113, 127, 142.

**M. corium** (Fr.) Ginns 1976

Syn.: *Merulius confluens* Schw. 1822; *M. pallens* Schw. 1832; *M. aurantiacus* Klotzsch apud Berk. in J.E. Smith 1836; *M. haedinus* Berk. & Curt. apud Berk. 1872; *M. ulmi* Peck 1906; *M. hirsutus* Burt 1917

**MERULIUS** Fr. 1821

Basidiocarp annual, effused to effused-reflexed or sometimes dimidiate, often imbricate, fleshy to ceraceous or cartilagineous, hard when dry. Hymenial surface merulioid to poroid, often brightly coloured. Abhymenial surface typically tomentose, whitish or sometimes more brightly coloured. Hyphal system monomitic. Generative hyphae hyaline, thin- to thick-walled, sometimes gelatinized; most septa with clamps. Cystidoles sometimes present. Basidia in clusters, clavate. Spores hyaline, smooth, thin-walled, subcylindrical to allantoid, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Merulius tremellosus* Fr. 1821

Distribution: in the whole area.

References: 115, 142.

1a. Spores cylindrical to allantoid, 3.5–4.5 × 1–1.5(−2) μm.

Basidiocarp effused to effused-reflexed, up to 5 mm thick. Hymenial surface ceraceous, merulioid to poroid, yellowish to orange yellow, sometimes becoming red. Abhymenial surface whitish to greyish. Abhymenial hyphae thin- to thick-walled, 2–5.5 μm, often with granular encrustations. Cystidoles when present hyaline, thin-walled, cylindrical to slightly capitate, 30–65 × 4–7.5 μm, sometimes encrusted. Basidia clavate, 17–28 × 3–5 μm. On angiosperms and gymnosperms.

Distr.: whole area. Ref.: 115, 127, 142.

**M. tremellosus** Fr. 1821

Syn.: *M. imbricatus* Balfour-Browne 1955

1b. Spores subcylindrical, sometimes slightly curved, 4–5(−6) × 2–2.5 μm.
**Merulius**

Basidiocarp effused-reflexed to dimidiate, about 5 mm thick. Hymenial surface ceraceous, pale pink when fresh, pink to dark red when dry. Abhymenial surface pink when fresh. Abhymenial hyphae with thin to slightly thickened walls, 2.5–5.5(–6.5) μm wide. Subhymenial hyphae thin-walled, 2–4.5(–6) μm wide, often gelatinized or with granules. Cystidioles absent. Basidia clavate, 17–35 × 3–5 μm. On angiosperms, rarely on gymnosperms.

Distr.: N. Am.  Ref.: 127, 142.

**M. incarnatus** Schw. 1822

Syn.: **M. rubellus** Peck 1882

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**MYCOACIA** Donk 1931

Basidiocarp annual, resupinate, effused, ceraceous, hydnoid. Spines conical to cylindrical, acute, single or sometimes con cresc ent, sometimes branched, often fimbriate at the apex. Hymenial surface bright or dark coloured, covering spines and resupinate part. Margin even or fimbriate. Coloured parts may become purplish or brownish black in KOH. Hyphal system monomitic. Hymenial and subhymenial hyphae hyaline, thin-walled, nearly all septa with clamps. Basal and axial hyphae hyaline, with thin to thick walls, clamps rare or absent. Hyphae often encrusted. Cystidioles often present. Basidia narrowly clavate, in small clusters, usually with 4 sterigmata. Spores hyaline, thin-walled, smooth, ellipsoid, cylindrical or subballantoid, not amyloid.

Substrate: saprophytic on wood of angiosperms, rarely of gymnosperms.

Type species: **Hydnum fuscoatrum** Fr. ex Fr. 1821

Distribution: in the whole area.

References: 66, 115.

1a. Spores subcylindrical to typically subballantoid, 3.5–5(–6) × 1.5–2(–2.5) μm. Colour not changing in KOH.

Basidiocarp effused, ceraceous, densely covered with slender spines. Spines single or confluent at the base, often fimbriate at the apex, up to 2.5(–3) mm long. Hymenial surface whitish to cream when young, ochraceous to brownish when mature. Margin fimbriate. Hyphae in central fascicles hyaline, with thickened walls, 2.5–3 μm wide, with or without clamps. Subhymenial hyphae thin-walled, 1.5–2.5 μm wide, with clamps. Cystidioles when present thin-walled, obtuse, sometimes encrusted, 15–25 × 3–4 μm. Basidia clavate, 11–20 × 3.5–5 μm.

Distr.: whole area.  Ref.: 66, 115.

**M. aurea** (Fr.) J. Erikss. & Ryv. 1976

Syn.: **Hydnum stenodon** Pers. 1825; **H. mucidum** Velen. 1922; **Mycoleptodon mycophilus** Pilát 1936; **M. microcystidius** M.P. Christ. 1953; **Sarcodontia bulliardii** Nikolajeva 1961

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2b. Spores subglobose, yellowish. General structure as above.

Cystidioles present, often a large size. Hyphae subhymenial hyaline.
1b. Spores ellipsoid to subcylindrical, on average wider than 2 \( \mu \text{m} \). Colour often changing in KOH.

2a. Spores subcylindrical, (4–)4.5–6 × 1.7–2.5 \( \mu \text{m} \). Hymenial surface yellowish to ochraceous when young, brown to blackish brown when mature. Cystidioles either abruptly narrowed at the apical part and forming a thread-like appendix (4–10 × 0.7–1.2 \( \mu \text{m} \)) or gradually tapering to the acute tip. Apical part of the spines consists of strongly encrusted protuding hyphae, resembling cystidia.

Basidiocarp effused, ceraceous. Spines single or confluent at the base, 1–3 mm long. Yellow parts of hymenial surface become red to purple in KOH, ochraceous or greyish brown parts sometimes dark brown or blackish. Margin often fimbriate. Hyphae in central fascicle of spines thin- to thick-walled, 2–4.5 \( \mu \text{m} \) wide, often encrusted. Subhymenial hyphae 2–3 \( \mu \text{m} \) wide. Basidia 10–22 × 3.5–5 (–5.5) \( \mu \text{m} \).

Distr.: whole area. Ref.: 66, 115.

**M. fuscoatra** (Fr. ex Fr.) Donk 1931
Syn.: *Hydnum carbonarium* Peck 1887; *Mycoleptodon corneum* Pilát 1934

2b. Spores narrowly ellipsoid, 4.5–6 × 2–3(–3.2) \( \mu \text{m} \). Hymenial surface lemon yellow to mustard yellow, becoming ochraceous to tawny. Cystidioles subfusoid, sometimes apically encrusted with resinous material. Hyphae in part of spines generally not encrusted, not cystidioid.

Basidiocarp effused, ceraceous. Spines conical to cylindrical, sometimes confluent, 1–2 mm long. Yellow parts becoming red in KOH. Margin pruinose to fimbriate. Hyphae in central fascicle of spines thin- to thick-walled, 2–4.5 \( \mu \text{m} \) wide, often encrusted or with crystalline material between the hyphae. Subhymenial hyphae 2–3 \( \mu \text{m} \) wide. Basidia 10–22 × 3–4.5(–5) \( \mu \text{m} \).

Distr.: whole area. Ref.: 66, 115.

**M. uda** (Fr.) Donk 1931
Syn.: *?Acia flava* Čečp 1928

Note: *Mycoacia kuriensis* Parm. 1967 and *M. austro-occidentalis* Canfield apud Gilberts. et al. 1976 may represent a small-spored form of *M. uda*.

**MYCOACIELLA** J. Erikss. & Ryv. 1978

Basidiocarp annual, resupinate, effused, ceraceous. Hymenial surface hydnoid, yellowish to ochraceous or brownish. Hyphal system seemingly dimitic. Generative hyphae hyaline, thin-walled, with clamps. Skeletoid hyphae hyaline, thick-walled, lumen often not visible, only present in the axis of the spines. Cystidia hyaline, thin-walled, obtuse to capitate, rarely fusiform, typically with a large yellowish oil-cap. Basidia narrowly clavate, with 2–4 sterigmata. Spores hyaline, thin-walled, smooth, narrowly ellipsoid to subcylindrical, not amyloid.
**Mycoaciella**

Substrate: saprophytic on wood of angiosperms.
Type species: *Resinicum bisporum* Stalpers 1976
Distribution: Europe.
References: 111.

Monotypic. Basidiocarp effused, ceraceous, hard when dry. Hymenial surface densely hydroid, yellowish to ochraceous, becoming brownish when dry. Spines single, rarely concrescent, slender, acute, up to 2 mm long. Skenetial hyphae 2.5–4.5(-5) μm wide. Generative hyphae often irregular, 2–3.5(-7) μm wide. Cystidia obtuse to capitate, rarely fusiform, 16–30 × 2.5–4 μm, typically with a large yellowish oil-cap up to 9 μm in diam. Crystalline material often present. Basidia narrowly clavate, 11–20 × 3–4.5 μm, with (1–)2–4 sterigmata. Spores narrowly ellipsoid to subcylindrical, 4.5–5.5(-6) × 2.2–2.8(-3) μm.


*M. bispora* (Stalpers) J. Erikss. & Ryv. 1978

**MYCOSTIGMA** Jülch 1976

Basidiocarp annual, consisting of minute globules, separated or aggregated, but never confluent, connected by a few hyaline hyphae. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps. Cystidia lacking. Basidia hyaline, clavate, with a basal clamp. Spores hyaline, smooth, thin-walled, globose to subglobose, not amyloid.

Substrate: on plant debris.
Type species: *Corticum aegeritoides* Bourd. & Galz. 1911
Distribution: Europe.
References: 196.

Monotypic. Basidiocarp more or less globose, 20–100 μm in diam., connected by very few delicate, hyaline hyphae. Hymenial surface even. Hyphae hyaline, rather indistinct, easily collapsed, flexuous-cylindrical, 2–3 μm wide, probably with clamps. Basidia ellipsoid to mostly clavate, 11–18 × 4.5–6 μm, 4-spored. Spores globose to subglobose, 4–4.5 μm in diam., with prominent apiculus. On decaying petioles of ferns.


*M. aegeritoides* (Bourd. & Galz.) Jülch 1976

**ODONTICUM** Parm. 1968

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface tuberculate or odontioid, the teeth up to 1 mm long, more or less cream-coloured. Hyphal system monomitic. Hyphae hyaline, cylindrical, thin- to thick-walled, lacking clamps. Cystidia hyaline, cylindrical, somewhat thick-walled, smooth or encrusted. Basidia hyaline, cylindrical, narrowly clavate or suberrinate, ellipsoid to subglobose.

Substrate: on wood of angiosperms.
Type species: *Odontium suberrinum* (Tul.) Parm. 1968
Distribution: Europe.
References: 111

1a. Cystidia clavate

1b. Cystidia filiforme

**OLIVECOSTIGMA** Jülch 1976

Syn.: *Hesperocypha*

Peck 1912

Basidiocarp annual, attaining considerable size, surface usually wrinkled and appearing as a single species, often entwined in shrubs, forming corky to gourds, (sub)cylindrical, irregularly lobed, thick-walled, of form and colour of olive wood.

Substrate: on wood of angiosperms.
Type species: *Olivecostigma* (Hesperocypha) Parm. 1968
Distribution: Europe.
References: 111

1a. Cystidia clavate
suburniform, up to 20 μm long, 4-spored. Spores hyaline, thin-walled, smooth, ellipsoid, cylindrical or slightly allantoid, often guttulate, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.
Type species: *Odontia romellii* Lundell apud J. Erikss. 1958
Distribution: in the whole area.
References: 111, 318.

1a. Spores cylindrical to slightly allantoid, 4–5 × 1–1.5 μm.
   Basidiocarp membranaceous. Hymenial surface cream-coloured, odontoid, the teeth up to 1 mm long, with fimbriate apices. Hyphae slightly thick-walled, 3–5 μm wide. Cystidia in tufts at apices of teeth, thick-walled at the base, gradually thinning out towards the apex, 4–5 μm wide, smooth. Basidia 15–20 × 4–5 μm. On gymnosperms.
   Distr.: whole area. Ref. 111.
   **O. romellii** (Lundell apud J. Erikss.) Parm. 1968

1b. Spores ellipsoid, 3–3.5 × 1.7–2.3 μm.
   Basidiocarp thin-membranaceous. Hymenial surface whitish to pinkish buff, odontoid, the teeth subulate or cylindrical. Hyphae thin- to somewhat thick-walled, 4–7 μm wide, smooth or encrusted. Cystidia cylindrical, somewhat thick-walled, 40–75 × 5–10 μm, encrusted. Basidia 8–12 × 3–4 μm. On angiosperms.
   Distr.: N. Am. Ref.: 363.
   **O. laxa** (Miller) Ryv. 1978

**OLIVEONIA** Donk 1958


Basidiocarp annual, resupinate, effused, pruinose to ceraceous. Hymenial surface even. Hyphal system monomitic. Hyphae hyaline, fuscous in one species, with or without clamps. Cystidia (gloeocystidia) present or absent, often emerging. Basidia in small clusters, ellipsoid, ovoid to broadly clavate or cylindrical, with (2–)4 large sterigmata. Spores hyaline, ovoid to ellipsoid to (sub)cylindrical, smooth, thin-walled, not amyloid, not cyanophilous, capable of forming secondary spores.

Substrate: saprophytic on ferns and rotten wood of gymnosperms and angiosperms.
Type species: *Sebacina fibrillosa* Burt 1926
Distribution: in the whole area.
References: 384.

1a. Cystidia (gloeocystidia) absent. Hyphae and basidia becoming brown.
**Oliveonia**

Basidiocarp fleshy to ceraceous, sometimes layered. Hymenial surface even, greyish olive to violaceous or blackish, becoming paler when dry. Hyphae hyaline to fuscous, 2–5(–6) μm wide, with clamps. Basidia ovoid to short-cylindrical to subclavate or cylindrical, hyaline to yellowish fuscous, 20–40 × 6–10 μm, with four 10–15 μm long sterigmata. Spores hyaline to brownish, 6–10.5 × 4–8 μm, globose to ovoid, thin-walled.

Distr.: whole area. Ref.: 111, 284, 387.

**O. subviolacea** (Peck) M.J. Larsen 1974
Syn.: *Corticium atratum* Bres. 1896; *Tulasnella metallica* Rick 1934; *Ceratobasidium plumbeum* G.W. Martin 1939

Note: This seems to be a species-complex.

1b. Cystidia (gloeocystidia) present. Hyphae and basidia always hyaline.


Basidiocarp fibrillose-hypochnoid to ceraceous, 30–400 μm thick. Hymenial surface even, whitish. Basidia ovoid to short-clavate, 15–20(–27) × 9–11 μm, with 4 sterigmata up to 7.5 μm long. Spores ellipsoid to cylindrical, 7–12 × 3–5.5 μm. (Sub)tropical distribution.


**O. fibrillosa** (Burt) Donk 1958
Syn.: *Peniophora heterobasidioidea* D.P. Rogers 1935


**O. pauxilla** (H.S. Jacks.) Donk 1958

**PARVOBASIDIUM** Jülich 1975

Syn.: *Physodontia* Ryv. & Solheim 1977

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface even to odontoid, whitish to cream-coloured. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps. Gloeocystidia present, hyaline, thin-walled, with granular or guttulate contents. Cystidia absent or present, hyaline, subulate, thin-walled. Basidia small, narrowly clavate, up to 15 μm long, 4-spored. Spores hyaline, ellipsoid, smooth, thin-walled, not amyloid.
Substrate: saprophytic on wood of gymnosperms or on ferns.
Type species: Gloeocystidium cretatum Bourd. & Galz. 1913
Distribution: Europe.
References: 191.

1a. Hymenial surface even, whitish to pale cream-coloured.
    Basidioecarp effused, membranaceous, 50–250 μm thick. Hyphae cylindrical to somewhat torulose, 1.5–2 μm wide. Gloeocystidia clavate or the basal part widened, 17–32 × 5.2–8.9 μm. Basidia clavate, 8.5–12 × 3.5–4 μm. Spores ellipsoid, 4–4.5 × 1.8–2.1 μm. On putrescent petioles of ferns.
    P. cretatum (Bourd. & Galz.) Jülich 1975

1b. Hymenial surface odontoid, whitish to pale cream-coloured, with up to 300 μm long teeth.
    P. lundellii (Ryv. & Solheim) Jülich 1979

PAULLICORTICICUM J. Erikss. 1958
Basidioecarp annual, resupinate, effused, thin, indistinct, forming a pruinose film over the substratum. Hymenial surface even or minutely reticulate. Hyphal system monomitic. Hyphae hyaline, thin-walled, with or without clamps. Sterile structures in hymenium absent. Basidia single or in clusters, subglobose, ovoid or subcylindrical, with (4–)5–7(–8) sterigmata. Spores hyaline, smooth, thin-walled, ellipsoid to cylindrical, allantoid or navicular, not amyloid.
Substrate: saprophytic on wood of gymnosperms, more rarely on angiosperms.
Type species: Corticium pearsonii Bourd. 1921
Distribution: in the whole area.
References: 111, 243, 303.

1a. Hyphae without clamps (but large open ones may be present under the basidia only).
1b. Hyphae with clamps at nearly all septa.
2a. Large ansiform clamps present at the basidial septa. Spores ellipsoid to subnivicular, 4.5–6.5 × (2–)2.5–3.5(–4) μm, never forming 'microconidia'.

    Basidioecarp ceraceous when fresh, fibrillose-encrusting when dry, up to 40 μm thick. Hymenial surface even to minutely reticulate, pruinose, whitish to grey. Hyphae hyaline, distinct, 1.5–3.5 μm
wide. Basidia subglobose to ovoid, 7–18 × 5–9 µm, with 6–8 sterigmata.

P. ansatum Liberta 1962
2b. Basidial septa without clamps. Spores narrowly navicular to subspherical, (4.5–)6–7.5 × 2–3 µm, sometimes forming small globose to broadly ellipsoid ‘microconidia’ 0.5–1.5 µm across.
Basidiocarp ceraceous when fresh, encrusting when dry, up to 50 µm thick. Hymenial surface even, granular or minutely reticulate, pruinose, whitish to grey. Hyphae hyaline, 1.5–4 µm wide. Basidia subglobose to ovoid or subcylindrical, 7–15 × (4–)5–7 µm, with (4–)5–7 sterigmata.

P. pearsonii (Bourd.) J. Erikss. 1958
Syn.: Corticium subinvisible D.P. Rogers 1935
3a. Basidia subglobose to ovoid, 5–10 × (4–)5–8 µm, usually solitary. 4
3b. Basidia ovoid to subcylindrical, 12–20 × 5–8 µm, usually in clusters. 5

4a. Spores narrowly ellipsoid to subcylindrical, rarely ovoid, often curved, 2.5–4.5 × 1.5–2.5 µm.
Basidiocarp subinvisus, up to 30 µm thick. Hymenial surface even to minutely reticulate, pruinose, hyaline to whitish or pale yellowish. Hyphae 1–3.5 µm wide, with clumps. Hyphal strands may be present in subcicum. Basidia single, subglobose to ovoid, 6–10 × (4–)5–7 µm, with 5–7 sterigmata.

P. delicatissimum (H.S. Jacks.) Liberta 1962
4b. Spores allantoid, (4–)4.5–6.5 (–7) × 1.5–2.5 µm.
Basidiocarp subinvisus. Hymenial surface even, hyaline, pruinose. Hyphae 0.5–1.5 µm wide, with clumps. Basidia single, subglobose to ovoid, 5–10 × 5–8 µm, with (4–)6 sterigmata.

P. globosum Oberw. 1962
5a. Spores narrowly ellipsoid to cylindrical, 6–9 × 3–4 µm. Mainly on angiosperms.
Basidiocarp ceraceous to crustaceous. Hymenial surface even to minutely reticulate, pruinose, whitish to greyish-ochraceous. Hyphae 2–5 µm wide, sometimes ampullate, with clumps. Basidia in loose clusters, ovoid to usually subcylindrical, 12–21 × 5–8 µm, with (4–)6 (–8) sterigmata.
Distr.: whole area. Ref.: 111, 243, 303.

P. niveo-cremeum (Höh. & Litsch.) Oberw. 1962
Syn.: ?Paullicorticium jacksonii Liberta 1962
5b. Spores allantoid, 5.5–7 × 2–2.5 µm. On gymnosperms.

PENICILLIUM
Syn.: Cercospora

Basidiocarp membranous, thin-walled, stratified on the substratum. Spores reddish-brown. Hymenial system brown, thin-walled, thick-walled, or allantoid.
Substratum: Arboreal. Type species: P. glaucum
Distr.: All world.
Ref.: 304.

1a. Distr. unknown in Europe
1b. Distr. known in Europe
2a. Lignicolous
2b. Lignicolous
3a. Saprobiic

- Paulicorticium
- Penicillium
- Cercospora
- Hymenial system
- Substratum
- Distr.
- Ref.
Basidiocarp subinvisible, up to 45 μm thick. Hymenial surface even to minutely reticulate, pruinose, hyaline to whitish or greyish. Hyphae 1.5–3.5 μm wide, with clamps, rarely with swellings. Basidia in loose clusters, ovoid to subcylindrical, 13–20 × 5–8 μm, with 5–8 sterigmata.

**Distr.:** Eur.  **Ref.:** 111, 243, 303.

**P. allantosporum** J. Erikss. 1958

**PENIOPHORA** Cooke

**Syn.:** Cryptochaete P. Karst. 1889; Sterellum P. Karst. 1889; Gloeopeniopora Höhn. & Litsch. 1907; Duportella Pat. 1915

Basidiocarp annual or perennial, resupinate, effused or effused-reflexed, membranaceous or somewhat ceraceous, thin- to rather thick, in section stratified or not. Margin indistinct or distinct, adnate or free from the substrate. Hymenial surface even to papillate or (in one species) raduloid, reddish, orange, pink, violaceous, greyish, ochraceous or brown. Hyphal system monomitic or rarely seemingly dimitic. Hyphae hyaline, yellowish or brown, thin- to thick-walled, typically with clamps, the walls gelatinized or not. Dendrohyphidia, gloeoecystidia (sulpho-positive), or lamprocytasia (and their thin-walled, young states) present. Basidia narrowly clavate, thin- to slightly thick-walled, with (2–)4 sterigmata. Spores hyaline, ellipsoid, cylindrical or allantoid, thin-walled, smooth, not amyloid, spore print mostly pink.

Substrate: saprophytic on wood or bark of angiosperms or gymnosperms.

Type species: *Thelephora quercina* Pers. ex Fr. 1821

Distribution: in the whole area.

**References:** 15, 103, 111.

1. Dendrohyphidia present.

2. Dendrohyphidia absent.

3. Spores rather broad, ellipsoid, 11–14 × 7–9 μm.

**Basidiocarp effused, thin, up to 200 μm thick, adnate, margin indeterminate. Hymenial surface even, pruinose, cream-coloured or greyish alutaceous, with a pinkish tinge when fresh. Hyphae hyaline in the subhymenium, pale yellowish brown in the basal part, 2–3 μm wide, with clamps, forming a 50–60 μm thick basal horizontal layer. Dendrohyphidia hyaline, brittle, slightly thick-walled, somewhat encrusted, not easily seen. Gloeocystidia flexuous fusiform, 50–100 × 11–18 μm. Basidia 45–60 × 8.5–12 μm. On angiosperms, mainly Fraxinus and Ulmus.

**Distr.:** Eur., USSR.  **Ref.:** 8, 111.

**P. lilacea** Bourd. & Galz. 1913
3b. Spores narrower, cylindrical, slightly curved.

4a. Mainly on Tamarix, sometimes on Acacia and Pistacia. Dendrohyphidia in all parts of the basidiocarp.
   Basidiocarp effused, rather thin (50–200 μm), adnate. Margin pale, irregular or indistinct. Hymenial surface even, at first pinkish-cream, later brownish, cracked when dry. Hyphae hyaline in the subhymenium, slightly yellowish and thick-walled in the basal part, with clamps, 4–5 μm wide. Dendrohyphidia hyaline, covered with small crystals (especially the appendages). Gloeocystidia clavate or fusiform, 30–70 × 8–12 μm. Basidia 35–50 × 6–8 μm. Spores cylindrical, slightly curved, 8–12 × 3.7–5.2 μm.
   **P. tamaricicola** Boidin & Malençon. apud Boidin 1961

4b. On other angiosperms, mainly Populus (tremula). Dendrohyphidia mainly in the hymenial layer.
   Basidiocarp effused, adnate, often composed of scattered rounded patches, rarely confluent. Hymenial surface even to warted, orange to reddish. Hyphae hyaline, with clamps, 3–8 μm wide, a basal horizontal layer present or lacking. Dendrohyphidia hyaline, covered with small crystals. Gloeocystidia sulpho-positive, mostly ellipsoid to pyriform, 50–100 × 15–25 μm. Basidia 30–45 × 4.5–5.5 μm. Spores cylindrical, slightly curved, 9–12 × 2.5–4 μm.
   Distr.: Eur., N. Am.  Ref.: 8, 111.
   **P. polygonia** (Pers. ex Fr.) Bourd. & Galz. 1928
   Syn.: *Thelephora maculaeformis* Fr. ex Fr. 1821; *?Th. leproides* Pers. 1822; *Th. colliculosa* Hoffmann ex Wallr. 1833

5a. Dendrohyphidia brown (*P. versiformis*-group).

5b. Dendrohyphidia hyaline to slightly yellowish (*P. lycii*-group).

6a. Spores at least 8 μm long, on average longer.

6b. Spores up to 7.2 μm long.

7a. Distr.: N. Am.
   Ref.: 8, 14, 234.
   **P. albobadia** (Schw. ex Fr.) Boidin 1961
   Syn.: *Thelephora albomarginata* Schw. ex Berk. 1847; *Stereum cox-earum* Berk. & Curt. 1868; *Hymenochaete paupercula* Berk. & Curt. 1868; *S. bizonatum* Berk. & Curt. apud Berk. 1873; *S. fragile* Pat. 1900; *S. heterosporum* Burt 1920
7b. **Distr.: Eur.**

Basidiocarp effused, 200–500 μm thick, often with reflexed margin. Hymenial surface even, brownish. Hyphae hyaline to yellowish brown, 2–3 μm wide, with clamps, sometimes skeletal. Gloeocystidia subulate, 50–60 × 5.5–6.5 μm. Lamprocystidia brownish, conical, smooth or encrusted, 50–100 × 6.5–10 μm. Basidia 40–50 × 5.5–6 μm. Spores cylindrical, slightly curved, 8–10(–13) × 3–4 μm. On angiosperms.

Ref.: 26.

**P. malmeonii** Boidin & Lanquetin 1977

8a. Basidiocarp at first discoid with elevated black margin, later confluent. Spores cylindrical, slightly curved, 6.5–7.2 × 2–2.5 μm.


Distr.: N. Am. Ref.: 8, 234.

**P. erumpens** (Burt) Boidin 1959

8b. Basidiocarp effused, totally adnate or only narrowly reflexed. Spores cylindrical to slightly curved, 5–7 × 1.7–2.2 μm.


Distr.: whole area. Ref.: 8, 234.

**P. versiformis** (Berk. & Curt.) Bourd. & Galz. 1928

Syn.: **Corticium carbonicola** Pat. 1885; **Peniophora ellisi** Massee 1889


Distr.: N. Am. Ref.: 8, 14, 103.

**P. decorticans** Burt 1926

9b. Growing on the surface of wood or bark.

10a. Spores allantoid, 9–12 × 3.5–4.5 μm.

Basidiocarp effused, 40–80 μm thick, totally adnate, margin

Distr.: Eur., N. Am. Ref.: 8, 103, 111.

P. lieii (Pers.) Höhn. & Litsch. 1907
Syn.: Corticium bupleuri Roum. 1882; ?C. rimosissimum Passerini & Beltrand 1882; C. friesii Grognard 1863; ?C. passerinii Sacc. 1888; C. caesium Bres. 1892

10b. Spores smaller, up to 9 μm long.

11a. Spores ellipsoid, 6.2–7.2 × 3.2–3.8 μm.

Distr.: Eur. Ref.: 348

P. boedini D. Reid 1965

11b. Spores cylindrical, slightly curved, 6.8–8.8 × 2.4–3.2 μm.


P. meridionalis Boidin 1959

12a. Basidiocarp mostly bright coloured, spore ratio length : width = 1.5–2.5:1.

12b. Basidiocarp mostly dull coloured, spore ratio length : width = 2.5–3:1.

13a. Gloeocystidia lacking.

13b. Gloeocystidia present.

14a. On Buxus.


P. proxima Bres. apud Bourd. & Galz. 1913
Syn.: Peniophora hilitzeri Pilát 1937
14b. On other angiosperms or on gymnosperms.

15a. Spores cylindrical to narrowly ellipsoid, 7.5–11 × 4.5–5.5 μm.
   Basidiocarp effused, adnate, c. 100 μm thick. Hymenial surface even, pinkish grey or brown. Hyphae hyaline to light brown, 3–5 μm wide, with clamps. Lamprocystidia conical, encrusted, 15–25 × 5–7 μm.
   *P. versicolor* (Bres.) Sacc. & Syd. 1902

15b. Spores ellipsoid, 6.2–7.2 × 3.2–3.8 μm. *P. boidinii*, see 11a.
   Note: When spores smaller, cf. *Phlebia*.

16a. Spores ellipsoid, broader than 6 μm.

16b. Spores cylindrical to ellipsoid, narrower than 6 μm.

17a. Clamps present.
   Distr.: Eur., N. Am. Ref.: 111, 368.

17b. Clamps lacking.
   Distr.: Eur., N. Am. Ref.: 111, 368.

**P. aurantiaca** (Bres.) Höhn. & Litsch. 1906
   Syn.: *Peniophora lepida* Bres. 1925

18a. Growing (like *Vuilleminia comedens*) under bark which finally disrupts.
   Distr.: Eur. Ref.: 66, 111.

**P. taeta** (Fr.) Donk 1957
   Syn.: *Thelephora hydnoidea* (Pers.) ex Fr. 1821; *Sistotrema glossoide* Pers. 1825; *Hydnum thelephoroideum* Duby 1830

18b. Growing on the surface of bark or wood.


19a. Clamps lacking.
Distr.: Eur. Ref.: 103, 111.
P. laurentii Lundell apud Lundell & Nannf. 1946
Syn.: Merulius lepidus Romell 1911

19b. Clamps present.

20a. On Atriplex halimus (Chenopodiaceae).
Basidiocarp effused, adnate or with free margins, c. 200 μm thick. Hymenial surface even, pinkish grey to brownish. Hyphae rather thin-walled, hyaline, 2–3 μm wide, with clamps. Gloeocystidia subulate, 55–70 × 5–10 μm. Lamprocystidia cylindrical to conical, yellowish to brown, 45–52 × 6–6.5 μm. Spores broadly ellipsoid, 5.5–7 × 4–4.8 μm.
P. halimi Boidin & Lanquetin 1974

20b. On trees.

21a. Spores narrowly ellipsoid to cylindrical, 5.5–6.5 × 2.5–3 μm.
Distr.: N. Am. Ref.: 177.
P. exima H.S. Jacks. & Dearden 1951

21b. Spores larger.

22a. Spores cylindrical to slightly allantoid, 6.5–9(–10) × 3–3.5(–4) μm, uninucleate. Basal horizontal layer often developed.
P. pseudoversicolor Boidin 1965

22b. Spores cylindrical to slightly allantoid, 8–12 × 3.5–5 μm, binucleate. Basal horizontal layer lacking.
Basidiocarp effused, up to 300 μm thick. Hymenial surface even to
Peniophora

papillate, pink to orange, fading when dry. Hyphae hyaline, 3–5 \( \mu m \) wide, with clamps. Gloecystidia cylindrical, 50–200 \( \times \) 8–15 \( \mu m \). Lamprocystidia conical to subcylindrical, 30–60 \( \times \) 7–15 \( \mu m \). Basidia 30–40 \( \times \) 5–6 \( \mu m \). On angiosperms, rarely on gymnosperms.

Distr.: whole area. Ref.: 103, 111, 368.

P. incarnata (Pers. ex Fr.) P. Karst. 1889

Syn.: Thelyphora fallax Pers. ex Fr. 1821; Th. lateritia Chaillot apud Pers. 1822; ?Corticium rubrifolium Mont. 1837; Peniophora aemulans P. Karst. 1889

23a. Gloecystidia lacking. 24

23b. Gloecystidia present. 34

24a. On angiosperms. 25

24b. On gymnosperms. 31

25a. No basal horizontal layer developed. Margin adnate. 26

25b. With a basal horizontal layer. Margin in some species free from the substrate. 27

26a. Hymenial surface greyish, often with a violaceous tinge. Clamps present. Lamprocystidia conical, 15–30 \( \times \) 7–10 \( \mu m \), encrusted. Basidiocarp effused, 50–100 \( \mu m \) thick. Hymenial surface even or papillate. Hyphae hyaline to brown, 2–4 \( \mu m \) wide. Basidia 20–35 \( \times \) 5–6 \( \mu m \). Spores cylindrical, curved, 7–10 \( \times \) 2–3.5 \( \mu m \). On angiosperms.

Distr.: whole area. Ref.: 103, 111.

P. cinerea (Pers. ex Fr.) Cooke 1879

Syn.: Thelyphora tiliae Pers. 1822; Th. obscura Pers. 1822; Th. lilacina Schw. 1832; Corticium fumigatum Thüm. 1876

26b. Hymenial surface brown. Clamps absent. Lamprocystidia 20–50 \( \times \) 12–17 \( \mu m \).

Basidiocarp effused, 75–280 \( \mu m \) thick. Hymenial surface even. Hyphae brown, 3–7 \( \mu m \) wide. Spores cylindrical, curved, 7–8.5 \( \times \) 2.5–3 \( \mu m \). On angiosperms.

Distr.: N. Am. Ref.: 249.

P. seymouriana Burt 1926

27a. Basidiocarp stratified in section, the basal part rather dark. Hyphae not gelatinized. 28

27b. Basidiocarp not stratified, the basal part at first hyaline or yellowish, gradually becoming dark brown. Hyphae gelatinized or not. 29

28a. On Oleaceae (Fraxinus, Ligustrum, Syringa). Hymenial surface rather dark coloured, brownish violaceous or greyish brown. Subhymenial hyphae thin-walled.

Basidiocarp effused, at first adnate, later with free margins, 100–500 \( \mu m \) thick. Hymenial surface even or papillate. Hyphae of trama
**Peniophora**


**Distr.** Eur., USSR. **Ref.** 103, 111.

**P. limitata** (Chaillet ex Fr.) Cooke 1879

**Syn.:** *Thelephora fraxinea* Pers. 1822

28b. Mainly (or exclusively?) on other angiosperms. Hymenial surface rather light coloured, pinkish brown or pinkish grey. Subhymenial hyphae rather thin-walled.

Basidiocarp effused, at first adnate, later with free margins, up to 500 µm thick. Hymenial surface even. Hyphae hyaline to dark brown, 2–3 µm wide, clamps present. Lamprocystidia conical, encrusted, up to 52 × 8–12 µm. Basidia up to 7.5 µm wide. Spores cylindrical, curved, 5.7–9.7 × 2.2–3.2 µm.

**Distr.** Eur. **Ref.** 15, 348.

**P. platiana** Pouzar & Svrček 1953

*Note:* A very similar but (according to interfertility tests) distinct species is *P. simulans* D. Reid 1968. It differs in having broader spores (8.7–10.7(–11.2) × 3.2–3.7(–4) µm). Macroscopically it strongly resembles *P. quercina*. Known only from Corsica. **Ref.** 349.

29a. Mainly (or exclusively?) on Tilia.

Basidiocarp effused, 100–400 µm thick, at first adnate, soon with loosening margins, showing the dark coloured basal part. Hymenial surface irregularly tuberculate, pinkish grey or pinkish brown. Hyphae brown, 3–5 µm wide, thick-walled, with clamps. Lamprocystidia conical, encrusted, 30–60 × 10–20 µm. Spores cylindrical to allantoid, 7.5–10 × 2.5–3.5 µm.

**Distr.** Eur. **Ref.** 103, 111, 346.

**P. rufomarginata** (Pers.) Litsch. apud Keissler 1923

29b. On other angiosperms, often on Quercus.


Basidiocarp effused, 200–300 µm thick. Hymenial surface even. Hyphae hyaline to yellowish-brown, 2.5–4.5 µm wide, with clamps. Lamprocystidia conical, 40–70 × 7–20 µm. Basidia 25–35 × 5–6.5 µm. Spores cylindrical, curved, 6–11 × 2.5–3.5 µm (cf. also *P. pithya* under 34a).

**Distr.** Eur. **Ref.** 103, 111.

**P. suecica** Litsch. 1941

30b. Margin free from the substrate and rolling up. Hymenial surface sometimes with pinkish tint.

Basidiocarp effused, 200–500 µm thick. Hymenial surface even or often irregularly tuberculate, violaceous, old specimens brownish. Hyphae hyaline to brown, 3–4 µm wide, with clamps, a basal horizontal layer developed. Lamprocystidia conical, encrusted,
Distr.: whole area.  Ref.: 66, 103, 111.

**P. quercina** (Pers. ex Fr.) Cooke 1879

**Syn.:** *Thelephora corticalis* (Bull.) ex St.-Amans 1821; *Th. ciliata* Fr. 1828; *Th. carneae* (Willd.) ex Wallr. 1833; *Peniophora pezizoides* Massee 1889; *Stereum tuberculatum* Velen. 1922

31a. On Juniperus.
Basidiocarp effused, 100–200 μm thick, margin becoming free. Hymenial surface even, greyish violaceous or greyish red. Hyphae in the basal part brown, context dense and often stratified, hyphae 3–4 μm wide, with clamps. Lamprocystidia conical, encrusted, 30–80 × 7–12 μm. Basidia 35–50 × 6–7 μm. Spores cylindrical, slightly curved, 8–11 × 2.5–3.5 μm.
Distr.: Eur.  Ref.: 103, 111.

**P. junipericolor** J. Erikss. 1950

31b. On other genera (Abies, Picea etc.), very rarely on Juniperus or Salix.  32

32a. Spores rather small, cylindrical, slightly curved, 5.5–7.5 × 2–3 μm.
Basidiocarp effused, adnate, 50–150 μm thick. Hymenial surface even, greyish blue to blue-black when fresh, reddish grey when dry, old specimens more or less brown. Hyphae brown, thick-walled, 3–5 μm wide, with clamps, the context often with a basal horizontal layer. Gloecystidia subulate, 50–70 × 8–10 μm. Lamprocystidia conical, encrusted, 35–65 × 12–15 μm. Basidia 20–35 × 4–6 μm.
Distr.: whole area.  Ref.: 66, 111, 368.

**P. pithya** (Pers.) J. Erikss. 1950

**Syn.:** *Corticium plumbeum* Fr. 1874

32b. Spores larger  33

33a. Distr.: Eur., N. Am. In Europe on Abies, in North America also on other gymnosperms.
Basidiocarp effused, 100–300 μm thick, margins free. Hymenial surface even or tuberculate, greyish lilaceous to greyish brown. Hyphae brown, 3–4 μm wide, with clamps, thick-walled, the context often with a basal horizontal layer. Lamprocystidia conical, encrusted, 20–35 × 5–15 μm. Basidia 30–40 × 5–7 μm. Spores cylindrical, slightly curved, 6–9.5 × 1.7–2.7 μm.
Ref.: 103, 111.

**P. piceae** (Pers.) J. Erikss. 1950

**Syn.:** *Peniophora separans* Burt 1926

Basidiocarp adnate, margins becoming free, 100–400 μm thick. Hymenial surface even or tuberculate, pinkish-grey or brown. Hyphae hyaline to brown, thick-walled, 3–5 μm wide, with clamps,
the context with a well developed horizontal basal layer. Gloeocystidia 60–120 × 7–10 μm. Lamprocystidia conical, encrusted, 30–50 × 7–12 μm. Basidia 20–40 × 4–6 μm. Spores cylindrical, slightly curved, 6–8 × 2–2.5 μm. Ref.: 103, 111, 298.

**P. septentrionalis** Laurila 1939


35

34b. Margin free from the substrate. Hyphae gelatinized.

37


35b. Spores larger, 7.5–9 × 2.5–3 μm.

36

36a. Gloeocystidia clavate to fusiform, 50–75 × 7–15 μm.


**P. cinctula** (Quél.) Bourd. & Galz. 1913

Syn.: *Thelephora violaceo-lividia* Sommerf. 1826 (non *Peniophora violaceo-lividia* Masse 1889); *P. syringae* P. Karst. 1889


**P. nuda** (Fr.) Bres. 1897

37a. On angiosperms, mainly Populus.


**P. rufa** (Fr.) Boidin 1959

Syn.: *Tubercularia pezizoides* Schw. 1832; *Hypocrea richardsonii* Berk. & Mont. apud Berk. 1875

37b. On gymnosperms, mainly Pinus.
38a. Gloecystidia mostly elongated, very rarely vesicular. Individual brown hyphae lacking in the hyaline areas of the basidiocarp. Basidiocarp at first appearing as rounded patches, later more elongate and somewhat confluent. Margin adnate in young specimens, later somewhat free from the substrate. Hymenial surface even, pruinose, cream-coloured. Hyphae hyaline, 3.5–5.5(–7) μm wide, thick-walled, with clamps, the walls gelatinized, with a 25–100 μm thick basal horizontal layer. Gloecystidia 13–70(–100) × 5.5–20 μm. Lamprocystidia encrusted, 35–50 × 5–10 μm. Basidia 4.5–7 μm wide. Spores cylindrical, curved, 5.5–9 × 2.2–3.2 μm. On Pinus. Distr.: N. Am. Ref.: 368, 408.

P. duplex Burt 1926
Syn.: Corticum overholtsii Burt 1926

38b. Gloecystidia mostly vesicular, rarely elongated. Individual brown hyphae (branched or not) growing through the hyaline parts of the basidiocarp.

39a. Distr.: Eur., USSR.

Basidiocarp at first orbicular, later somewhat confluent, 100–400 μm thick, the margin adnate or somewhat free. Hymenial surface even, tuberculate or folded, pruinose, reddish when fresh, becoming greyish or brownish when old. Hyphae 4–11 μm wide, with clamps, thin- to thick-walled, the walls gelatinized. Gloecystidia clavate, cylindrical or ellipsoid, 30–60 × 10–20 μm. Lamprocystidia conical, 20–35 × 5–7 μm. Basidia 30–40 × 5–6 μm. Spores cylindrical, curved, 7–9 × 2.5–3 μm. On Pinus and other gymnosperms. Ref.: 103, 111, 408.

P. pini (Schleicher ex Fr.) Boidin 1956

39b. Distr.: N. Am.

Basidiocarp at first orbicular, later somewhat confluent, margin mostly free from the substrate. Hymenial surface even, pruinose, cream-coloured, brown or reddish. Hyphae 3.5–7(–9.5) μm wide, thick-walled, with clamps, the walls gelatinized. Gloecystidia ellipsoid to clavate, 20–50 × 10–20 μm. Lamprocystidia conical, 40–60 × 10–15 μm. Basidia 4.5–5.4 μm wide. Spores cylindrical, slightly curved, 6–7.5 × (1.7)–2.2–2.5 μm. On Pinus. Ref.: 408.

P. pseudopini Weresub & Gibson 1960
Syn.: Phlebia cervina Overh. 1930 (non Peniophora cervina (Thüm.) Höhn. & Litsch.)
PHANEROCHAETE P. Karst. 1889
Syn.: Grandiniella P. Karst. 1895

Basidiocarp annual, resupinate, effused, membranaceous, ceraceous or crustaceous. Hymenial surface even to sometimes odontoid, hydnoid, or tuberculate. Hyphal strands present or absent. Hyphal system monomitic. Hyphae hyaline or yellowish-brown, cylindrical, clamps absent from most septa, occasionally present on tramal hyphae as single or multiple clamps (up to 6 per septum). Cystidia lacking or present as leptoid or lamprocystidia, in one species as septocystidia, hyaline, cylindrical, subulate or fusiform, thin-to-thick-walled, smooth or encrusted. Basidia hyaline, narrowly clavate, thin-walled, normally with 4 sterigmata. Spores hyaline, ellipsoid, cylindrical or allantoid, thin-walled, smooth, not amyloid.

Substrate: saprophytic or rarely parasitic on angiosperms or gymnosperms, occasionally on soil.

Type species: Stereum alneum (Fr.) Fr. sensu P. Karst. 1889
Anamorphs: Sporotrichum Link ex Fr. 1821; Necator Massae 1898
Distribution: in the whole area.
References: 111.

1a. Hymenial surface distinctly hydnoid, orange-yellow.
   Basidiocarp effused, thin-membranaceous, fragile, with yellow-orange hyphal strands. Teeth subulate, up to 2 mm long. Hyphae thin- to somewhat thick-walled, 2–8 μm wide, smooth or densely encrusted. Leptocystidia rare, slightly fusiform, 30–40 × 3–4 μm.
   Basidia 20–30 × 5.5–7 μm. Spores broadly ellipsoid, 5–6 × 4–4.5 μm. On angiosperms.
   Ph. chrysorhizon (Torrey) Budington & Gilberts. 1973
   Syn.: Hydnium fragilissimum Berk. & Curt. 1873

1b. Hymenial surface even or tuberculate to raduloid. 2

2a. Cystidia absent. 3
2b. Cystidia present. 6

3a. Parasitic on angiosperms, causing the “pink disease”. Pantropical species, also known from the southern states of N. Am.
   Distr.: N. Am. Ref.: 194.
   Ph. salmonicolor (Berk. & Br.) Jülich 1975
   Anamorph: Necator decretus Massae 1898


7a. Sporotrichum Link ex Fr. 1821
7b. Sporotrichum, 1821
8a. Sporothrix Loeske 1916
8b. Sporothrix, 1916
9a. Sporothrix, 1916
3b. Saprophytic or on soil. Species of northern temperate areas.

4a. Spores cylindrical to narrowly ellipsoid, 7–8(−11) × 2.5–3.2 μm.
Distr.: Eur., USSR. Ref.: 348, 352.
Ph. jose-ferreirae (Reid) Reid 1975
Syn.: ?Ph. pallida Parm. 1967

4b. Spores shorter, 4.5–6.5 μm long.

5a. Spores ellipsoid, 5–6.5 × 3–4 μm.
Distr.: Eur. Ref.: 111.
Ph. tuberculata (P. Karst.) Parm. 1968

5b. Spores cylindrical to narrowly ellipsoid, 4.5–5.5 × 2–2.5 μm.
Distr.: Eur. Ref.: 111.
Ph. galactites (Bourd. & Galz.) J. Erikss. & Ryv. 1978

Distr.: whole area. Ref.: 111.
Ph. septocystidiata (Burt) J. Erikss. & Ryv. 1978
Syn.: Odonticum rauii Parm. 1968

6b. Cystidia not septate. 7

7a. Spores longer than 7 μm. 8

7b. Spores up to 7 μm long. 13

8a. Spores allantoid. 9

8b. Spores cylindrical to ellipsoid. 10

9a. Spores allantoid, 9–13 × 3–4.5 μm.
Basidiocarp membranaceous, hyphal strands lacking. Hymenial


Ph. cacaina (Bourd. & Galz.) Burdsall & Gilberts. 1974

9b. Spores allantoid, 9–14 × 2.5–3.5 μm.

Basidiocarp membranaceous, hyphal strands lacking. Hymenial surface even, yellowish white to greyish orange. Hyphae thin- to somewhat thick-walled, 2.5–5 μm wide, covered with pale yellow material. Cystidia abundant, thin-walled, cylindrical, 50–130 × 5.5–8 μm, projecting. Basidia 25–35 × 6–8 μm. On angiosperms.

Distr.: N. Am. Ref.: 47.

Ph. allantospora Burdsall & Gilberts. 1974

10a. Subiculum bright orange-yellow.

Basidiocarp membranaceous, the margin bright orange and fibrillose, hyphal strands lacking. Hymenial surface even, pale greyish to cream-coloured or greyish orange. Hyphae thin- to slightly thick-walled, 2–6 μm wide. Cystidia often rare, thin-walled, cylindrical, 50–90 × 7–10 μm, projecting. Basidia 25–40 × 6–9 μm. Spores ellipsoid, 8–10.5 × 4–6 μm. On gymnosperms and angiosperms.

Distr.: N. Am. Ref.: 368.

Ph. viticola (Schw.) Parm. 1968

10b. Subiculum whitish to cream-coloured.

11a. Spores broadly ellipsoid, 7–10 × 4–5 μm.


Distr.: Eur. Ref.: 111.

Ph. martelliana (Bres.) J. Erikss. & Ryv. 1978

Syn.: Peniophora macrospora Bres. apud Bourd. & Galz. 1913

11b. Spores cylindrical to narrowly ellipsoid, 3–4 μm wide.

12a. Cystidia rare, thin-walled, subulate, 40–60 × 3–5 μm.


Ph. ericina (Bourd.) J. Erikss. & Ryv. 1978

12b. Cystidia abundant.

13a. Spores subglobose or ellipsoid.

13b. Spores broadly ellipsoid.

14a. Lacking.

14b. Lacking, with brown material.

15a. Hymenial surface even.

15b. Hymenial surface thickened.

16a. Waxy material.

16b. Hymenial surface thickened.

Distr.: N. Am. Ref.: 46.

**Ph. chrysosporium** Burdsall 1974
Anamorph: *Sporotrichum pruinosem* Gilman & Abott 1927

13a. Substrate (wood) staining reddish.

Basidiocarp membranaceous, often with red hyphal strands. Hymenial surface even, whitish to cream-coloured or more or less reddish. Hyphae thin- to somewhat thick-walled, 2–8 μm wide. Cystidia few or abundant, thin-walled, subulate, 50–80 × 5–6 μm, projecting. Basidia 25–40 × 5–6 μm. Spores cylindrical to narrowly ellipsoid, 4.5–6 × 2.5–3 μm. On gymnosperms, less common on angiosperms.

Distr.: whole area. Ref.: 111, 127.

**Ph. sanguinea** (Fr.) Pouzar 1973

13b. Substrate (wood) remaining whitish.

14a. Lamprocystidia present, always heavily encrusted.

15a. Hymenial surface turning purplish in KOH.


Distr.: Eur., N. Am. Ref.: 111.

**Ph. filamentosa** (Berk. & Curt.) Burdsall 1976

15b. Hymenial surface not purplish in KOH.

16a. With conspicuous whitish, up to 1 mm wide hyphal strands. Basidiocarp about 1 mm thick.


**Ph. leprosa** (Bourd. & Galz.) Jülich 1979

16b. Hyphal strands absent or thinner. Basidiocarp thinner.
Phanerochaete

17a. Basal hyphae thin- to slightly thick-walled. Basidiocarp almost aethelioid. All cystidia projecting. Ph. galactites, see 5b.


18a. Lamprocystidia cylindrical to subulate, 40–120 × 8–15 μm.
Basidiocarp more or less ceraceous, often with whitish hyphal strands. Hymenial surface even, whitish or with a reddish tinge. Hyphae thin- to thick-walled, 2–8 μm wide. Basidia 30–35 × 4–6 μm. Spores ellipsoid, 5–7 × 2.5–3 μm. On angiosperms, more rarely on gymnosperms.
Distr.: whole area. Ref.: 111.
Ph. velutina (DC. ex Pers.) P. Karst. 1898
Syn.: Corticium decolorans P. Karst. 1882; Stereum alneum (Fr.) Fr. sensu P. Karst. 1889

18b. Lamprocystidia narrowly conical, 40–70 × 5–7 μm.
Distr.: whole area. Ref.: 111.
Ph. affinis (Burt) Parm. 1968
Syn.: Ph. laevis (Fr.) sensu J. Erikss. & Ryv. 1978

19a. Hyphal strands yellow.
19b. Hyphal strands white or absent.

20a. Hyphal strands and subiculum yellowish, becoming reddish in KOH.
Distr.: N. Am. Ref.: 47.
Ph. salmonicolor A. Burdsall & Gilberts. 1974

20b. No such colour reaction with KOH.
Distr.: N. Am. Ref.: 41, 368.
Ph. burttii (Romell ex Burt) Parm. 1967
21a. Basidiocarp becoming more or less raduloid. Subicular hyphae often strongly branched, resembling binding hyphae.


Distr.: Eur., USSR. Ref.: 111.
Ph. raduloides J. Erikss. & Ryv. 1978

21b. Basidiocarp even at least when dry. Subicular hyphae straight.

22a. Margin and subiculum dark brown.


Distr.: N. Am. Ref.: 132, 249
Ph. fuscomarginata (Burt) Gilberts. apud Gilberts., Canfield & Cummins 1972

22b. Margin and subiculum not dark brown.

23a. Hyphal strands present, white.

23b. Hyphal strands absent.

24a. Cystidia encrusted. Ph. galactites, see 5b.

24b. Cystidia smooth.

Basidiocarp membranaceous, with white hyphal strands. Hymenial surface even, whitish to pale ochraceous. Hyphae thin- to somewhat thick-walled, 2–8 μm wide. Cystidia subulate, thin-walled, projecting, 40–70 × 5–7 μm. Basidia 25–30 × 4–5 μm. Spores cylindrical to narrowly ellipsoid, 4.5–5.5 × 2.2–2.5 μm. On angiosperms, more rarely on gymnosperms.

Distr.: Eur. Ref.: 111.
Ph. calotricha (P. Karst.) J. Erikss. & Ryv. 1978

Syn.: Peniophora limonia Burt 1926

25a. Spores narrowly ellipsoid, 4–5 × 2–2.5 μm.


Distr.: N. Am. Ref.: 127, 368.
Ph. carnosa (Burt) Parm. 1967

Note: When basidiocarp 100–200 μm thick and hymenial surface cream-coloured, cf. Ph. galactites under 5b.
Phanerochaete

25b. Spores 2.5–3 or 3–4 μm wide.


26b. Cystidia 6–10 μm wide.


Distr.: N. Am. Ref.: 47. Ph. arizonica Burdall & Gilberts. 1974

27. Cystidia fusoid, 40–60 × 3–5 μm. Ph. ericina, see 12a.


Distr.: whole area. Ref.: 111. Ph. sordidia (P. Karst.) J. Erikss. & Ryv. 1978

Syn.: Grandiniella livescens P. Karst. 1895; Corticium cremeum Bres. 1898; C. eichlerianum Bres. 1903; Peniophora arachnoidea Burt 1926

28b. Spores narrowly ellipsoid to cylindrical, 6–9 × 3–4 μm. Sporotrichum-anamorph typically present. Ph. chrysosporium, see 12b.

PHLEBIA Fr. 1821

Basidiocarp annual, resupinate, effused or somewhat effused-reflexed, adnate, ceraceous to sometimes membranaceous, sometimes with hyphal strands. Hymenial surface even, phlebioid or meruloid, rarely poroid or odontoid, light or dark coloured. Hyphal system monomitic. Hyphae hyaline, cylindrical or torulose, thin- to thick-walled, with or without clamps. Cystidia lacking or present, hyaline, thin- to thick-walled, subulate, cylindrical, clavate or conical, smooth or encrusted, enclosed or projecting. Basidia hyaline, narrowly clavate, with 4 sterigmata. Spores hyaline, thin-walled, smooth, subglobose, ellipsoid, cylindrical or allantoid, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms, occasionally on soil.

Type species: Phlebia radiata Fr. 1821

Distribution: in the whole area.

References: 66.
1a. Thick-walled cystidia present.  
1b. Thick-walled cystidia absent.  
2a. Basidiocarp reddish in KOH.  
2b. Basidiocarp not reddish in KOH.  
3a. Cystidia thin-walled, partly or totally encrusted, 3–5 \( \mu m \) wide, the incrustation consisting of amorphous material. *Ph. chrysoceras*, see 1a.  
3b. Cystidia thick-walled, encrusted, 40–80 × 6–16 \( \mu m \), the incrustation consisting of small, hyaline crystals. 
   Basidiocarp effused, ceraceous to membranaceous, the margin fimbriate and yellowish orange. Hymenial surface even or slightly granular, yellowish orange when fresh, orange-brown when dry. Hyphae 2–3.5 \( \mu m \) wide, covered with brownish, amorphous material, with clamps. Basidia 22–32 × 4–5 \( \mu m \). Spores ellipsoid to cylindrical, 4.4–6.8 × 2.8–3.5 \( \mu m \). On angiosperms. 
Distr.: whole area. Ref.: 317, 368. 
*Ph. martiana* (Berk. & Curt.) Parm. 1967 
Syn.: *Peniophora egelandii* Bres. 1911; *Ph. pulcherrima* Parm. 1967

4a. Hymenial surface odontoid, cream-coloured to ochraceous. 
   Basidiocarp effused, closely adnate, ceraceous to membranaceous, the margin thinning out. Hyphae thin- to somewhat thick-walled, 2.5–3.5 \( \mu m \) wide, with clamps. Lamprocystidia hyaline, conical, 30–80 × 6–12 \( \mu m \), thick-walled, encrusted. Basidia 15–25 × 4.5–5.5 \( \mu m \). Spores ellipsoid, 5–6 × 3–3.5 \( \mu m \). On gymnosperms. 
*Ph. queletii* (Bourd. & Galz.) M.P. Christ. 1960

4b. Hymenial surface even to merulioid.  
5a. Spores up to 5 \( \mu m \) long.  
5b. Spores at least 6 \( \mu m \) long.  
6a. Two types of cystidia present, viz. heavily encrusted conical and smooth clavate cystidia. 
   Basidiocarp effused, adnate, ceraceous, with indistinct margin. Hymenial surface merulioid when fresh, almost even when dry, greyish. Hyphae thin- to thick-walled, 3–6 \( \mu m \) wide, with clamps. Lamprocystidia hyaline, conical, thick-walled, 40–60 × 8–10 \( \mu m \), encrusted, projecting. Leptocystidia rare, hyaline, cylindrical to capitate, 40–50 × 7–8 \( \mu m \), thin- to slightly thick-walled, smooth, somewhat projecting. Basidia 20–25 × 4–5 \( \mu m \). Spores ellipsoid, 4.5–5.5 × 2.8–3.8 \( \mu m \). 
Distr.: Eur., USSR. Ref.: 372. 
*Ph. lindneri* (Pilát) Parm. ex Strid 1975 
Syn.: *Phlebia merulioides* Parm. 1962
Phlebia

6b. Cystidia conical, thick-walled, smooth or encrusted.

7a. Spores cylindrical, sometimes curved, 5.5–7 × 2.2–2.5 μm. Cystidia smooth, conical, thick-walled, 50–70 × 5–7 μm.


Distr.: Eur., USSR. Ref.: 368, 406.

Ph. segregata (Bourd. & Galz.) Parm. 1967
Syn.: Peniophora livida Burt 1926

7b. Spores ellipsoid, 3.5–4.5(5) × 2–2.5 μm. Cystidia heavily encrusted, conical, thick-walled, 40–100 × (7–)10–18(20) μm, projecting up to 60 μm.


Distr.: Eur., USSR. Ref.: 161, 318.

Ph. creneo-alutacea (Parm.) K.-H. Larsson & Hjortstam apud Hjortstam & K.-H. Larsson 1977
Note: Cf. also Hyphoderma karstenii and H. fouquieriae.

8a. Cystidia heavily encrusted. Cf. Hyphoderma pubera

8b. Cystidia more or less smooth.


Basidiocarp effused, ceraceous, closely adnate, the margin adnate or slightly rolled up when dry. Hymenial surface even, greyish brown or reddish brown. Subicular hyphae thick-walled, up to 8 μm wide. Subhymenial hyphae thin-walled, 3–5 μm wide, with clamps. Basidia 30–45 × 5–6 μm. Spores ellipsoid, 7–10.5 × 3.5–5.5 μm. On gymnosperms.

Distr.: whole area. Ref.: 32.

Ph. cornea (Bourd. & Galz.) Parm. 1967

9b. Cystidia cylindrical, 90–150(–200) × 10–12 μm, somewhat thick-walled, smooth. Thick-walled cystidioles or basidioles sometimes present.

Basidiocarp effused, adnate, ceraceous to membraneous. Hymenial surface even, greyish. Hyphae 3.5–4.5 μm wide, thin to somewhat thick-walled, with clamps. Basidia 20–30 × 5–6 μm.

Spores ellipsoid, 7–8 × 4–5 μm. On gymnosperms.


Ph. longicystidia (Litsch.) Hjortstam & Ryv. 1979
Note: When spores slightly narrower, cf. Crustoderma dryina.
10a. Hymenial surface fresh or dry distinctly folded, meruloid or somewhat poroid.

10b. Hymenial surface even, tuberculate or grandinoid, not or — when fresh — only slightly folded-meruloid.

11a. Hymenial surface folded, pinkish to orange, sometimes with violaceous tinges.

Basidiocarp effused or slightly effused-reflexed, gelatinous when fresh, ceraceous when dry, adnate. Subhymenial hyphae thin- to slightly thick-walled, 2–5 µm wide, with clamps. Subicular hyphae thick-walled, up to 10 µm wide. Cystidia rare or absent, thin-walled, clavate, 40–100 × 6–12 µm, smooth. Basidia 23–35 × 3.5–5.5 µm. Spores cylindrical, curved, 4.5–6 × 1.5–2 µm. On angiosperms, rarely on gymnosperms.

Distr.: whole area. Ref.: 142.

**Ph. radiata** Fr. 1821

Syn.: *Phlebia contorta* Fr. 1821; *Ph. merismoides* (Fr.) ex Fr. 1821;
*Thelephora bolaris* Pers. 1822; *Merulius fulvus* Lasch 1829;
*Ph. cinnabarinus* (Schw. ex Fr.) Schw. 1832; *Th. aurantiaca* (Sow.) ex Berk. 1836; *Ph. kriegeriana* P. Henn. 1902; *Ph. donkii* Bourd. apud Donk 1930. *Ph. cystidiata* H.S. Jacks. ex W.B. Cooke 1956

Note: When spores larger (7–9 × 2.5–3 µm), cf. *Ph. centrifuga* under 37a.

11b. Hymenial surface meruloid to poroid, orange when young, becoming ochraceous or brownish.

Basidiocarp effused or slightly reflexed, ceraceous, adnate. Hyphae thin- to somewhat thick-walled, 2–6 µm wide, with clamps. Cystidia rare or abundant, thin-walled, cylindrical to clavate, 30–120 × 6–14 µm, mostly enclosed. Basidia 20–30 × 3.5–5 µm. Spores narrowly ellipsoid to cylindrical, slightly curved, 4.5–5.5 × 2–2.5 µm. On angiosperms, rarely on gymnosperms.

Distr.: whole area. Ref.: 142.

**Ph. rufa** (Fr.) M.P. Christ. 1960

Syn.: *Xylomyzon isopororum* Pers. 1825; *Merulius pallens* Berk. 1841;
*Phlebia acerina* Peck 1889; *M. pruni* Peck 1906; *Ph. merulioidea* Lloyd 1915; *Ph. castanea* Lloyd 1922; *M. pilosus* Burt apud Zeller 1922; *M. lividus* Bourd. & Galz. 1923; *M. phlebiodes* Bourd. & Galz. 1923; *M. interruptus* Bres. 1925; *Ph. vassilkovi* Parm. 1962; *Ph. sublivida* Parm. 1967

12a. Leptocystidia present.

12b. Leptocystidia absent.

13a. Cystidia 9–12 µm wide.

13b. Cystidia narrower.
14a. Subiculum reddish in KOH.
Basidiocarp effused, up to 1 mm thick, adnate, ceraceous to membranaceous. Hymenial surface even or slightly warded, yellowish ochraceous to slightly brown. Hyphae thin- to slightly thick-walled, 2–5.5 µm wide, with clamps. Cystidia subulate, 15–30 × 3–5 µm. Basidia 15–22 × 4–5 µm. Spores narrowly ellipsoid to cylindrical, 4–5.5(–6) × 2–2.5 µm. On angiosperms.
Ph. chrysoceaea (Berk. & Curt. apud Berk.) Burdsall apud Lombard, Burdsall & Gilberts. 1975
Syn.: Kneiffia chromopolumba Berk. & Br. 1875; Corticium flavo-croceum Bres. apud Bourd. & Galz. 1911

14b. Subiculum not reddish in KOH.

15a. Spores narrowly cylindrical to allantoid.

15b. Spores ellipsoid.

Basidiocarp effused, adnate, ceraceous. Hymenial surface even, brick-red when fresh, ochraceous to yellowish brown when dry. Hyphae thin-walled, 1.5–4 µm wide, with clamps. Basidia 14–28 × 3.5–4.5 µm. Spores cylindrical to slightly allantoid, 5–6 × 1.2–1.5 µm. On gymnosperms.
Distr.: whole area. Ref.: 263, 368.
Ph. flavoferruginina (P. Karst.) Parm. 1967

16b. Cystidia smooth.

17a. Cystidia small, subulate, with small, capitate apex, 20–40 × 3–6 µm.

17b. Cystidia larger, cylindrical or subulate, not capitate, 30–70(–100) µm long.

18a. Spores narrowly cylindrical to allantoid, 6–7 × 1.5–1.8 µm.
Ph. romelli (Litsch. apud Bourd. & Galz.) Parm. 1967
Syn.: Corticium cretaceum Romell apud Litsch. 1941

18b. Spores allantoid, 4.5–5.5 × 1.8–2.2 µm.
Distr.: USSR. Ref.: 317.
Ph. georgica Parm. 1967
19a. Cystidia cylindrical, thin- to somewhat thick-walled, the basal part slightly widened, 50–100 × 6.5–9 μm, smooth. Basidiocarp effused, adnate, ceraceous to membranaceous. Hymenial surface even, cream-coloured to ochraceous. Hyphae thin-walled, 1–3.5 μm wide, with clamps. Basidia 20–28 × 4.5–5 μm. Spores cylindrical to slightly allantoid, 4.5–7 × 1.5–2 μm. On gymnosperms.
Distr.: Eur.
Ph. tristis (Litsch. & Lundell apud Litsch.) Parm. 1967

19b. Cystidia subulate.

Ph. subserialis (Bourd. & Galz.) Donk 1957

Distr.: N. Am. Ref.: 176, 368.
Ph. phlebioïdes (H.S. Jacks. & Dearden) Donk 1957

Ph. subochracea (Bres.) J. Erikss. & Ryv. 1976
Syn.: Peniophora ludoviciana Burt 1925; Ph. danica M.P. Christ. 1956

21b. Hymenial surface even to slightly tuberculate.

22a. Clamps absent.
Basidiocarp effused, adnate, ceraceous to membranaceous. Hymenial surface even, cream-coloured to ochraceous or brownish. Hyphae thin- to slightly thick-walled, 2–4 μm wide. Cystidia often rare, thin-walled, cylindrical, 50–70 × 4–6 μm. Basidia 28–40 × 4–5 μm. Spores ellipsoid, 3.5–4.8 × 2.2–3 μm. On angiosperms.
Ph. umbrata (Bourd. & Galz.) Parm. 1967
Syn.: Phlebia lilacea M.P. Christ. 1960
**Phlebia**

22b. Clamps present.

**Ph. expallens** (Bres.) Parm. 1967

23b. Cystidia subulate or fusiform.

**Ph. ochraceofulva** (Bourd. & Galz.) Donk 1957

Distr.: N. Am. Ref.: 368. 
**Ph. separata** (H.S. Jacks. & Dearden) Parm. 1967

25a. Clamps absent.

25b. Clamps present.

**Ph. deflectens** (P. Karst.) Ryv. 1971

26b. Basal hyphae thin-walled.

**Ph. griseo-livens** (Bourd. & Galz.) Parm. 1967
27b. Spores narrowly ellipsoid, 5–7 × 2.5–3.5 μm.
   Ph. cremeo-ochracea (Bourd. & Galz.) Parm. 1967

28a. Spores curved-cylindrical or allantoid. 29

28b. Spores ellipsoid. 33

29a. Basal hyphae thick-walled, 2–5 μm wide.
   Basidiocarp effused, adnate, ceraceous. Hymenial surface even or slightly warted to tuberculate, bluish grey to brownish. Subhymenial hyphae thin-walled, 2.5–4 μm wide, with clamps. Basidia 20–35 × 4–5 μm. Spores allantoid, 4–6 × 1.5–2.5 μm. Distr.: whole area. Ref.: 268.
   Ph. livida (Pers. ex Fr.) Bres. 1897

29b. Basal hyphae thin-walled. 30

30a. Spores allantoid, 1.2–1.8 μm broad. 31

30b. Spores cylindrical, often curved, 1.8–2.5 μm broad. 32

31a. Basidia irregularly clavate, 14–18 × 3.7–4.4 μm.
   Ph. subcretacea (Litsch.) M.P. Christ. 1960

31b. Basidia narrowly clavate, 18–24 × 4–5 μm.
   Basidiocarp effused, adnate, ceraceous. Hymenial surface even, bluish grey to pale brownish. Hyphae thin-walled, 2–3 μm wide, with clamps. Spores curved-cylindrical to allantoid, 6–7 × 1.2–1.8 μm. Distr.: Eur., USSR. Ref.: 270 (nr 1840).
   Ph. aerugino-levida (Romell ex Lundell) Donk 1957

32a. Spores cylindrical, slightly curved, 7–9 × 1.8–2 μm. Subiculum without colonies of green algae.
   Ph. argentea Parm. 1967

32b. Spores cylindrical, slightly curved, 5–7 × 1.8–2.5 μm. Subiculum (?always) with colonies of green algae (Chlorococcus).
Phlebia

Distr.: USSR. Ref.: 317.

Ph. lichenoides Parm. 1967

33a. Spores up to 5 μm long.
33b. Spores longer than 5 μm.

34a. Spores ellipsoid, 3.5–5 × 2.5–3 μm.
   Basidiocarp effused, adnate, ceraceous to membranaceous.
   Hymenial surface even, cream-coloured or greyish. Hyphae thin-walled, 2–4 μm wide, with clamps. Basidia 24–30 × 4–4.5 μm.
   Ph. lacteola (Bourd.) M.P. Christ. 1960

34b. Spores ellipsoid, 3.8–4.5 × 2.2–2.5 μm.
   Basidiocarp effused, adnate, ceraceous to membranaceous.
   Hymenial surface even, cream-coloured to ochraceous. Hyphae thin- to slightly thick-walled, 1.5–4 μm wide, with clamps. Basidia 38–45 × 3.8–4.5 μm.
   Ph. serialis (Fr.) Donk 1957
   Syn.: ?Corticium pallido-incarnatum Litsch. 1941

35a. Hymenial surface blackish or bluish grey.
35b. Hymenial surface cream-coloured, ochraceous or brown.

36a. Spores ellipsoid, 5.5–6.5 × 3–3.5 μm.
   Basidiocarp effused, adnate, ceraceous. Hymenial surface even, blackish or dark bluish grey. Hyphae thin- to somewhat thick-walled, 3–4 μm wide, with clamps. Basidia 20–35 × 4.5–5.5 μm.
   Distr.: USSR. Ref.: 317.
   Ph. ardesiaca Parm. 1967

36b. Spores ellipsoid, 6.5–8 × 3.2–4 μm.
   Distr.: USSR. Ref.: 317.
   Ph. plumbea Parm. 1967

37a. Spores ellipsoid, 7–9 × 3–3.5 μm. Hymenial surface cream-coloured, even.
   Basidiocarp effused, adnate, ceraceous to membranaceous. Hyphae thin- to thick-walled, 2.5–4.5 μm wide, with clamps. Basidia 20–30 × 5–7 μm. On angiosperms.
   Ph. pallido-cremea (Litsch.) Parm. 1967

37b. Spores up to 3 μm broad. Hymenial surface brownish.

PHLEBIA

Basidiocarp adnate or effused, even or patchy. Hyphae thin-walled, or absent. Hymenial surface hyaline or slightly bluish, smooth.

Substr.: Wood.

Type: Not seen.

Distr.: Eur.

Referecnes

1a.
38a. Spores narrowly ellipsoid to cylindrical, 7–9 × 2.5–3 μm. Margin distinct, strigose, up to 5 mm wide. Hymenial surface papillose and wrinkled when fresh, even or papillose when dry.
Basidiocarp effused, adnate, ceraceous. Hymenial surface at first greyish white, becoming pale ochraceous to brown. Hyphae thin- to slightly thick-walled, 1.5–4 μm wide, with clamps. Basidia 25–35 × 5–6 μm.
Distr.: Eur., N. Am.
Ph. centrifuga P. Karst. 1881
Syn.: ?Phlebia albida Post ex Fr. 1863; Ph. macra Litsch. apud Pilát 1934

38b. Spores narrowly ellipsoid to cylindrical, 5.5–7.5(–8) × 2.3–2.8 μm. Margin indistinct or slightly fimbriate. Hymenial surface even.
Ph. nitidula (P. Karst.) Ryv. 1971
Syn.: ?Phlebia pallidiformis (Bourd. & Galz.) Parm. 1967

**PHLEBIOPSIS** Jülich 1978

Basidiocarp annual, resupinate, effused, ceraceous, adnate. Hymenial surface even to slightly tuberculate, whitish, greyish, cream-coloured or ochraceous. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled, clamps rare or absent. Lamprocystidia present, hyaline, thick-walled, encrusted. Basidia hyaline, narrowly clavate, 4-spored. Spores hyaline, ellipsoid, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Thelephora gigantea* Fr. 1821

Distribution: in the whole area.

References: 199.

1a. On gymnosperms.

Basidiocarp effused, up to 1 m long, thick-gelatinous when fresh, ceraceous when dry, adnate. Hymenial surface even or slightly tuberculate, whitish to light greyish or pinkish-ochraceous. Margin fimbriate. Hyphae densely interwoven, cylindrical to torulose, thin- to somewhat thick-walled and 2–4 μm wide in the subhymenium, very thick-walled and up to 8 μm wide in the subiculum, clamps absent or rare. Lamprocystidia hyaline, conical, thick-walled, 60–100 × 12–20 μm, the upper half heavily encrusted, projecting. Basidia 18–30 × 4–5 μm. Spores ellipsoid, 5–7 × 2.5–3 μm.
Distr.: whole area. Ref.: 66, 368.
Ph. gigantea (Fr.) Jülich 1968

Ph. roumeguerii (Bres.) comb. nov. Bas.: Corticium roumeguerii Bres. 1892, Fung. trident. Vol. 2, p. 36, pl. 144, fig. 1.

PILODERMA Jülich 1969

Basidiocarp annual, resupinate, effused, pellicular to membranaceous, with or without hyphal strands. Hymenial surface even, mostly pale coloured. Hyphal system monomitic. Hyphae hyaline to pale yellowish, thin- to somewhat thick-walled, cylindrical, without clamps, the surface smooth or loosely covered with crystals. Cystidia lacking. Basidia hyaline, clavate, with (2–)4(–6) sterigmata. Spores yellowish, somewhat thick-walled, smooth, subglobose to ellipsoid, often guttulate, not amyloid.


1a. Basidia large, broadly clavate, 10–31 × 5.7–12 μm, with (2–)4(–6) sterigmata.

Basidiocarp effused, pellicular, loosely adnate, without hyphal strands. Hymenial surface even, whitish to cream-coloured. Hyphae hyaline to pale yellowish, 2.5–4 μm wide. Spores ellipsoid, 3.5–6 × 2.8–4.2 μm. On wood, ferns and stones. Distr.: Eur., USSR. Ref.: 186.

P. lapillicola Jülich 1969

1b. Basidia smaller, narrowly clavate.

2a. Hyphal strands lacking. Subiculum not very distinct.
2b. Hyphal strands present. Subiculum usually well developed.

3a. Basidiocarp thin-pellicular. Basidia rigid, after dispersal of the spores not easily collapsed, 16–20 × 3.5–4(–4.5) μm. Hymenial surface even, whitish to cream-coloured. Hyphae hyaline, thin-walled, 2.5–3 μm wide. Spores subglobose to broadly ellipsoid, 3–4(–4.5) × 2.8–3(–3.4) μm.
Pseudotomentella

**P. sphaerosporum** Jülich 1972

Hymenial surface even, cream-coloured. Hyphae hyaline to pale yellowish, thin-walled, 2–3 μm wide. Spores broadly ellipsoid, 2.9–3.8 × 2.1–2.9 μm.
**P. reticulatum** Jülich 1972

4a. Hyphal strands and subiculum orange-yellow. Hymenial surface typically yellowish to orange-yellow, rarely brown, white or olive.
Spores broadly ellipsoid, 2.5–4.5 × 2–3 μm.
Distr.: whole area.  Ref.: 66, 127, 186.
**P. bicolor** (Peck) Jülich 1972

4b. Hyphal strands and subiculum pure white, sometimes scarcely developed. Hymenial surface white or pale yellowish.
Basidiocarp pellicular to soft membranaceous. Hyphae pale yellowish, slightly thick-walled, 2–4 μm wide. Basidia 11–18 × 4–5.5 μm, with 2–4 sterigmata. Spores ellipsoid, 2–5.5 × 2–3.8 μm.
Distr.: whole area.  Ref.: 127, 186.
**P. byssinum** (P. Karst.) Jülich 1972

**PSEUDOTOMENTELLA** Svrček 1958

Basidiocarp annual, resupinate, effused, arachnoid, byssoid, tomentose or pellicular. Hymenial surface continuous when mature, even, pale or dark coloured. Hyphal system mono- or dimitic. Hyphal strands typically present. Skeletal hyphae yellowish, 1–2.5 μm wide. Generative subicular hyphae typically with thickened walls, brownish, without clamps or rarely with scattered or abundant clamps. Sterile hymenial structures absent. Basidia sphaeropedunculate when immature, pedunculate-clavate when mature, sometimes with median septum, with (2–)4 sterigmata which may become septate. Spores subhyaline to pale yellowish, rarely brown, globose to lobed, typically warded and warts becoming bifurcate, rarely echinulate to aculeate, with thickened walls, 5–12 μm in diam.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: *Hypochnos mucidula* P. Karst. 1882
Distribution: in the whole area.
References: 217, 376.

1a. Spores becoming deep blue in KOH, yellowish in H₂O.
Pseudotomentella

Basidiocarp effused, pellicular, separable, margin indistinct. Hymenial surface pulverulent, deep blue when fresh, pale yellow green when dry. Hyphal system monomitic. Subicular hyphae hyaline to yellowish, 1–4 \( \mu \)m wide. Basidia 35–40 \( \times \) 8–10 \( \mu \)m, sterigmata up to 5 \( \mu \)m long. Clamps present, abundant in sub-hymenium, rare in subiculum. Spores irregularly globose to irregular, coarsely warted, 7–9 \( \times \) 7 \( \mu \)m.


**P. atrocyanea** (Wakef.) Burdsall & M.J. Larsen 1974

1b. Spores not deep blue in KOH.

2a. Nearly all septa of subicular hyphae with clamps.

2b. Clamps on subicular hyphae rare or absent.

3a. Spores warted to echinulate, walls brownish to umbrinous. Hymenial surface typically warted to toothed. Cf. **Tomentella crinalis**.

3b. Spores warted, walls hyaline to pale yellowish. Hymenial surface even.

4a. Spores irregularly globose, strongly warted, 8–11(–12) \( \mu \)m in diam. Subicular hyphae 3.5–5.5(–6.5) \( \mu \)m wide. Chlamydospores typically present in hyphal strands, up to 35 \( \mu \)m in diam.

   Basidiocarp effused, separable, pellicular, up to 0.4 mm thick. Hymenial surface even, often cracking, dark green. Margin fimbriate, darker. Hyphal strands present, up to 45 \( \mu \)m wide, dark greyish blue in H\(_2\)O, dull purplish brown, greenish or yellowish in KOH (subicular hyphae also). Basidia 60–80 \( \times \) 9–11(–13) \( \mu \)m, sterigmata up to 8 \( \mu \)m long. On gymnosperms.

Distr.: N. Am. Ref.: 208, 211, 217.

**P. vepallidospora** M.J. Larsen 1967

4b. Spores irregularly globose, warted, (5.5–) 6–8(–9) \( \mu \)m in diam. Subicular hyphae 3–4.5(–6) \( \mu \)m wide. Chlamydospores absent.

   Basidiocarp effused, separable in small pieces, pellicular to crustose. Hymenial surface even, greenish. Margin indistinct. Hyphal strands present, up to 200 \( \mu \)m wide, yellowish to brownish in H\(_2\)O and KOH (subicular hyphae also). Basidia 50–70 \( \times \) 8–10.5(–11) \( \mu \)m, sterigmata up to 9 \( \mu \)m long. On gymnosperms.


**P. humicola** M.J. Larsen 1968

5a. Spore walls pale brown to umbrinous in KOH.

5b. Spore walls hyaline to pale yellow in KOH.

6a. Spores irregularly globose to lobed, warted, some may be greenish in KOH, 5.5–6.5(–7) \( \mu \)m in diam. Hyphal system dimitic.

   Basidiocarp effused, arachnoid to pellicular, separable. Hymenial surface even, blackish brown. Margin fimbriate to arachnoid, paler. Subiculum much paler than hymenium. Hyphal strands dull brown,
Pseudotomentella

up to 30 μm wide. Skeletal hyphae 1.5–2 μm wide, generative subicular hyphae 2–2.5 μm wide, hyaline to brownish, some encrusting material purple in KOH. Basidia 40–60 × 6–8 μm, encrusting material and contents greenish in KOH, sterigmata up to 7 μm long. On angiosperms and gymnosperms.


P. atrofuscus M. J. Larsen 1971

6b. Spores globose to subglobose or irregular, warted, rarely echinulate, pale brown to umbrinous in KOH, 7–10(–11) μm in diam. Hyphal system monomitic.

Basidiocarp effused, separable, pellicular to crustose, up to 2 mm thick. Hymenial surface even to slightly folded, ferruginous to brown to bluish black. Subiculum ferruginous. Margin fibrillose, concolorous or paler. Hyphal strands absent. Subicular hyphae brown, 2.5–3.5(–6) μm wide, encrusting material often greenish in KOH. Basidia 40–60(–80) × 8–12 μm, often with greenish contents, sterigmata up to 10 μm long. On angiosperms and gymnosperms.

Distr.: whole area.   Ref.: 208, 211, 217, 376.

P. tristis (P. Karst.) M. J. Larsen 1972

Syn.: Thelephora umbrina auct., non − Fr. 1828; Th. biennis Fr. 1874, non − 1821; Hypochonopsis fuscata P. Karst. 1889; Hypochonius sitensis Bres. 1897; H. rhacodium Berk. & Curt. apud Burt 1926

7a. Hymenium tan to brown to brownish black.

7b. Hymenium with greenish tinge or pale grey to greyish blue.

8a. Hymenium blackish brown. Spores 5.5–6.5(–7) μm in diam. P. atrofuscus, see 6a

8b. Hymenium tan to pale brown. Spores 7–12 μm in diam.

9a. Subiculum dark blue or violaceous black. Basidiocarp effused, becoming pellicular, up to 1.5 μm thick. Basidia 60–80(–110) × 8–12 μm. Hyphal strands up to 150 μm wide.

Hymenial surface even, tan to pale brown. Hyphal system dimitic. Generative subicular hyphae blue to bluish grey in H2O and yellowish brown in KOH, thick-walled, often minutely spinulose, 2–5(–4) μm wide. Spores globose to irregular, warted, 8–12 μm in diam.

Distr.: Eur., N. Am.   Ref.: 211, 217, 376.

P. nigra (Höhn. & Litsch.) Svrček 1960

9b. Subiculum pale tan to pale brown. Basidiocarp effused, tomentose, rarely pellicular, up to 0.5 mm thick. Basidia 35–45(–50) × 7–9 μm. Hyphal strands up to 20 μm wide.

Hymenial surface even, tan to pale brown. Hyphal system dimitic. Generative subicular hyphae pale brown, with thickened walls,
smooth, 2–3 \( \mu \text{m} \) wide. Spores globose, sometimes irregular, warty or more rarely echinulate, 7–11 \( \mu \text{m} \) in diam.
Distr.: whole area. Ref.: 211, 217, 376.

**P. mucidula** (P. Karst.) Svrček 1958
Syn.: *Cortici um epimyces* Bres. 1901; *Hypochomus roseogriseus* Wakef. & Pearson 1919; *H. lavandulaceus* Pearson 1920; *Tomentella verrucispora* Bord. & Galz. 1924; *T. gilbertii* Bord. & Galz. 1928

10a. Subiculum ferruginous brown. Hyphal system monomitic; subicular hyphae 3–4.5(–6) \( \mu \text{m} \) wide. Sterigmata up to 18 \( \mu \text{m} \) long. Spores 8–10(–12) \( \mu \text{m} \) in diam.
Basidiocarp effused, separable, pellicular, up to 1.5 mm thick. Hymenial surface even, greyish green; margin ferruginous brown. Hyphal strands obscure, up to 150 \( \mu \text{m} \) wide. Basidia 50–80(–100) \( \times \) (8–)10–15 \( \mu \text{m} \). Spores globose to irregular, strongly warty.
Distr.: N. Am. Ref.: 208, 211, 217.

**P. longisterigmata** M.J. Larsen 1967

10b. Subiculum with some shade of grey, green or blue. Hyphal system dimitic. Subicular hyphae 2–3.5(–4) \( \mu \text{m} \) wide. Sterigmata up to 7 \( \mu \text{m} \) long. Spores 5–8(–10) \( \mu \text{m} \) in diam.

11a. Hymenial surface dull green to greyish green, even. Spores irregularly globose to lobed, strongly warty, 6.5–8(–10) \( \mu \text{m} \) in diam.
Basidiocarp effused, separable, membranaceous to pellicular, up to 0.5 mm thick. Margin arachnoid to fibrillose, paler than hymenial surface. Hyphal strands up to 40 \( \mu \text{m} \) wide, composed of skeletal and/or generative hyphae. Generative subicular hyphae 2–3(–3.5) \( \mu \text{m} \) wide, sometimes greenish in KOH. Subhymenial hyphae may be faintly purple in KOH. Basidia 60–80(–90) \( \times \) 5–6(–7) \( \mu \text{m} \).
Distr.: Eur., N. Am. Ref.: 211, 217, 376.

**P. flavovirens** (Höhn. & Litsch.) Svrček 1958

11b. Hymenial surface greyish blue or greyish blue-green. Spores globose to lobed, warty, 5–7(–8) \( \mu \text{m} \) in diam.

12a. Fertile area pale grey to greyish blue. Subiculum grey, but darker than the hymenium. Basidiocarp usually drying parchment-like.
Basidiocarp effused, separable, arachnoid to byssoid, later pellicular, up to 0.2 mm thick. Hyphal strands up to 150 \( \mu \text{m} \) wide with generative hyphae, or up to 50 \( \mu \text{m} \) wide with skeletal hyphae. Generative subicular hyphae pale brown to dull yellowish brown, with thickened walls, 2–3.5(–4) \( \mu \text{m} \) wide. Basidia 45–60(–70) \( \times \) 6–7(–8.5) \( \mu \text{m} \). Spores globose to irregular, 5–7(–8) \( \mu \text{m} \) in diam.

**P. griseopergamacea** M.J. Larsen 1971

12b. Fertile area greyish blue to normally greyish blue-green, sometimes with
Pteridomyces


Basidiocarp effused, separable, arachnoid to byssoid, sometimes pellicular, up to 200 μm thick. Hyphal strands up to 30 μm wide, with generative hyphae. Generative subicular hyphae subhyaline to yellowish brown, thin-walled, 2.5–3.5 μm wide. Basidia 50–70 (–80) × 6–7.5 μm. Spores irregularly globose to symmetrically lobed, 5.5–6.5(–7) μm in diam.

Distr.: N. Am. Ref.: 218.

P. griseoveneta M.J. Larsen 1974


Substrate: saprophytic on wood of gymnosperms.


Distribution: Europe.

References: 160.


PTERIDOMYCÉS Jülich 1979


Substrate: saprophytic on ferns.
Pteridomyces

Type species: Epithele galzinii Bres. apud Bourd & Galz. 1911
Distribution: Europe.
References: 201.

P. galzinii (Bres. apud Bourd. & Galz.) Jülich 1979

PULCHERRICICUM Parm. 1968

Basidiocarp annual, resupinate, effused or effused-reflexed, membranaceous. Hymenial surface even, at first blue, later bluish-greenish. Hyphal system mononitic. Hyphae bluish, distinct, somewhat thick-walled, with clamps. Cystidia and gloecystidia lacking. Dendrohyphidia present, the appendages covered with dark blue granules, at least some of the dendrohyphidia capable of growing out to form basidia. Basidia clavate, hyaline or slightly bluish, with clamps at the base and 4 sterigmata; basidia may have lateral appendages. Spores hyaline to slightly bluish, more or less thin-walled, smooth, ellipsoid, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.
Type species: Thelephora caerulea Lamarck ex St.-Amans 1821
Distribution: in the whole area.
References: 191, 318.

Monotypic. Basidiocarp effused, sometimes slightly reflexed, membranaceous with filibrate and lighter coloured margin. Hymenial surface even, deep blue when immature, later becoming dirty bluish-greenish. Hyphae mostly bluish or greenish, the basal ones slightly brownish, 4–6 μm wide, somewhat thick-walled (0.4–0.8 μm), with clamps. Hyphae smooth or encrusted with a dark blue substance or with hyaline cystals. Dendrohyphidia 20–40 × 4–8 μm, appendages of various shape and length, often covered with dark blue granules. Basidia hyaline to slightly blue, thin- or slightly thick-walled, clavate, 30–60 × 5.5–8 μm, sometimes with small lateral appendages like those of the dendrohyphidia. Spores hyaline to slightly bluish, ellipsoid, more or less thin-walled, 8–13 × 5–7 μm.
P. caeruleum (Lamarck ex St.-Amans) Parm. 1968
Syn.: Thelephora indigo Schw. 1822; Sporotrichum azureum Link ex Steudel 1824; Th. atrocoerulea Trog 1832

PB133261

Syn.: 225

Type species: Schizophyllum commune (Schwein.) Donk 1938
Distribution: whole area.
References: 1a. 314

1b. 71
**Punctularia** Pat. apud Pat. & Lagerh. 1895

*Syn.*: *Phaeophlebia* W.B. Cooke 1956

Basidiocarp annual, resupinate, effused or effused-reflexed, ceraceous. Hymenial surface even or tuberculate to phlebioid, medium to dark coloured. Hyphal system monomitic. Hyphae hyaline in the subhymenium, brown in the trama, cylindrical, thin- to thick-walled, clamps present. Dendrophyllidia present, yellowish to brown, scarcely or strongly branched. Gloeocystidia present in one species. Basidia long and narrowly clavate, 4-spored. Spores hyaline to pale yellowish, ellipsoid, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.

Type species: *Corticium tuberculatum* Pat. apud Pat. & Lagerh. 1892


Distribution: Europe, North America.

References: 70, 379, 383.

1a. Gloeocystidia present, 20–35 × 3.5–5 μm, with yellowish contents.

   Basidiocarp mostly effused-reflexed, up to 1 mm thick, ceraceous, the upper surface of pileus brown, zonate. Hymenial surface even, tuberculate or phlebioid, dark brown. Margin yellow-brown when fresh. Hyphae 3–5 μm wide. Dendrophyllidia yellowish, the upper part branched, 20–35 × 1–2 μm, smooth. Basidia narrowly clavate, 15–20 × 3–4 μm. Spores ellipsoid, 6.5–7.5(–8) × 3–4 μm.

   Distr.: whole area. Ref.: 70, 383.

   **P. strigoso-zonata** (Schw.) Talbot 1958

   *Syn.*: *Auricularia persistens* Sow. 1803; *Phlebia orbicularis* Berk. & Cooke 1849; *Ph. zonata* Berk. & Curt. 1872; *Ph. rubiginosa* Berk. & Rav. 1872; *Ph. anomala* Berk. & Rav. 1873; *Corticium hepaticum* Berk. & Cooke 1873; *Ph. pileata* Peck 1878; *Ph. spilomea* Berk. & Cooke ex Cooke 1891

1b. Gloeocystidia absent.

   Basidiocarp effused, rarely slightly effused-reflexed, pulvinate, about 500 μm thick. Hymenial surface even, medium to dark brown (the margin including). Hyphae 2–4.5 μm wide. Dendrophyllidia with a hyaline stem and brown branches, the branched part up to 30 × 5.5 μm, smooth. Basidia narrowly clavate, 27–50 × 4–7 μm. Spores ellipsoid, 5.5–7(–8) × 3–4(–5) μm.


   **P. atropurpurascens** (Berk. & Br.) Petch 1916

   *Syn.*: *Corticium tuberculatum* Pat. apud Pat. & Lagerh. 1892; *C. conigenum* Shear & Davidson 1944

   Anamorph: Pulvinate, loose, floccose, several mm thick, reddish brown to violaceous blue. Conidia purplish brown in mass, thick-walled, globose to ellipsoid, 4–4.5(–6) μm in diam, or 4.5–7(–10) × (3–)3.5–4.5 μm.

   **Ptychogaster rubescens** Boud. 1887
RADULODON Ryvarden 1972

Basidiocarp annual, resupinate, effused, ceraceous, becoming cartilaginous when dry, covered with spines, adherent. Spines single or concrescent, often fimbriate at the apex. Hymenial surface ochraceous to pale brown, sometimes greyish. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled, with or without clamps. Cystidia when present hyaline, thin-walled. Basidia single or in small clusters, clavate to subuniform, often with 1–2 constrictions, gradually or abruptly narrowing towards the base. Spores hyaline, thin-walled, smooth, globose to subglobose, not amyloid.

Substrate: saprophytic or parasitic on angiosperms.

Type species: Radulodon americanus Ryv. 1972

Distribution: in the whole area.

References: 360, 362.

1a. Clamps absent. Some subiculer hyphae thick-walled, much-branched, 1.5–2 μm wide.

   Basidiocarp up to 1.5 mm thick. Spines crowded, often concrescent, up to $8 \times 0.5$ mm. Hymenial surface greyish to buff when dry. Besides narrow, thick-walled hyphae also thin-walled hyphae present, 2–3.5 μm wide, sometimes encrusted. Cystidia absent. Basidia 5–5.5 μm wide. Spores subglobose, 5–6 × 4–4.5 μm. On angiosperms. Distr.: N. Am. Ref.: 360.

   **R. casearium** (Morgan) Ryv. 1972

1b. Clamps present. Narrow thick-walled much-branched subiculer hyphae absent.

   2a. Cystidia present, cylindrical to clavate, 35–70 × 6–13 μm, apex acute or obtuse. Distr.: Eur., USSR.

   Basidiocarp up to 0.3 mm thick. Spines cylindrical to somewhat flattened, 1–3 mm long. Hymenial surface ochraceous to buff. Hyphae 1.5–5 μm wide. Basidia 20–40 × 5–10 μm. Spores globose to subglobose, 4–6 μm in diam. On Populus.

   Ref.: 360.

   **R. eikssonii** Ryv. 1972


   Basidiocarp up to 2 mm thick. Spines 1–5 mm long, often fused at the base. Hymenial surface ochraceous to pale buff. Hyphae 1.5–4.5 μm wide. Basidia 20–40 × 5–10 μm. Spores globose to subglobose, 4–6.5 μm in diam. On Populus.

   Ref.: 360.

   **R. americanus** Ryv. 1972
RAMARICMAM J. Erikss. 1954

Syn.: Phlyctibasidium Jülich 1974

Basidiocarp annual, resupinate, effused, membranaceous, with distinct subiculum. Hymenial surface even or tuberculate, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin-to somewhat thick-walled, with clamps, smooth or covered with warts. Cystidia lacking, hysphidia may be present. Basidia clavate, often distinctly stalked, with a basal clamp, 2-4-spored. Spores hyaline or yellowish, thin-to slightly thick-walled, smooth or warted, subglobose to ellipsoid or cylindrical, cyanophilous, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms and on mosses.

Type species: Ramaricium occultum J. Erikss. 1954

Distribution: in the whole area.

References: 104, 144.

1a. Spores smooth, hyaline, thin-walled, cylindrical, 10-16.5 × 4.5-4.8 μm.
Basidiocarp effused, up to 1 mm thick, membranaceous, with short hyphal strands. Hymenial surface even, ochraceous. Hyphae hyaline, thin-to somewhat thick-walled, smooth or covered with acyanophilous warts, 2-4 μm wide, locally inflated up to 7.5 μm. Hyphidia hyaline, cylindrical, sometimes branched, 2-4 μm wide. Basidia stalked, clavate, 60-100 × 8-10 μm.
Distr.: N. Am. Ref.: 144.

R. flavomarginatum (Burt) Gims 1979

1b. Spores nearly smooth (and then subglobose) or distinctly warted, yellowish.

2

2a. Spores subglobose, nearly smooth, 6-7 μm in diam., yellowish.
Basidiocarp effused, soft-membranaceous. Hymenial surface even, cream-coloured to ochraceous. Hyphae hyaline, thin-to slightly thick-walled, smooth or warted, 1.5-4 μm wide. Hyphidia torulose, branched, 1-3 μm wide. Basidia stalked, clavate, 40-70 × 8-10 μm.
Distr.: N. Am. Ref.: 144.

R. alboflavescens (Ell. & Everh.) Gims 1979
Syn.: Coniophora corticola Overh. 1938; Serpula illudens Overh. ex W.B. Cooke 1957; S. imperfectus Overh. ex W.B. Cooke 1957

2b. Spores ellipsoid, distinctly warted.

3

3a. Hyphae with acyanophilous warts.
Basidiocarp effused, c. 300 μm thick, membranaceous. Hymenial surface even, yellowish-ochraceous. Hyphae hyaline, thin-to slightly thick-walled, 2-5.5 μm wide. Basidia 28-40 × 6.5-8 μm. Spores ellipsoid, pale yellow, 7-9.2 × 5-6 μm (incl. warts), slightly thick-walled.
Ramaricum

Distr.: N. Am. Ref.: 144, 189.
R. polyphoroides (Berk. & Curt.) Ginn 1979

3b. Hyphae smooth.
R. albo-ochraceum (Bres.) Jülich 1977
Note: A very similar and probably identical species is R. ocultum J. Erikss. 1954 which differs by growing on dead mosses.

REPETOBASEDIDIUM J. Erikss. 1958

Basidiocarp annual, resupinate, effused, adnate, pruinose, membranaceous or ceraceous, thin. Hymenial surface even to minutely reticulate, whitish to greyish or ochraceous. Hyphal system monomitic. Hyphae hyaline, thin-walled, distinct or indistinct, with clamps. Cystidia hyaline, thin-walled, conical, capitate, or cylindrical, smooth or with an apical oily excretion, often with a clamped median septum. Basidia (repetobasidium) single, globose or ovoid to subcylindrical, 4-spored. Spores hyaline, smooth, thin-walled, subglobose to ellipsoid or allantoid, not amyloid.

Substrate: saprophytic on decayed wood of gymnosperms and angiosperms.
Type species: Peniophora viles Bourd. & Galz. 1928
Distribution: Europe, USSR.
References: 105, 303.

1a. Spores subglobose to broadly ellipsoid, 5–7 × 4.5–5.5 µm.
Basidiocarp pruinose, adnate. Hymenial surface even, whitish to pale ochraceous. Hyphae 1.5–3(–4) µm wide, with clamps. Cystidia conical, often with an apical bulb, which may be surrounded by a ring and may be covered with oily excretions, 30–50 × 5–10 µm. Basidia 7–13 × (5–)6–8 µm.
Distr.: Eur., USSR. Ref.: 303.
R. mirificum J. Erikss. 1958

1b. Spores ellipsoid to allantoid.

2a. Spores narrowly ellipsoid to allantoid, 6–10 × 2–4(–5) µm. Cystidia conical, often with median septum, 25–40 × 5–10 µm.
Basidiocarp pruinose to membranaceous-ceraceous, adnate. Hymenial surface even, whitish to greyish ochraceous. Hyphae (1–)1.5–3 µm wide, with clamps. Basidia 6–15 × 5–7 µm.
R. vile (Bourd. & Galz.) J. Erikss. 1958
2b. Spores ellipsoid, (4–)4.5–6 × 2.5–3 μm. Cystidia cylindrical, usually with one or two clamped septa, 20–50 × 3.5–5 μm.

Basidiocarp adnate. Hymenial surface even, whitish to greyish ochraceous. Hyphae 1.5–3 μm wide, with clamps. Basidia 6–10 × 5–7 μm.
R. erikssonii Oberw. 1965

RESINICUM Parm. 1968

Basidiocarp annual, resupinate, effused, membranaceous to ceraceous, closely adnate. Hymenial surface even, grandinoid or hydnoid, pale coloured. Hyphal system monomitic. Hyphae rather indistinct, often agglutinated, hyaline, cylindrical to torulose, thin- to slightly thick-walled, with clamps. Cystidia hyaline, thin-walled, apically swollen and covered with a halo of oily material or with crystals, with a basal clamp. Basidia narrowly clavate, hyaline, with a basal clamp. Spores hyaline, cylindrical, allantoid or ellipsoid, smooth, thin-walled, not amyloid.

Substrate: saprophytic on decayed wood of angiosperms and gymnosperms.
Type species: Hydnum bicolor Alb. & Schw. ex Fr. 1821
Distribution: in the whole area.
References: 127, 318.

1a. Hymenial surface even.

Distr.: whole area. Ref.: 127, 245.
R. furfuraceum (Bres.) Parm. 1968

1b. Hymenial surface grandinoid or minutely hydnoid; two types of cystidia present.

2a. Hymenial surface grandinoid or minutely hydnoid; two types of cystidia present.

Basidiocarp thin-ceraceous. Hymenial surface pale cream-coloured. Hyphae rather indistinct, agglutinated, cylindrical to torulose, 1.5–3 μm wide, thin- to slightly thick-walled. Cystidia of two types: a) cylindrical to clavate, apically swollen, 10–18 × 8–10 μm, with a large, 12–20 μm wide halo; b) irregularly cylindrical, 10–15 × 2–5 μm, apically with a stellate mass of crystals; both types with clamps at the base. Basidia cylindrical to narrowly clavate, 16–22 × 4–5 μm. Spores cylindrical, 4–6 × 2.5–3 μm.
Distr.: whole area. Ref.: 66, 81, 127, 297.
R. bicolor (Alb. & Schw. ex Fr.) Parm. 1968
Resinicum

2b. Hymenial surface strongly hydnoi d; one type of cystidium present.
Basidiocarp membranaceous to ceraceous. Hymenial surface usually
strongly hydnoi d, with numerous brittle, conical teeth, 0.5–1 mm
long, cream-coloured to bright yellowish. Hyphae hyaline, 3–5 μm
wide, rather thin-walled, with clamps. Cystidia abundant at apices
of teeth, irregularly cylindrical, apically swollen, 3–5 μm in diam.,
the halo up to 9 μm wide, never covered with crystals. Basidia 4–5 μm
wide. Spores allantoid, 4–7 × 1.5–2 μm.
Distr.: N. Am. Ref.: 127, 128.
R. chiricalhuaensis Gilberts. & Budington 1970

SARCODONTIA S. Schulzer 1866
Syn.: Oxydontia L.W. Miller 1933

Basidiocarp resupinate, effused, adnate, ceraceous, the margin thinning out,
reddish or purplish in KOH. Hymenial surface hydnoi d, the teeth up to 1.5 cm
long, conical or flattened, acuminate, at base free or concrecent, ochraceous
or brownish. Hyphal system monomitic. Hyphae of teeth hyaline, thin-walled,
cylindrical, 2–4 μm wide, with clamps. Cystidia lacking. Basidia hyaline, long
and narrowly clavate, thin-walled, clamped at base, 4-spored. Spores hyaline,
subglobose to broadly ellipsoid, smooth, thick-walled (c. 0.4 μm), not amyloid.

Substrate: parasitic on angiosperms.
Type species: Hydnum setosum Pers. 1825
Distribution: in the whole area.

Monotypic. Basidiocarp ceraceous, with sulphur yellow hyphae at the
base and especially in the substrate. Hymenial surface hydnoi d, teeth
slender, up to 1.5 cm long. Hyphae 3–4 μm wide, guttulate, thin-walled in
the teeth, often thick-walled (1–2 μm) in the substrate, always with
clamps. Basidia 40–45 × 4–5 μm. Spores subglobose to broadly ellipsoid,
4.5 5 × 3.7 4 μm, guttulate. Parasi tic on rosaceous trees (mainly Malus) and ?Fraxinus.
Distr.: whole area. Ref.: 183, 290.
S. setosa (Pers.) Donk 1952
Syn.: Sistotrema crocun Schw. 1822 sensu Kotlaba 1953; Hydnum
luteoarceum Secr. 1833; Sarcodontia mali S. Schulzer 1866; H.
schiedermayri Heufler 1870; H. amplissimum Berk. & Curt. apud
Berk. 1873; H. subvolutum Berk. & Curt. apud Berk. 1873; H.
eareleanum Sumstine 1904; H. foetidum Velen. 1922

SCYPHELOIDES (Masse) Höhn. & Litsch. 1908

Basidiocarp annual, resupinate, effused, ceraceous, adnate. Hymenial surface
odontoid, greyish. Hyphal system monomitic. Hyphae hyaline, thin- to slightly
thick-walled, without clamps. Cystidia of two types: a) lamprocystidia in the resupinate part, hyaline, aseptate, conical, thick-walled, encrusted; b) septocystidia in the teeth, hyaline, septate, cylindrical, thick-walled, encrusted. Basidia hyaline, narrowly clavate. Spores hyaline, cylindrical to ellipsoid, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood of angiosperms.

Type species: *Peniophora hydnoides* Cooke & Massee apud Cooke 1888

Distribution: in the whole area.

Monotypic. Basidiocarp effused, firm-gelatinous when fresh, ceraceous when dry, adnate. Hymenial surface odontoid, light greyish to pale bluish-grey. Margin indistinct. Hyphae densely interwoven, cylindrical to slightly torulose, thin- to somewhat thick-walled, 3–4 μm wide. Cystidia of two types: a) lamprocystidia present in the resupinate part, hyaline, not septate, conical, thick-walled, 50–70 × 8–10 μm, the upper part heavily encrusted, projecting; b) septocystidia present in the teeth, hyaline, with several thick septa, cylindrical to slightly fusiform, thick-walled, 60–120 × 6–15 μm, encrusted, projecting. Basidia 8–12 × 3–5 μm. Spores cylindrical to narrowly ellipsoid, 3.5–4 × 2–2.4 μm. On angiosperms.

Distr.: whole area. Ref.: 66, 164.

*S. hydnoides* (Cooke & Massee apud Cooke) Hjortstam & Ryv. 1979

**SCYTINOSTROMA** Donk 1956

Basidiocarp annual or perennial, resupinate, effused, membranaceous to coriaceous. Hymenial surface even or tuberculate, rarely hydroid, whitish, yellowish or brownish. Margin distinct or not, rarely rhizomorphic. Hyphal system dimitic. Skeletal hyphae subhyaline to yellowish, dextrinoid, present in subiculum and hymenium, often once or twice branched in terminal region, dichohyphidium-like. Generative hyphae hyaline, thin-walled, with or without clamps. Gloeocystidia or cystidia present or absent. Basidia single or in small clusters, cylindrical to clavate, often somewhat constricted in the middle, with (2–)4 sterigmata. Spores hyaline, globose to cylindrical, smooth or minutely echinulate, thin-walled, amyloid or not.

Substrate: saprophytic or parasitic on wood of angiosperms and gymnosperms.

Type species: *Corticium portentosum* Berk. & Curt. apud Berk. 1873

Distribution: in the whole area.

References: 321.

1a. Spores amyloid, globose to broadly ellipsoid. 2

1b. Spores not amyloid or only the supra-hilar plage, ellipsoid to clavate. 5

2a. Spores ornamented. Clamps present. Mainly on gymnosperms. 3

2b. Spores smooth. Clamps absent. On angiosperms. 4
Scytinostroma

3a. Spores with ridges, (5.5-)6–8 × 5.5–7 μm. Cf. Vararia effuscata.

3b. Spores globose to broadly ellipsoid, minutely echinulate, 3.5–4.5 × 2.5–3.5 μm.

Basidiocarp effused, soft-membranaceous, separable. Hymenial surface even to tuberululate, rarely hydnoid, cream to pale ochraceous. Skeletal hyphae 1.5–2.5 μm wide. Generative hyphae thin-walled, 2–2.5 μm wide. Gloeocystidia cylindrical to clavate, 60–120 × 5.5–8 μm, projecting up to 70 μm. Basidia 35–45 × 5–5.5 μm. On gymnosperms.

Distr.: N. Am. Ref.: 120, 172, 321.
S. arachnoideum (Peck) Gilberts. 1962
Syn.: Corticum quasitum H.S. Jacks. & Dearden 1949

4a. Ultimate part of skeletal hyphae simple or rarely once branched, branches then very long, not dendroid, almost forming a layer, parallel to and above the hymenium.

Basidiocarp effused, adnate, membranaceous. Hymenial surface even, cream-coloured to pale ochraceous. Skeletal hyphae 1.5–2.5 μm wide, generative hyphae 1.2–3 μm wide. Gloeocystidia scarce or absent, 30–70 × 3–5 μm. Basidia 30–55(–65) × (4–)4.5–6(–7) μm.

Spores globose to broadly ellipsoid, 4.5–6 × 4.5–5.5 μm.

Distr.: whole area. Ref.: 321, 343.
S. portentosum (Berk. & Curt. apud Berk.) Donk 1956
Syn.: Corticum diminuens Berk. & Curt. apud Berk. 1873; C. penetrans Cooke & Masse 1891; C. grammicium P. Henn. 1905; C. aluta Bres. 1908

4b. Ultimate part of skeletal hyphae 2–3 times branched, dicholhyphidium-like, parallel with basidia.

Basidiocarp effused, adnate, membranaceous to coriaceous, Hymenial surface even, cream-coloured to pale ochraceous. Skeletal hyphae 0.8–1.5 μm wide, generative hyphae 1.5–3.5 μm wide.

Gloeocystidia scarce or absent, cylindrical, 30–70 × 3–5 μm.

Basidia 50–55 × (4–)5–5.5(–6) μm. Spores globose to broadly ellipsoid, 5.5–7 × 5–5.8 μm.

S. hemidichophiticum Pouzar 1966

5a. Clamps present. Spores 1.5–3.2 μm wide.

5b. Clamps absent. Spores 3.5–6 μm wide.

6a. Spores subclavate, slightly curved, 11–14 × 2.5–3.2 μm. Basidiocarp thin, up to 50 μm, flesy. Gloeocystidia absent (but see note).

Hymenial surface even, white to cream-coloured. Skeletal hyphae 0.8–2.5 μm wide. Basidia 25–30 × 5–6 μm. On angiosperms and on ferns. Northern distribution.
S. praestans (H.S. Jacks.) Donk 1956

Note: Parmasto (321) reports the species from the USSR, but this may be a distinct species. The basidiocarp is up to 700 μm thick, gloecystidia are present (25–45 × 3–5 μm) and it grows on gymnosperms.

6b. Spores ellipsoid, 3.5–5.5(–7) × (2–)2.3–3(–3.2) μm. Basidiocarp up to 700 μm thick, coriaceous. Gloecystidia abundant, cylindrical to fusoid, 30–120 × 3–6.5 μm.

Hymenial surface even, white to pale ochraceous. Skeletal hyphae 1.5–3.5 μm wide. Basidia (15–)25–40 × (2–)3–5 μm. On angiosperms and gymnosperms.

Distr.: whole area. Ref.: 321, 343, 409.

S. galactinum (Fr.) Donk 1956

Syn.: ?Thelephora alnea Fr. 1821; ?Th. suaveolens Fr. 1828

7a. Spores ellipsoid to broadly navicular, 6.5–9 × 3.5–5 μm. Basidia 20–50 × 3.5–5.5(–6) μm.

Basidiocarp coriaceous, adnate. Hymenial surface even, white to pale ochraceous. Skeletal hyphae 1–3.5 μm wide. Gloecystidia cylindrical to fusoid, 40–100 × 3–8(–10) μm. On angiosperms and gymnosperms.

Distr.: whole area. Ref.: 321, 409.

S. odoratum (Fr.) Donk 1956

7b. Spores ellipsoid, (8–)10–13(–15) × 4.5–6.5(–8) μm. Basidia 30–70 × 6–11 μm.


Distr.: whole area. Ref.: 321, 343, 387.

S. ochroleucum (Bres. & Torrend apud Torrend) Donk 1956

Syn.: Corticium abeuns Burt 1926; C. lentum Wakef. 1952

SCYTONOSTROMELLA Parm. 1968

Basidiocarp annual, resupinate, effused, pellicular, membranaceous to crustaceous. Hymenial surface even, pale coloured. Margin often fimbriate or with hyphal strands. Hyphal system dimitic. Skeletal hyphae sometimes only in the hyphal strands, not dextrinoid. Generative hyphae hyaline, thin-walled, with clamps. Thick-walled encrustated cystidia absent or present, originating from skeletal hyphae. Gloecystidia clavate, cylindrical, fusiform or subulate, hyaline, thin-walled, often with an apical bulb. Basidia clavate, often somewhat constricted in the middle, with (2–)4 sterigmata. Spores hyaline, subglobose to ellipsoid, ornamented, thin-walled, amyloid.

Substrate: saprophytic on wood of gymnosperms.

Type species: Peniophora heterogenea Bourd. & Galz. 1913

Distribution: in the whole area.

References: 318.
Scytinostromella

1a. Cystidia thick-walled, encrusted, narrowly clavate, 45–100 × 5–9(-13) μm, projecting up to 40 μm, originating from skeletal hyphae.
   Distr.: whole area. Ref.: 119, 127, 368.
   S. heterogenea (Bourd. & Galz.) Parm. 1968

1b. Thick-walled encrusted cystidia absent.

2a. Gloeocystidia subulate, thin-walled, 35–60 × 3.5–5 μm.
   Basidiocarp effused, membranaceous, with hyphal strands. Hymenial surface even, whitish to ochraceous. Skeletal hyphae only in the hyphal strands, 2–5.5 μm wide. Generative hyphae 2–5.5 μm wide, with clamps. Basidia 15–25 × 2.5–4 μm. Spores subglobose to broadly ellipsoid, 3–4 × 2–3 μm, warty.
   Distr.: N. Am. Ref.: 119, 249.
   S. humificiens (Burt) Freeman & Petersen 1979

2b. Gloeocystidia clavate to broadly cylindrical, thin-walled, 25–50 × 5–7 (-10) μm, often with apical bulbs.
   Basidiocarp at first arachnoid, then hypochnoid to membranaceous.
   Hymenial surface even, whitish to pale ochraceous. Margin rhizomorphic. Skeletal hyphae 0.5–1.5 μm wide. Generative hyphae 1.5–2.5 μm wide. Basidia 20–25 × 4–5 μm. Spores ovoid to ellipsoid, warty, 4.5–5.5 × 2.5–3.5 μm.
   S. nannfeldtii (J. Erikss.) Freeman & Petersen 1979

SERPULA Pers. ex S.F. Gray 1821

Syn.: Xylomyzon Pers. 1825; Gyrophana Pat. 1897; Xylophagus Link ex Murrill 1903; Meruliporia Murrill 1942

Basidiocarp annual, rarely perennial, resupinate, effused to effused-reflexed, fleshy to ceraceous. Hymenial surface meruloid, poroid or hydnoid, honey yellow to orange brown or dark brown. Subhymenial gelatinous layer often present. Hyphal strands present, consisting of a central core of wide hyphae, surrounded by a sheath of generative and skeletal hyphae. Hyphal system dimitic, skeletal hyphae present in hyphal strands and sometimes in the basal layer. Generative hyphae hyaline to pale brown, thin- to thick-walled, with clamps. Cystidia and sclerotia absent. Basidia single or in small clusters, clavate. Spores yellow to brown, thick-walled, smooth, ovoid to ellipsoid, not amyloid.
Serpula

Substrate: saprophytic on wood of gymnosperms, rarely on angiosperms.
Type species: *Serpula destruens* (Pers.) ex S.F. Gray 1821
Distribution: in the whole area.

References: 71.

1a. Hymenial surface distinctly poroid, 1–3 pores per mm. Distr.: N.-Am.
Basidiocarp effused, up to 10 mm thick, separable. Hymenial surface buff to ochraceous or brownish, becoming dark brown to blackish when dry. Margin white, soft, sometimes with rhizomorphs. Basal hyphae parallel, thin-walled, 3–7(–12) μm. Basidia 20–35 × 7–9 μm. Spores ovoid to ellipsoid, (8–)9–13(–16) × (4–)5–7.5(–8.5) μm. On gymnosperms, often on timber.
Ref.: 139, 269.
*S. incrassata* (Berk. & Curt. apud Berk.) Donk 1948
Syn.: *Polyporus pineus* Peck 1888; *Poria atrospera* Ames 1913

1b. Hymenial surface typically merulloid, rarely irregularly poroid or hydnoid. Distr.: whole area.

2a. Basidiocarp 2–10 mm thick, with thickened margin. Development of surface mycelium between the hyphal strands vigorous. Gelatinous subhymenial layer typically thick, sharply delimited from the basal layer, filling up the folds completely. Skeletoid hyphae in hyphal strands in average 4.1 μm wide.
Hymenial surface merulloid to irregularly poroid or sometimes irpicoid, honey yellow to dark brown; margin white to yellowish. Basal layer consisting of parallel hyphae which often are skeletoid. Hyphae 2–9 μm wide. Basidia 30–40 × 7–10 μm. Spores ovoid to ellipsoid, (8–)9–12(–12.5) × 4.5–7(–8) μm. Mainly on timber, but also in forests.
Distr.: whole area. Ref.: 71, 153.
*S. lacrimans* (Wulf. apud Jacq. ex Fr.) Schroet. 1888
Syn.: *Serpula destruens* (Pers.) ex S.F. Gray 1821; *Merulius vastator* Tode ex Fr. 1821; *M. guilemonntii* Boud. 1894; *M. domesticus* Falck apud Moller 1912; *M. terrestris* (Peck) Burt 1917

2b. Basidiocarp up to 2 mm thick with thin margin. Development of surface mycelium between the hyphal strands scanty or absent. Gelatinous subhymenial layer typically poorly developed, not filling up the folds completely. Skeletoid hyphae in hyphal strands in average 2.6 μm wide.
Hymenial surface merulloid to poroid, greyish yellow to orange, cinnamon, olive or dark brown; margin whitish. Basal layer typically without skeletoid hyphae. Hyphae 2–8 μm wide. Basidia 25–45 × 6–9 μm. Spores ovoid to ellipsoid, (7–)8–12 × 4.5–7(–8) μm. On gymnosperms.
Distr.: whole area. Ref.: 71, 153.
*S. himantoides* (Fr.) P. Karst. 1889
Syn.: *Merulius brassicaefolius* Schw. 1822; *Xylomyzon versicolor*
Serpula

Pers. 1825; *M. papyrinus* Fr. 1828; *M. squalidus* Fr. 1828; *M. umbrinus* Fr. 1828; *M. tenuis* Peck 1894; *M. silvester* Falck apud Möller 1912; *M. americanus* Burt 1917; *M. gelatinosus* Lloyd 1922

**SISTOTREMA** Fr. 1821

Syn.: *Hydnotrema* Link 1833; *Heptasporium* Bref. 1908; *Urnobasidium* Parm. 1968

Incl.: *Galziniella* Parm. 1968

Basidiocarp annual, resupinate, effused, rarely pileate, arachnoid, pellicular, submembranaceous or ceraceous, separable. Hymenial surface even, grandinoid or poroid, whitish to cream-colour or greyish. Hyphal system monomitic. Hyphae hyaline or rarely basally brownish, thin- to slightly thick-walled, often ampullate at the septa, typically with clamps. Cystidia or gloeocystidia sometimes present. Basidia in clusters, urniform with 2–4–8 sterigmata. Spores hyaline, thin-walled, smooth, subglobose to ellipsoid or cylindrical, not amyloid.

Substrate: saprophytic on humus or bark and wood of angiosperms and gymnosperms.

Type species: *Sistotrema confluens* (Pers.) ex Fr. 1821

Distribution: in the whole area.

References: 66.

1a. Basidia with 2–4 sterigmata. 2
1b. Basidia with (5–)6–8 sterigmata. 6
2a. Cystidia or gloeocystidia present. 3
2b. Cystidia and gloeocystidia absent. 4

3a. Spores narrowly ellipsoid to cylindrical, 5.5–7 × 2.4–3 μm. Gloeocystidia subcylindrical to slightly fusoid, with yellow refractive contents, 50–100 × 5–7 μm, emerging.


   Distr.: Eur., USSR. Ref.: 66.

   *S. sernanderi* (Litsch.) Donk 1956

3b. Spores cylindrical, 7–10 × 2.5–3.5 μm. Cystidia flexuous cylindrical, thin-walled, 30–75 × 4.5–6.5 μm.

   Basidiocarp effused, thin-ceraceous, up to 175 μm thick. Hymenial surface even, whitish to slightly greyish. Hyphae 2.5–5 μm wide. Basidia utriform to urniform, 10–15(–25) × 3–5 μm, with 1–2(–4) sterigmata up to 9 μm long.

   Distr.: USSR. Ref.: 318.

   *Galziniella pereximia* Parm. 1968
4a. Spores cylindrical, curved, often somewhat constricted in the middle, 6–9(–11) × 2–4 μm. Basidia with 2(–4) sterigmata.
   Basidiocarp effused, hypوقف. Hymenial surface white to cream-colored or greyish, with faint lilaceous tinge when fresh, somewhat mealy. Hyphae 2.5–5 μm wide. Basidia uniform, 13–25 × 4–6(–6.5) μm.
   Distr.: Eur.
   S. hirschi (Donk) Donk 1956


5a. Spores ellipsoid, 8–10.5 × 5.5–6 μm.
   Basidiocarp pruinose to cereum, up to 70 μm thick. Hymenial surface even to minutely reticulate, white. Hyphae 3.5–4.5 μm wide. Basidia uniform, 20–25 × 7–8.5 μm, 5.5 μm wide in the middle part, with 2(–4) sterigmata up to 8.5 μm long.
   Distr.: N. Am.  Ref.: 171.
   S. exima (H.S. Jacks.) Ryv. & Solheim 1977

5b. Spores ellipsoid, 10–14(–16) × 5.5–8 μm.
   Basidiocarp pruinose to arachnoid, up to 100 μm thick. Hymenial surface minutely reticulate, white. Hyphae 3.5–6 μm wide. Basidia uniform, 30–50 × 5–7 μm, with 2 sterigmata up to 7 μm long. On angiosperms.
   S. autumnalis Ryv. & Solheim 1977

6a. Spores tetrahedral, triangular in outline, 4.5–5 × 3–4 μm.
   Basidiocarp pruinose, cereum when fresh, thin. Hymenial surface even, greyish white to white. Hyphae irregular, 3–5(–8) μm wide, with clamps. Basidia 12–18 × 4–6 μm, typically with 6 sterigmata.
   On angiosperms.
   S. subtrigonospermum D. P. Rogers 1935

6b. Spores subglobose to cylindrical, even or nearly even in outline.

7a. Spores subglobose, ovoid or broadly ellipsoid.

7b. Spores ellipsoid, narrowly pyriform or cylindrical.

8a. Hymenial surface even.

8b. Hymenial surface hydroid or poroid.

9a. Cystidia hyaline, capitate, thin-walled, 25–60 × 2–4 μm, apex 4.5–6 μm wide.
   S. pistilliferum Hauerslev 1975
Sistotrema

9b. Cystidia absent.

10a. Clamps absent.

   Basidiocarp adnate, thin-ceraceous. Hymenial surface even, yellow.
   Hyphae 2–3 μm wide. Basidia urniform, 20–25 × 5 μm, with 6(–8)
   sterigmata. Spores subglobose to subangular, 4–5 μm in diam. or
   5–6 × 3.5–4 μm.
   S. subangulisporum K.-H. Larsson & Hjortstam apud Hjortstam &
   K.-H. Larsson 1977

10b. Clamps present.

   Basidiocarp adnate, pruinose to ceraceous, horny when dry. Hyme-
   nial surface even, whitish to greyish yellow. Hyphae 1.5–5.5 μm
   wide. Basidia urniform, 9–28(–31) × 4.5–8(–9) μm, with 6–8
   sterigmata. Spores subglobose, ovoid or broadly ellipsoid, 3–5
   (–6) × 2–4(–5) μm.
   S. diademiferum (Bourd. & Galz.) Donk 1956

11a. Spores subglobose to broadly ovoid, 3–4.5(–5.5) × 2.3–3.5 μm.

   Hymenial surface hydnoid to poroid, white to cream, finally becom-
   ing yellowish to ochraceous.

   Basidiocarp pellicular to membranaceous. Hyphae 2–4.5 μm wide,
   often inflated (up to 10 μm). Basidia urniform, 14–24 × 4–6(–8)
   μm, with 4(–5)–7(–8) sterigmata.
   S. muscicola (Pers.) Lundell apud Lundell & Nannf. 1947
   Syn.: Poria albo-pallescens Bourd. & Galz. 1925

11b. Spores globose to subglobose, 4.5–7 × 4–6 μm. Hymenial surface

   poroid, at first whitish to cream, becoming sulphur yellow to golden
   yellow.

   Basidiocarp soft membranaceous. Hyphae with thin or slightly
   thickened walls, 2–6.5 μm wide, often inflated at the septa. Basidia
   urniform, 14–22 × 6–9(–10) μm.
   Distr.: Eur.
   S. eluctor Donk 1967
   Syn.: Trechispora onusta sensu Eres., non ~ P. Karst. 1890; Poria
   albo-lutea Bourd. & Galz. 1925

12a. Gloeocystidia subcylindrical to fusoid, usually flexuous, with yellowish

   contents, 20–100 × 4.5–9.5 μm. Spores narrowly ellipsoid to sub-
   cylindrical, 4.5–6.5 × 1.8–3 μm, often slightly curved.

   Basidiocarp thin, granulose to membranaceous. Hymenial surface
   even, white. Hyphae 2–5 μm wide, often ampullate and up to 9.5 μm
   wide, sometimes filled with yellowish resinous material, with clamps.
   Basidia urniform, 10–28 × 4–7 μm, with 6–8 sterigmata.
   S. coroniferum (Höhn. & Litsch.) Donk 1956
12b. Gloecystidia or cystidia absent.

13a. Spores at least 6.5 μm long.

13b. Spores up to 6.5 μm long.


S. pyrosporum Hauerslev 1975

14b. Clamps present. Spores up to 8.5 μm long.

15a. Hymenial surface raduloid to hydnoid, cream-coloured to buff, spines sometimes darker.

   Basidiocarp byssoid to membranaceous. Hyphae 2.5–5 μm wide, often inflated and up to 7.5 μm wide, thin- or slightly thick-walled, sometimes with yellowish granular contents. Basidia urniform, 12.5–27.5 × 5–8 μm, with (6–)8 sterigmata. Spores subcylindrical to fusoid, (6–)6.5–8.5 × 2.5–3.5 μm, with slightly thickened walls.

Distr.: whole area. Ref.: 355.
S. raduloides (P. Karst.) Donk 1956
Syn.: Hydnium populinum Peck 1900

15b. Hymenial surface even.

16a. Branched thin hyphal strands present in subiculum. Spores narrowly pyriform to subcylindrical, 6.5–8 × 3–4.2 μm.


S. subpyriforme M.P. Christ. 1960

16b. Hyphal strands absent. Spores subcylindrical, 5.5–7.5 × (2.5–)2.7–3.2 μm.

   Basidiocarp hypnchnoid-pruinose. Hymenial surface even, farinaceous, whitish to greyish. Hyphae 3.5–6 μm wide, ampullate, with clamps. Basidia urniform, 10–16 × 6–8 μm, typically with 6 sterigmata.

Distr.: USSR. Ref.: 315.
S. estonicum Parm. 1965

17a. Subicular hyphae hyaline or brownish, 5–7(–10) μm wide, not inflated, slightly thick-walled, with or without clamps. Spores narrowly ovoid to narrowly ellipsoid, 4–6 × 2–3.2 μm.

17b. Subicular hyphae hyaline, often with inflations, thin-walled, with clamps. Spores ellipsoid to cylindrical.
Sistotrema

S. heteronemum (J. Erikss.) Strid 1975

18b. Subicular hyphae hyaline, up to 7 µm wide, with or without clamps. Basidiocarp arachnoid to membranaceous. Hymenial surface even or somewhat tuberculate, whitish. Hyphal strands sometimes present, inconspicuous. Subhymenial hyphae hyaline, 3–5 µm wide. Basidia urniform, 18–25(–30) × 5–7 µm. Spores narrowly ovoid, obliquely tapering toward the base, 4–6 × 2–3.2 µm.
S. commune J. Erikss. 1949
Syn.: Corticium muscicola Bres. 1903, non Sistotrema muscicola (Pers.) Lundell 1947

Note: The typical form has clamps at all septa. Eriksson (1949), however, distinguished a fo. esculentum, which is devoid of clamps and has slightly larger spores (4.5–6 × 2.5–3.2 vs 4–5.5 × 2–2.5 µm).

19a. Spores at least 5.5 µm long. Hymenial surface even.

19b. Spores up to 5.5 µm long. Hymenial surface even, grandinoid or poroid.

20a. Spores subcylindrical, 5.5–7.5 × (2.5–)2.7–3.5 µm. Hymenial surface even, whitish to greyish. S. estonicum, see 16b.
20b. Spores narrowly ellipsoid to subcylindrical, 5.5–6.5(–7) × 1.8–2.5 µm. Hymenial surface even, yellowish grey. Basidiocarp hypochnoid, pulverulent. Hyphae 3.5–6.5(–7) µm wide, often ampullate, with clamps. Basidia urniform, 15–20 × 5.5–7 µm, usually with 6 sterigmata.
Distr.: USSR. Ref.: 313.
S. camshadalicum Parm. 1965

21a. Spores subcylindrical to cylindrical, often curved, 4.5–5.5 × 1.5–1.8 µm. Basidia urniform, 12–15 × 4–5 µm, with 6–8 sterigmata.
Basidiocarp pruinose to ceraceous. Hymenial surface even to somewhat reticulate, greyish white. Hyphae 2.5–4 µm wide, with clamps.
S. oblongisporum M.P. Christ. & Hauerslev apud M.P. Christ. 1960

21b. Spores at least 2 µm broad. Basidia 5–7.5 µm wide.

22a. Spores narrowly ellipsoid to subcylindrical, often somewhat curved, 3.5–5.5 × 2–2.5 µm. Basidiocarp effused, submembranaceous to ceraceous.
Hymenial surface even to warted, whitish, greyish or slightly yellowish. Hyphae 4–7 µm wide, often ampullate, with clamps.
Basidia urniform, 10–24 × 5–7(–8) μm, with 6–8 sterigmata.
S. brinkmannii (Bres.) J. Erikss. 1948
Anamorph: ?Phymatotrichum omnivorum (Shear) Duggar 1916
Syn.: Corticium coronilla Höhn. apud Höhn. & Litsch. 1906; C. octosporum Schröt. ex Höhn. & Litsch. 1906; ?Heptosporium gracile Bref. 1912; C. variants Kniep 1915; C. cotonii Burgeff 1936; C. masculi Sprau 1937
22b. Spores ellipsoid, 4–4.5 × 2–2.5 μm. Basidiocarp more or less excentrically stalked, membraneous to ceraceous; pilei rarely circular, usually flabellate and coalescent.
Hymenial surface grandinoid to poroid, whitish to yellowish.
Hyphae 2–5 μm wide, often inflated up to 10 μm, with clamps.
Basidia urniform, 12–22 × (4.5–)6–7.5 μm, with (2–)4–6(–8) sterigmata.
Distr.: Eur., USSR. Ref.: 271.
S. confluenus Pers. ex Fr. 1821
Syn.: Hydnum subslamellosum Bull. ex St. Amans 1821; Sistotrema membranaceum Oudemans 1879; Irpex anomalous Wettstein 1887

SISTOTREMASTRUM J. Erikss. 1958
Basidiocarp annual, resupinate, effused, membraneous to ceraceous. Hymenial surface even to reticulate. Hyphal system monomitic. Hyphae hyaline, thin-walled, typically distinct, with clamps. Basidia in clusters, narrowly clavate, with 6–8 sterigmata. Spores hyaline, thin-walled, smooth, narrowly ellipsoid to cylindrical, not amyloid.
Substrate: saprophytic on wood of gymnosperms.
Type species: Sistotremastrum suecicum Litsch. ex J. Erikss. 1958
Distribution: in the whole area.
References: 105.

Monotypic. Basidiocarp effused, closely adnate, membraneous to ceraceous. Hymenial surface even to minutely reticulate, cream to whitish; margin concolourous. Hyphae hyaline, thin-walled, 2–5 μm wide, with clamps. Basidia subclavate to cylindrical, 14–20 × 4–5 μm. Spores hyaline, narrowly ellipsoid to short-cylindrical, sometimes slightly curved, 4.5–6.5 × (1.5–)2–3 μm.
Distr.: whole area. Ref.: 66, 303.
S. suecicum Litsch. ex J. Erikss. 1958

SPHAEROBASIDIUM Oberw. 1965
Basidiocarp annual, resupinate, effused, very thin, pruinose. Hymenial surface
Sphaerobasidium

even, whitish to greyish. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps. Cystidia when present hyaline, capitate, thin-walled. Basidia single, globose to subglobose or ovoid, with 4 sterigmata. Spores hyaline, ellipsoid, subcylindrical or navicular, smooth, thin-walled, not amyloid.

Substrate: saprophytic, mainly on gymnosperms.
Type species: Xenasma minutum J. Erikss. 1958
Distribution: Europe, North America.
References: 303.

1a. Cystidia present, terminal or directly on basal hyphae, 20–25(–35) × 4–5 μm, capitate, basally swollen. Spores ellipsoid, 3.5–5.5 × 2.5–3.5 μm.
Basidiocarp subinvisble, one layer of horizontal hyphae. Hymenial surface even, whitish to greyish. Hyphae 1–2 μm wide. Basidia globose to subglobose, 7–8 × 5–7 μm.
Distr.: Eur., N. Am. Ref.: 244, 303.
S. minutum (J. Erikss.) Oberw. 1965

1b. Cystidia absent. Spores subcylindrical to navicular, 5.5–6.5(–7) × 2.5–3 μm.
Basidiocarp subinvisble, up to 30 μm thick. Hymenial surface even, whitish. Hyphae 2–4 μm wide. Basidia globose to ovoid, 7–8.5 × 4.5–6.5(–7) μm.
Distr.: N. Am. Ref.: 248.
S. subinvisibile Liberta 1966

STECCHERICUM D. Reid 1963


Substrate: saprophytic on wood of angiosperms.
Type species: Steccherinum fistulatum G.H. Cunn. 1958
Distribution: North America (mainly subtropical).
References: 229.

Basidiocarpus often gregarious, coriaceous. Abhymenial surface velutinous to fibrillose, becoming wrinkled, zoned or shiny, pale ochraceous to fawn coloured. Hymenial surface hydnoid, spines subulate, up to 2.5 mm long. Hyphae 2.5–5.5 μm wide, thin- to thick-walled, sometimes nearly solid. Gloeoplerous hyphae 3.5–5.5 μm wide, thin- to thick-walled. Gloeocystidia 3.5–8 μm wide. Basidia 18–30 ×
4–4.5 μm. Spores thin- to firm-walled, finely warted, ellipsoid, 2.5–3.5 × 1.8–2.5 μm.

Distr.: N. Am.  Ref.: 229.

S. seriatum (Lloyd) Maas G. 1966
Syn.: Steccerinum westii Murr. 1940; S. fistsulatum G.H. Cunn. 1958

**STECCERINUM** S.F. Gray 1821

Syn.: *Odontia* Fr. 1835; *Leptodon* Qué. 1886; *Odontina* Pat. 1887; *Mycoleptodon* Pat. 1897; *Ethirodon* Banker 1902

Basidiocarp annual, effused, effused-reflexed or pileate. Abhymenial surface tomentose to velutinous, sometimes becoming glabrous, whitish to brown. Hymenial surface covered with spines, cream-coloured to pinkish, reddish or brownish. Hyphal system dimitic. Generative hyphae hyaline, in most species with clamps. Skeletal hyphae hyaline, thick-walled. Cystidia thick-walled, usually encrusted, originating from subiculum or hymenium. Gloeocystidia sometimes present. Basidia in small clusters, clavate to cylindrical, 4-spored. Spores globose to ellipsoid, hyaline, thin-walled, smooth, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.

Distribution: in the whole area.

Type species: *Hydnium ochraceum* Pers. apud Gmelin ex Fr. 1821

References: 276.

1a. Clamps present.

2. Clamps absent.

1b. Basidiocarp effused, margin fimbriate, hyphal strands often present. Hymenial surface pinkish buff to cinnamon, with up to 1 mm long teeth. Generative hyphae 2–4(–6) μm wide. Skeletal hyphae 2–5 μm wide. Cystidia 8–10 μm wide, encrusted. Basidia 15–20 × 5–8 μm.

Spores ellipsoid, 2.5–4 × 2–3 μm. On gymnosperms and angiosperms.


S. suberinae (Peck) Ryv. 1978
Syn.: *Mycoleptodon kavinae* Pilát 1936

2a. Spores at least on average longer than 4.5 μm, narrowly ellipsoid to (sub-)cylindrical (length : width ≥ 2).

3. Spores up to 4.5 μm long, often smaller, ovoid to narrowly ellipsoid (length : width ≤ 2).

5a. Hymenial surface salmon to reddish when fresh, becoming ochraceous when dry, rarely irpicoid-poroid at the margin.

Basidiocarp effused, sometimes effused-reflexed. Margin fimbriate, white. Spines up to 3.5 mm long. Generative hyphae 2.5–4(–5.5) μm wide. Skeletal hyphae 3.5–7.2 μm wide. Cystidia 4–14(–18) μm
Steccherinum

Distr.: whole area. Ref.: 276.

S. laeticolor (Berk. & Curt. apud Berk.) Banker 1912

3b. Hymenial surface white to cream-coloured, typically poroid at the margin.

   Distr.: N. Am. Ref.: 254.

S. oreophilum Gilberts. 1977

4b. Spores ellipsoid to cylindrical, 4.5–5.5 × 1.8–2.7 μm. Basidiocarp effused. Margin fimbriate, sometimes forming strands.
   Generative hyphae 1.8–5.5 μm wide. Skeletal hyphae 2.7–5.5 μm wide. Cystidia obtuse or acute, 3.5–8 μm wide. Basidia 18–22 × 4–6 μm. On angiosperms and gymnosperms.
   Distr.: whole area. Ref.: 124, 276.

S. cilillatum (Berk. & Curt.) Gilberts. & Budington 1970
Syn.: Mycoleptodon lischiageri Bourd. & Galz. 1928

5a. Basidiocarp effused

5b. Basidiocarp effused-reflexed to pileate

6a. Margin fimbriate, forming strands. Spines up to 0.5 mm long, often wart-like. Hymenial surface yellowish to pinkish grey, often locally purplish or violaceous.
   Generative hyphae 2.5–4.5 μm wide. Skeletal hyphae 3.5–5.5 μm wide. Cystidia 3–9 μm wide, most abundant near apex of spines. Spores ovoid to ellipsoid, 3.3–4 × 2.5–3 μm. On angiosperms and gymnosperms.
   Distr.: whole area. Ref.: 276.

S. fimbriatum (Pers. ex Fr.) J. Erikss. 1958

6b. Margin even to somewhat fimbriate, never with strands. Spines at least 0.5 mm long. Hymenial surface never purplish or violaceous.

7a. Margin indistinct to evanescent.
Distr.: USSR. Ref.: 276.

S. narymicum (Pilát) Parm. 1968

7b. Margin distinct, velutinous. S. ochraceum, see 10b

8a. Spores subglobose to ovoid, 3.5–4.5 × 3–3.5 μm.

Basidiocarp pileate, flabelliform. Spines up to 0.5 mm long, subulate to flattened. Hymenial surface yellowish to flesh colour. Generative hyphae 3.5–4.6 μm wide. Skeletal hyphae 3.5–8 μm wide. Cystidia 4.5–7.5 μm wide, encrusted. Basidia 15–20 × 4.5–5.5 μm.

Distr.: N. Am. Ref.: 276.

S. basi-badium Banker 1912

8b. Spores narrowly ovoid to ellipsoid, up to 3 μm broad.

9a. Abhymenial surface white to ochraceous, near the base covered with concentrically arranged orange-brown pustules. Two types of cystidia.

Basidiocarp effused-reflexed to flabelliform. Spines up to 7 mm long. Hymenial surface pale ochraceous to brownish flesh-colour. Generative hyphae 2.7–3.6 μm wide. Skeletal hyphae 2.7–6.3 μm wide. Tramal cystidia 2.5–5 μm wide, thick-walled, encrusted. Sub-hymenial cystidia 18–40 × 2.4–7 μm, typically thin-walled, smooth, variously shaped. Basidia 11–16 × 4.5–5.5 μm. Spores 3–3.5 × 1.8–2 μm. On angiosperms.

Distr.: N. Am. Ref.: 276.

S. subravakense Murrill 1940

9b. Abhymenial surface without orange-brown pustules. Cystidia of one kind.

10a. Spines 4–5 mm long, reddish brown to dark brown.


Distr.: USSR. Ref.: 276.

S. murashkinskyi (Burt) Maas G. 1962

10b. Spines up to 3 mm long, cream to ochraceous, sometimes pale orange.

Basidiocarp effused, effused-reflexed or pileate, often flabelliform. Abhymenial surface generally velutinous to tomentose, sometimes becoming glabrous or concentrically zoned. Generative hyphae 1.8–4.5 μm wide. Skeletal hyphae 1.8–9 μm wide. Cystidia 4–10 μm wide, encrusted, abundant to scarce. Spores (3–)3.5–4.5(–4.7) × (1.6–)1.8–2.5(–2.7) μm. On angiosperms and gymnosperms.

Distr.: whole area. Ref.: 276.

S. ochraceum (Pers. apud Gmelin ex Fr.) S.F. Gray 1821

Syn.: Hydnum microdon Pers. ex Fr. 1821; H. rhois Schw. 1822; H. denticulatum Pers. 1825; H. dichrous Pers. 1825; H.
Steccherinum

pudorinum Fr. 1828; H. flabelliforme Berk. 1845; H. decurrens Berk. & Curt. 1868; H. plumarum Berk. & Curt. apud Berk. 1873; H. alnicola Velen. 1922; H. reflexum Burt 1931; Mycoleptodon gracillus Pilát 1938; Steccherinum resupinatum G.H. Cunn. 1958

Note: S. peckii Banker 1912 is recognized as a distinct species by Maas Geestanus (232), mainly differing by the presence of numerous concentric dark brown lines on the abhymenial surface.

STEREUM Pers. ex S.F. Gray 1821

Syn.: Auricularia Fr. 1825; Haematostereum Pouzar 1959

Basidiocarp annual or perennial, resupinate, effused-reflexed or flabelliform, coriaceous to coryx. Hymenial surface even, sometimes tuberculate or undulate, sometimes bleeding when damaged. Hyphal system typically dimitic. Hyphae thin- to thick-walled, without clamps. Cystidia usually present, originating from skeletal (or skeletonoid) hyphae, with thickened to thick walls, sometimes with yellowish, reddish or brownish contents (conducting hyphae), not projecting. Cystidioles and acanthophyidia often present, not emerging. Basidia subclavate to cylindrical. Spores hyaline, thin-walled, smooth, narrowly ellipsoid to cylindrical, amyloid.

Substrate: saprophytic or parasitic on wood of angiosperms or gymnosperms.

Type species: Thelephora hirsuta Willd. ex Fr. 1821

Distribution: in the whole area.

References: 10, 182, 403.

Note: The species concept within Stereum is difficult by the lack of stable combinations of characters. The shape of the basidiocarp, the type of the tomentum, the presence of acanthophyidia and conducting hyphae are all variable. The homothallism and nuclear behaviour of the species also suggest possible wide variation. For these reasons Welden (403) recognizes only S. rugosum, S. sanguinolentum, S. striatum-complex, S. hirsutum-complex and S. ostrea-complex.

1a. Tomentum of reflected part composed of long white hairs, appressed or not. Basidiocarp cup-shaped to effused-reflexed, up to 400 μm thick, exclusive of tomentum. Conducting hyphae and acanthophyidia absent. H. striatum-complex. 2

1b. Reflected part absent or tomentum not composed of long white hairs. Basidiocarp usually thicker. Conducting hyphae and acanthophyidia may be present. 3

Distr.: N. Am.    Ref.: 234.
S. striatum (Fr.) Fr. 1838 non S. striatum (Schrad.) ex Fr. 1838.
Syn.: Thelephora sericeum Schw. 1822

2b. Hairs loose, silky-hirsute, predominantly pointing toward the margin. On various woods of angiosperms.
Basidiocarp cup-shaped or effused-reflexed. Abhymenial layer whitish to grey, more rarely with ochraceous or brownish tinge. Hymenial surface cream-buff to pale orange-yellow. Skeletal hyphae 4–7 μm wide, generative hyphae 1.5–4 μm wide. Basidia approximately 27 × 4.5–5 μm. Spores cylindrical, 5.5–9 × 1.5–2.5(–3) μm.
Distr.: whole area.    Ref.: 182, 234.
S. ochraceo-flavum (Schw.) Ellis 1878
Syn.: Thelephora ramealis (Pers. ex Fr.) Schw. 1822 (= Stereum rameale (Pers. ex Fr.) Burt 1920 non (Berk.) Masse 1890;
Stereum sulphuraturn Berk. & Rav. apud Berk. & Curt. 1868;
S. ochroleucum Bres. 1903

3a. Spores on average larger than 8 × 3 μm. Conducting hyphae always present; hymenium usually bleeding when damaged.  4
3b. Spores at least on average smaller than 8 × 3 μm. Conducting hyphae usually absent.  6

4a. On wood of gymnosperms.
Basidiocarp effused or effused-reflexed, up to 600 μm thick. Abhymenial surface felt to strigose-hirsute, cinnamon buff to greyish brown. Hymenial surface even or tuberculate, pale brown to brown, often with greyish violaceous tinge, abundantly bleeding when damaged. Skeletal hyphae 3–6 μm wide, generative hyphae 2–3.5 μm wide. Acanthohyphidia present or not. Basidia 20–45 × 4–8.5 μm. Spores (6)–8–14 × (2)–2.5–3.5(–5) μm. Sometimes wound-parasite.
Distr.: whole area.    Ref.: 182, 234, 367.
S. sanguino lentum (Alb. & Schw. ex Fr.) Fr. 1838
Syn.: S. balsameum Peck 1875; S. rigens (P. Karst.) Masse 1882; S. crispum Quéll. 1891
Note: Acanthohyphidia are mentioned in descriptions of American specimens, never in those of European ones.

4b. On angiospermy wood, very rarely on gymnosperms.  5

5a. Basidiocarp effused, rarely with glabrous or short-feltly, brown to dark brown corky-woody effused parts. Often perennial.
Basidiocarp up to 3.5 mm thick. Hymenial surface even, tuberculate or undulate, yellowish to ochraceous, sometimes greyish. Up to 20 hymenium layers may be present. Skeletal hyphae 4.5–7 μm wide, generative hyphae 2–5 μm wide. Acanthohyphidia sometimes present. Basidia 20–50 × 3–6 μm. Spores cylindrical, (6)–7–12 × (2.7–)3–4.5 μm.
Stereum

S. rugosum (Pers. ex Fr.) Fr. 1838
Syn.: S. avellanum Fr. 1838; Corticium boltoni Fr. 1838; Thelephora juniperina Weinmann 1836; Th. laurocerasi Berk. 1836
5b. Basidiocarp effused-reflexed, reflexed part felty, yellowish brown to rust brown, coriaceous. Hymenium even, brownish, never yellowish. S. gausapatum, see 11a.

6a. On gymnospermous wood, bleeding when damaged. Spores 5–8.5 × 2–3.5 μm. Small-spored form of S. sanguinolentum, see 4a.
6b. On angiospermous wood, rarely on gymnospermous wood and then not bleeding. 7

7a. Acanthohyphidia absent. S. hirsutum-complex. Key to the form-species. 8
7b. Acanthohyphidia present. S. ostrea-complex. Key to the form-species. 13

8a. Hymenium bleeding yellow when damaged. 9
8b. Hymenium not bleeding yellow, or when it does, the colour changing rapidly to red. 10

9a. Basidiocarp effused or slightly reflexed, up to 800 μm thick. Distr.: N. Am.

Abhymnial surface pinkish buff to cinnamon brown when dry. Hymenial surface even, pruinose, pinkish buff. Conducting hyphae pale, 3–3.5 μm wide. Cystidia absent. Spores cylindrical, slightly curved, 5–8 × 2.5–3 μm.
Ref.: 58.
S. styricafillum (Schw.) Fr. 1838

9b. Basidiocarp effused-reflexed to stipitate, 200–600 μm thick, more when perennial. Distr.: Eur.

Abhymenial surface ochraceous to bright rusty brown, later paler. Hymenial surface yellowish to pinkish buff, often with greyish tinge. Cystidia and conducting hyphae present. Spores cylindrical, 5.5–7 × 2.2–3 μm.
Ref.: 182, 338.
S. subtomentosum Pouzar 1964

10a. Basidiocarp rather thick, 500–1500 μm, sometimes more. 11
10b. Basidiocarp thinner, 300–500(–850) μm. 12

11a. Hymenium bleeding when damaged, never with yellowish tinge.

Basidiocarp effused-reflexed, more or less radially plicate. Abhymenial surface pubescent to hirsute, sometimes strigose, yellowish brown to brown. Hymenium even, pinkish buff to brown. Conducting hyphae thin-walled, abundant. Spores narrowly ellipsoid to cylindrical, 6–10 × 3.5–4.5 or 5–7.5(–8.5) × 2–3 μm.
Distr.: whole area.  Ref.: 182, 234, 367.
S. gausapatum (Fr.) Fr. 1874
Syn.: *Auricularia tabacina* Pers. 1822; *Thelephora spadicea* Fr. 1828, non ~ Pers. ex Fr. 1821, nec ~ Bres. apud Höhn. 1907; *S. cristulatum* Quéll. 1875; *S. aurantiacum* (P. Karst.) Britz. 1896, non ~ (Berk.) Fr. 1849, nec ~ (Pers. apud Gaud.) Lloyd 1913; *S. plicatum* (Peck) Lloyd 1922; *S. quercinum* M.C. Potter 1902; *S. occidentale* Lloyd 1919; *S. lacunosum* Velen. 1922

Note: The dimensions of the spores as given by European authors are always larger than those given by American authors.

11b. Hymenium very rarely bleeding when damaged, at least at the margin with yellowish tinge.

Basidiocarp typically effused-reflexed, rarely effused, margin often radiately plicate. Abhymenial surface hirsute to strigose, yellowish brown to rust brown, margin often orange-yellow. Hymenial surface even, yellowish to orange-yellow to cinnamon-buff, often with greyish tinge. Conducting hyphae sometimes present. Spores cylindrical, 5–8 × 2–3.5 μm.

Distr.: whole area. Ref.: 182, 234, 367.

*S. hirsutum* (Willd. ex Fr.) S.F. Gray 1821

Syn.: *Thelephora concentrica* Alb. & Schw. ex Fr. 1821; *T. ochracea* Schw. 1822, non ~ Fr. 1821; *T. subzonata* Fr. 1828; *T. rhinophilus* Lév. 1846; *S. amoenum* Kalchbr. & McOwan 1881, non ~ (Lév.) Sacc. 1888; *S. kalcbrenneri* Sacc. 1888; *S. personianum* Britz. 1897; *S. variicolor* Lloyd 1914; *S. reflexum* Sacc. 1916; *Corticium reisneri* Velen. 1922; *S. neuwirthi* Velen. 1922; *S. azonum* Velen. 1922; *S. cinericum* Lloyd 1922; *S. ochroleucum* Velen. 1922, non ~ (Fr.) Fr. 1863, nec ~ Bres. 1903; *S. ochraceum* Lloyd 1923

12a. Conducting hyphae absent.

12b. Conducting hyphae present.

Basidiocarp effused-reflexed to flabelliform, reflexed part radiately plicate. Abhymenial surface strigiform, cinnamon-buff to orange-brown, sometimes greyish. Hymenial surface even, cream-buff to cinnamon-buff to orange. Spores cylindrical, often slightly curved, 5–6.5 × 2–2.5 μm.

Distr.: N. Am. Ref.: 234.

*S. complicatum* (Fr.) Fr. 1838

Syn.: *Thelephora lobata* Bertoloni 1856, non ~ Kuntze ex Fr. 1830; *S. bertoloni* Sacc. 1895

13a. Tomentum formed of repent radiating fibrils, hirsute. Hymenium pale orange-brown to ochraceous brown with salmon tinge. Acanthohyphidia thin- to somewhat thick-walled.

Basidiocarp effused or with reflexed margin, approximately 370 μm thick. Abhymenial surface grey to ochraceous-buff. Hymenium
Stereum

tuberculate, cracked into minute areolae. Skeletal hyphae 3–5 μm wide, generative hyphae 2.5–4 μm wide. Thick-walled cystidia and conducting hyphae present. Spores narrowly ellipsoid to cylindrical, 4.5–7 × (2.2–)2.5–3 μm.
S. reflexulum D. Reid 1968

13b. Tomentum tomentose-feltly. Hymenial surface even, light ochraceous buff, pinkish buff to light brown or drab to greyish. Acanthohyphidia thin-walled.
Basidiocarp effused-reflexed to flabelliform or stipitate, 300–800 (–1000) μm thick. Abhyemenal surface light buff to rusty brown, or drab to greyish. Hymenial surface even, often undulate. Hymenium when damaged bleeding or not, “blood” may be red or yellow turning red. Skeletal hyphae 4–6 μm wide, generative hyphae 2–3 μm wide. Thick-walled cystidia always, conducting hyphae sometimes present. Spores narrowly ellipsoid to cylindrical, 4–7(–8) × 2–3 (–3.5) μm.
Distr.: whole area. Ref.: 182, 234, 350, 381.
S. ostrea (Blume & Nees) Fr. 1838
Syn.: Thelephora fasciata Schw. 1822; T. lobata Kunze ex Fr. 1830; T. borysta Fr. 1830; T. concolor Jungh. 1838; S. luteobadium Fr. 1838; S. perlatum Berk. 1842; T. leichkardtianum Lév. 1846; T. mollis Lév. 1846; S. galeottii Berk. 1851; S. sprucei Berk. apud Berk. & Br. 1869; S. insignitum Quél. 1889; S. pictum Berk. ex Massee 1890; S. austrole Lloyd 1913; S. tenbroosum Lloyd 1918; S. trapianum Velen. 1920; S. transvaalium Bijl 1929

SUBULICICUM Hjortstam & Ryv. 1979
Basidiocarp annual, resupinate, effused, thin, pruinose to membranaceous, adnate. Hymenial surface even, pilose under a lens, whitish to cream-coloured. Hyphal system monomitic. Hyphae hyaline, thin- to slightly thick-walled, smooth or encrusted, without clamps. Cystidia terminally or laterally on hyphae, hyaline, subulate, somewhat thick-walled, smooth or somewhat encrusted. Basidia hyaline, narrowly clavate, 4-spored. Spores hyaline, globose, subglobose to broadly ellipsoid, thin-walled, smooth, not amyloid.
Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: Peniophora lauta H.S. Jacks. 1948
Distribution: Europe, North America.
References: 164.

1a. Cystidia mostly smooth, originating laterally on hyphae, 90–120 × 4–5 μm.
Basidiocarp effused, pruinose to thin-membranaceous. Hymenial
Subulicystidium

Surface even, pilose, whitish to light cream-coloured. Hyphae thin-to slightly thick-walled, 3–3.5(–4) μm wide, smooth. Basidia 25–30 × 6 μm, guttulate. Spores globose to subglobose (6–7 μm in diam.) or broadly ellipsoid and 6–8 × 4.5–7 μm, guttulate. On angiosperms and gymnosperms.


S. lautom (H.S. Jacks.) Hjortstam & Ryv. 1979

b. Cystidia somewhat encrusted, terminal, 60–75 × 4–5.5 μm.


S. rallum (H.S. Jacks.) comb.nov.


SUBULICYSTIDIIUM Parm. 1968

Basidiocarp annual, resupinate, effused, soft-membranaceous, often very thin. Hymenial surface even, under a lens hispid. Hyphal system mononitic. Hyphae hyaline to slightly yellowish, thin- to somewhat thick-walled, always with clamps. Cystidia acuminate-cylindrical, thick-walled, with bifurcate base, covered with crystals which in polarized light seem to be short-bacilliform and arranged in 3–4 longitudinal rows, but examined with the scanning electron microscope they are flattened bodies arranged in two rows only. Basidia more or less clavate, sometimes exhibiting repetition, clamped at the base, with (2–)4 sterigmata. Spores hyaline, thin-walled, long-cylindrical or long-ellipsoid, not amyloid.

Substrate: saprophytic on wood or bark of angiosperms and gymnosperms.

Type species: Hypocnthus longisporus Pat. 1894

Distribution: in the whole area.

References: 184, 191, 192, 318.

Only one species in the area. Basidiocarp effused, adnate, hypochnoid or membranaceous, easily separable. Hymenial surface even, whitish or light greyish-brownish (in older specimens). Hyphae hyaline, thin-to slightly thick-walled (up to 0.8 μm), 2.5–4 μm wide, with clamps. Cystidia abundant, cylindrical, acuminate, brittle, with thickened walls (c. 1–1.5 μm) bearing flat bodies normally arranged in two rows, 40–80 × 4–5 μm, up to 50 μm projecting, the base mostly bifurcate. Basidia cylindrical to narrowly clavate, somewhat flexuose, 18–25 × 4–6 μm, with 4 subulate sterigmata 2–3 μm long; in well developed specimens the basal half of most of the basidia is loosely surrounded by a wall of the previous basidium (basidial repetition). Spores hyaline, more or less
**Subulicystidium**

Cylindrical, straight or somewhat curved, slightly narrowed at both ends, thin-walled, 10–16 × 1.5–3 μm, often with several guttules, apiculus not distinctive.

Distr.: whole area. Ref.: 184, 191, 192.

*S. longisporum* (Pat.) Parm. 1968

Syn.: *Peniophora asperipilata* Burt 1926

**SUILLOSPORIUM** Pouzar 1958


Substrate: saprophytic on wood of gymnosperms.

Type species: *Pellicularia cystidiata* D.P. Rogers 1943

Distribution: Europe, North America.

References: 336.


*S. cystidiatum* (D. P. Rogers) Pouzar 1958

**THANATEPHORUS** Donk 1956

Incl.: *Uthotobasidium* Donk 1956; *Ypsilotiniidium* Donk 1972.

Basidiocarp annual, resupinate, effused, arachnoid, floccose, pellicular, hypochnoid or membranaceous. Hymenial surface typically discontinuous. Hyphal system monomitic. Basal hyphae hyaline or brownish, thin- or thick-walled, branching at right angles, often wide (up to 17 μm), without clamps. Subhymenial hyphae typically hyaline, rather short-celled, thin-walled. Hyphal cells bi- to pluri-nucleate. Sterile hymenial structures absent. Basidia hyaline, thin-walled, barrel-shaped to subcylindrical or broadly clavate, about the same width as the supporting hyphae, with (1–)2–4(–7) sterigmata, arranged in clusters. Spores hyaline to yellowish, thin-walled, smooth, subglobose, ellipsoid, cylindrical or citriform, repetitive, not amyloid, sometimes cyanophilous. Sclerotia may be present.
Substrate: parasitic on herbaceous plants or saprophytic on decaying wood, lumus or soil.

Type species: *Hypochnus solani* Prillieux & Delacroix 1891
Distribution: in the whole area.

1a. Spores citrifform to fusoid. 2
1b. Spores subglobose, ovoid, ellipsoid or cylindrical. 3

2a. Spores 4.5–5.5 × 4–4.5 μm. Hyphae 2–3.5 μm wide.
   Basidiocarp hypochnoid to membranaceous. Hymenial surface even, dark clay yellow to ochraceous. Basidia ovoid to subcylindrical or broadly clavate, 11–15 × 5–6 μm, with 2–4 sterigmata up to 7 μm long.
   **Uthatobasidium citiforme** M.P. Christ. 1959

   Basidiocarp arachnoid, floccose or membranaceous. Hymenial surface even, whitish to yellowish, sometimes with olivaceous tinge.
   Basidia broadly clavate to subcylindrical, 15–27 × 8.5–12 μm, with (1–)2–4 sterigmata, up to 15 μm long.
   Distr.: whole area. Ref.: 65, 384.
   **Hypochnus fusisporus** Schroet. 1888
   Syn.: *Hypochnus flavescens* Bon. 1851; *Coniophora vaga* Burt 1917; *Corticium fenestratum* Overholts 1934

3a. Spores narrowly ellipsoid to cylindrical, at least twice as long as wide. 4
3b. Spores subglobose, ovoid or ellipsoid. 5

4a. Spores cylindrical, often curved, 12–17 × 4.5–6 μm. Sterigmata up to 30 μm long.
   **T. stergiomaticus** (Bourd.) Talbot 1965

4b. Spores narrowly ellipsoid to subcylindrical, 13–16 × 6–8 μm. Sterigmata up to 18 μm long. Cf. *Ceratobasidium bicorne*

5a. Hyphae up to 5.5 μm wide. 6
5b. Hyphae at least 6 μm wide. 7

6a. Basidia cylindrical to subclavate, 15–28 × 6–9 μm, with 2 sterigmata up to 25 μm long. Sclerotia absent.
   Basidiocarp membranaceous, up to 160 μm thick. Hymenial surface pale fawn. Hyphae pale to dark brown, especially in the sub-
Thanatephorus

hymenium, thin-walled, 3.5–5 μm wide. Spores ovoid, pyriform or ellipsoid, (7.5–)8.7–13(–15) × (3.5–)5.7–7.5 μm.
Distr.: Eur. Ref.: 351.
T. langlei-regis D. Reid 1969
6b. Basidia subglobose to short-cylindrical, 10–18 × 8–12 μm, typically with 4 sterigmata up to 16 μm long. Sclerotia often present. Cf. Cerato-
basidium aniceps.
7a. Spores pale brownish, subglobose to ovoid or pyriform, 9–12 × 7–9.5 μm.
Basidiocarp arachnoid to floccose. Hymenial surface discontinuous,
whitish to pale brownish. Basal hyphae brown, with thickened walls,
up to 17 μm wide. Subhymenial hyphae hyaline, thin-walled, 8.5–10 μm wide. Basidia short-cylindrical, (13–)16–21 × 9–11 μm, with 4 sterigmata up to 12 μm long. On Orchidaceae.
T. orchidicola Warcup & Talbot 1966
7b. Spores up to 7 μm wide.
8a. Basal and subhymenial hyphae hyaline, with thin to somewhat thickened
walls, 6–8 μm wide. On decaying wood.
Basidiocarp hypochnoid to membranaceous. Hymenial surface even,
ochraceous. Basidia short-cylindrical or broadly clavate, 14–20 × 8–10 μm, with 4 sterigmata up to 14 μm long. Spores subglobose,
ovoid or broadly ellipsoid, 8–10 × 5–6.5 μm.
Distr.: whole area. Ref.: 65, 384.
Uthatbasidium ochraceum (Masse) Donk 1958
Syn.: Hypochnus flavescens Bon. 1851; Corticium frustulosum
Bres. 1903
8b. Basal hyphae brownish, with thick walls (up to 2–3 μm thick); sub-
hymenial hyphae hyaline, thin-walled; hyphae (4.5–)9–12(–17) μm wide.
Typically parasitic on plant parts in or near the soil.
Basidiocarp arachnoid, hypochnoid or membranaceous. Hymenial
surface even, whitish to cream-coloured. Basidia (9–)12–16(–25) × (5–)7–10(–12) μm, short-cylindrical, with (2–)4(–7) sterigmata.
Spores hyaline, thin-walled, ovoid to ellipsoid, (5–)7–11(–12) × (4–)4.5–7(–8) μm.
Distr.: whole area. Ref.: 65, 322, 354.
T. cucumberis (Frank) Donk 1956
Syn.: Hypochnus filamentosus Pat. apud Pat. & Lagerheim 1891; H.
solani Prîlîieux & Delacroix 1891; H. sasakii Shirai 1906;
Corticium praticola Kotila 1929; C. areolatum Stahel 1940,
non – Bres. 1925
Anamorph: Rhizoctonia solani Kühn 1858

TOMATODECAY

Syn.: 227

Basicidium: none
Basidioles: 1–2
Basidiospores: 4
Basidial scars: none
Basidioles: none
Basidiospores: none

Hyphal structure: none
Subhyphae: none
Encrustations: none
Cystidia: none
Cystidioles: none

Type: 228
Distr.: 229
Ref.: 230
Note: 231
Tomentella

TOMENTELLA Pat. 1887 nom. cons.
Syn.: Alytosporium Link ex Steudel 1824; Caldesiella Sacc. 1877; Amaurodon Schroet. 1889; Tomentellastrum Svrček 1958

Basidiocarp annual, resupinate, effused, arachnoid, hypochnoid, byssoid, tomentose, pellicular or submembranaceous, separable or not. Hymenial surface discontinuous when young, later often continuous, even, granular, warted or hydnoid with yellowish, pinkish, reddish, brownish, greenish, purplish or blackish tinges, often bluish, greenish or blackish with KOH. Hyphal strands present or absent. Hyphal system monomitic or rarely dimitic. Subicular hyphae subhyaline to brown, thin- to thick-walled, smooth or encrusted, sometimes of two types. Subhymenial hyphae hyaline to brownish, typically thin-walled. Clamps present on nearly all septa or completely absent. Cystidia or cystidioles sometimes present. Basidia clavate, with 2–4 sterigmata, often septate in the middle or at the base of the sterigmata. Spores subhyaline to brown, globose to ellipsoid, regular, sinuous or angular in outline, ornamented, typically with somewhat thickened walls, not amyloid, sometimes changing colour in KOH.

Substrate: saprophytic on wood of angiosperms and gymnosperms or on humus.

Type species: Thelophora ferruginea Pers. ex Pers. 1822
Distribution: in the whole area.
References: 211, 219, 376.

Note: The genus Tomentella contains the resupinate forms/species of Thelophora Ehrh. ex Fr., of which the type species, Thelophora terestris Ehrh. ex Fr., fits equally well in both genera!

1b. Clamps present at most septa (Tomentella s. str.).

2a. Spores brown, globose to irregular, echinulate to usually aculeate, 7–12 μm in diam.

Basidiocarp arachnoid, byssoid or felty. Hymenial surface even or discontinuous, dark brown to olive brown to violaceous; margin and subicular darker. Hyphal strands absent or obscure, up to 40 μm wide, individual hyphae 2.5–4 μm wide. Subicular hyphae with thickened to thick walls, dull brown, 3–7 μm wide. Subhymenial hyphae hyaline to yellowish brown, 3.5–5(–6) μm wide. Basidia 40–75 × 7–9(–11) μm, often with bluish or greenish contents.

Distr.: whole area. Ref.: 66, 210, 211, 376.
Syn.: Thelophora floridana Ellis & Everh. 1886; Tomentella atriovioleata Litsch. 1933; Tom. fimbrirata M.P. Christ. 1960; Tom. macrospora auctt.

T. badia (Link ex S.F. Gray) Stalpers 1975
Tomentella

2b. Spores subglobose to ellipsoid, rarely globose, regular, warted to echinulate.

3a. Subicula subglobosa 2–3.5(–4.5) μm wide.
Basidiocarp soft fleshy to crustose. Hymenial surface even, purplish brown to dark brown; margin paler to almost white. Subiculum pale brown. Hyphal strands up to 25 μm wide, individual hyphae 2–4 μm wide. Subhymenial hyphae thin- to slightly thick-walled, yellowish brown, 3–5 μm wide. Basidia 40–60 × 8–12 μm. Spores brown with slightly greenish contents, globose to broadly ellipsoid, warted to echinulate, 7.5–9.5 × 6–8 μm.
Distr.: N. Am. Ref.: 208, 211.
T. brunneoforma M.J. Larsen 1967

3b. Subicula hyphae 2–5.5(–8) μm wide.

4a. Hyphal strands present, up to 30 μm wide; individual hyphae 2–3.5 μm wide. Sterig mata up to 5 μm long. Basidiocarp arachnoid, byssoid or tomentose, loose.
Hymenial surface bluish grey to greyish brown, even; margin paler than hymenium. Subiculum dull brown. Subicula hyphae with thickened to thick walls, 2–5.5(–6) μm wide. Subhymenial hyphae thin- to moderately thick-walled, hyaline to brown, 3–6 μm wide. Basidia 35–60 × 7–10 μm, partly bluish in KOH. Spores pale yellow to brown, subglobose to ellipsoid, warted to echinulate, 8–10 × 6–8(–9) μm.
Distr.: Eur. Ref.: 211, 376.
T. caesiocinerea (Svérček) M.J. Larsen 1968

4b. Hyphal strands absent. Sterig mata up to 10 μm long. Basidiocarp tomentose to crustose.
Hymenial surface even, light brown, grey, dark brown, violaceous brown to violet; margin concolourous or paler. Subiculum darker. Subicula hyphae with thickened to thick walls, dark brown, 3.5–6 (–8) μm wide. Subhymenial hyphae hyaline to pale brown, thin to slightly thick-walled, 3–5(–7) μm wide. Basidia 40–70 × 8–13(–16) μm. Spores yellowish brown to brown, subglobose to ellipsoid, warted to echinulate, 7.5–12(–14) × 6–9(–10) μm.
Distr.: whole area. Ref.: 211, 390.
T. fusco-cinerea (Pers.) Donk 1933

Note: Tomentella biennis (Fr.) A.M. Rogers is often considered as synonymous. If this is accepted, T. biennis is the correct name. Larsen (211) distinguished T. montanensis from T. macrospora by the darker hymenium and the smaller spores of the former. However, the hymenium of T. macrospora was originally described as "schwarzbraun" and the dimensions of the spores of T. montanensis fall within the limits of those of T. macrospora as given by Larsen himself.
Tomentella

5a. Cystidia or cystidioles present. 6
5b. Cystidia or cystidioles absent. 16

6a. Hyphal strands present. 7
6b. Hyphal strands absent. 11

7a. Cystidia up to 5(−6.5) μm wide at the base and up to 3.5(−4.5) μm at the apex. 8
7b. Cystidia especially at the apex much wider. 9

   Basidiocarp granulose to submembranaceous. Hymenial surface pinkish buff to greyish buff to reddish brown, sometimes with olivaceous tinge, even, mealy or granulose; margin arachnoid, pale. Hyphal strands up to 15 μm wide, individual hyphae 2−3 μm wide. Subicular hyphae hyaline to pale tan, 2.5−4.5(−5.5) μm wide, with thickened walls. Subicular hyphae hyaline, thin-walled, 2.5−4.5(−5) μm wide. Cystidia cylindrical, sometimes slightly widened at the base and apex, hyaline, 35−60 × 2.5−5(−6.5) μm, often septate, sometimes encrusted at the apex. Spores yellowish brown to irregularly globose to lobed, warted to echinulate, 7−9(−10) × 6−8 μm.
   Dist.: whole area. Ref.: 219, 376.
   T. subtestacea (Bourd. & Galz.) Srček 1958
   Syn.: ?Tomentella roana (Bourd. & Galz.) Srček 1958

8b. Basidia 40−50(−60) × 8−12 μm. Subiculum somewhat darker than hymenium.
   Basidiocarp arachnoid to byssoid to submembranaceous, separable. Hymenial surface even to colliculose, tan brown to olivaceous; margin arachnoid to fimbriate, paler. Hyphal strands up to 50 μm wide, individual hyphae 2−4 μm wide. Subicular hyphae olive brown to yellowish brown, thick-walled, 2.5−5(−7) μm wide, often encrusted. Subhymenial hyphae 3−5(−7) μm wide. Cystidia hyphoid, up to 70 × 2−4(−5) μm, often septate, smooth. Spores yellowish brown to dark brown, irregularly globose to lobed, echinulate to aculeate, 7−9(−10) × 7−8 μm.
   Dist.: USSR. Ref.: 219, 295.
   T. atro-arenicolor Nikolajeva 1970

9a. Cystidia brown, often basally with thickened walls, originating in subiculum, expanded (up to 12 μm) and often encrusted at the apex, embedded or projecting up to 80 μm.
   Basidiocarp byssoid to membranaceous, separable. Hymenial surface even to granulose, yellowish brown to tobacco brown or olivaceous brown; margin paler. Subiculum concolourous or darker. Subicular hyphae yellowish brown, thick-walled, 2.5−5.5(−8) μm wide. Hyphal strands up to 200 μm wide; individual hyphae 2−3(−4) μm wide. Subhymenial hyphae 3−4 μm wide. Basidia 35−60 × 6−10
Tomentella

μm. Spores yellowish to golden brown, irregular, echinulate to aculeate, 6–8(–9) × 5–7 μm.
Distr.: whole area. Ref.: 211, 219, 390.

T. pilosa (Burt) Bourd. & Galz. 1924

9b. Cystidia hyaline, thin-walled, originating in subhymenium, smooth. 10

10a. Cystidia clavate, 35–120 μm long, 3–4(–6) μm wide at the base, 6–8(–9) μm at the apex, usually septate, emerging.
Basidiocarp arachnoid to byssoid, separable. Hymenial surface even to granulose, drab to wood brown to buff; margin similar.
Subiculum pale tan to medium brown. Hyphal strands 15–80 μm wide; individual hyphae 2–3.5 μm wide. Subicular hyphae yellowish to brown, with thickened walls, 3.5–6 μm, often encrusted and spinulose. Subhymenial hyphae 3–4.5 μm (or 5–7(–10) μm) wide. Basidia 25–40 × 7–9 μm. Spores brownish, echinulate to aculeate, globose to subglobose to irregular, 7–9(–10) μm in diam. or 7–9 × 5–6 μm.

T. muricata (Ellis & Everh.) Wakef. 1960

10b. Cystidia clavate-cylindrical, up to 90 × 15 μm, aseptate, filled with ochre to reddish ochre material, not emerging.
Basidiocarp arachnoid to byssoid, separable. Hymenial surface even, dull buff to wood brown; margin paler. Subiculum concolourous or darker. Hyphal strands 10–40 μm wide; individual hyphae 2.5–4 μm wide. Subicular hyphae pale yellow to tan, with thickened walls, (3.5–)5–7 μm wide. Subhymenial hyphae 3–5 μm wide. Basidia (40–)50–65 × 7–10(–11) μm. Spores hyaline to pale yellow, irregular to lobed, echinulate to aculeate, 7.5–11 μm in diam.

T. pirolae (Ellis & Halsted) M.J. Larsen 1968

11a. Cystidia acuminate. 12

11b. Cystidia clavate to capitate, rarely cylindrical. 13

12a. Hymenial surface ferrugineous brown to reddish orange, even. Cystidia (paraphysoid hyphae) hyaline, 2.5–3.5(–4) μm wide, projecting 5–10 μm. Spored globose to subglobose, 7–11 × 7–9 μm or 7–11(–12) μm in diam. T. bryophila, see under 98a.

12b. Hymenial surface granulose to pulverulent, rarely smooth, dull green to olive brown. Cystidia up to 85 × 4–9 μm, hyaline to pale tan, projecting up to 40 μm. Spores pale brown, irregular to lobed, echinulate to aculeate, 6–8.5 μm in diam.
Basidiocarp adherent. Margin and subiculum concolourous or paler than hymenium. Subicular hyphae pale brown, thick-walled, 2.5–3.5 μm wide. Subhymenial hyphae 3.5–5(–6) μm wide. Basidia 30–45 × 6–8 μm.

T. galzinii Bourd. 1924
13a. Hymenial surface even to punctate or granulose, greyish green to olive brown. Cystidia hyaline, clavate to capitate, 2–5 μm wide at the base, up to 7 μm wide at the apex, 50–90 μm long, often thick-walled at the base.

Basidiocarp floccose, adherent. Subiculum concolourous with hymenium, margin paler to whitish. Subicular hyphae hyaline to yellowish or olive-brown, 2–4 μm wide. Subhymenial hyphae 2.5–5 (–6) μm wide. Basidia 35–45(–50) × 5–7 μm. Spores yellowish brown to hazel, irregular to lobed, rarely subglobose, echinulate, 6–8(–9) × 6–7(–8) μm.

Distr.: whole area. Ref.: 211, 219, 390.

T. viridula (Bourd. & Galz.) Svrček 1958

13b. Hymenial surface without greenish tints. Cystidia thin-walled over the whole length.

14a. Cystidia up to 60 μm long, widest at the base, apex up to 4.5 μm wide, often finely encrusted. T. subestacea, see under 8a.

14b. Cystidia up to 100(–160) μm long, widest at the apex (5–10(–12) μm). 15

15a. Spores subhyaline to pale brown, globose to broadly ellipsoid, rarely slightly irregular, echinulate, 6.5–7.5(–8.5) μm in diam. or 6–9 × 6–7 μm.

Basidiocarp arachnoid to tomentose, adherent. Hymenial surface even to granulose or discontinuous, buff to wood brown or greyish brown. Margin and subiculum paler. Subicular hyphae subhyaline or pale yellowish brown, thin- or rarely thick-walled, 3–5(–5.5) μm wide. Subhymenial hyphae 4–5(–8) μm wide. Cystidia originating in subiculum or subhymenium, clavate, up to 160 μm long, 2.5–5 μm wide at the base and 6–12 μm at the apex, projecting up to 80 μm. Basidia 25–35 × 6–8.5(–9.5) μm.


T. subclavigera Litsch. 1933

15b. Spores yellowish brown, irregular to lobed, usually elongated along one axis, echinulate, 7.5–8(–9) μm in diam.

Basidiocarp adherent. Hymenial surface even, dull pinkish buff to dull brown; margin paler. Subicular hyphae yellowish or darker. Subicular hyphae hyaline to pale yellow, thin-walled, 2.5–4 μm wide. Subhymenial hyphae 3–5 μm wide. Cystidia originating in subhymenium, narrowly clavate to capitate, up to 100 μm long, 3–5 μm wide at the base and 5–10 μm at the apex, sometimes finely encrusted. Basidia 45–55 × 8–9 μm.


T. clavigera Litsch. apud Svrček 1960

16a. Hyphal strands present.

16b. Hyphal strands absent.
Tomentella

17a. Spores 4–6 \( \mu \text{m} \) in diam., ± globose, usually warted.  
17b. Spores at least on average more than 6 \( \mu \text{m} \) in diam.  
18a. Hyphal system dimitic. Skeletal hyphae 1–2 \( \mu \text{m} \) wide.  
18b. Hyphal system monomitic. All hyphae at least 2 \( \mu \text{m} \) wide.  
19a. Spores globose, warted to echinulate, pale yellowish brown, 4–6 \( \mu \text{m} \) in diam. Hymenial surface even to minutely granulose. Basidiocarp arachnoid to byssoid, separable. Hymenial surface ferrugineous brown to ochraceous brown; margin concolourous or darker, subiculum darker. Hyphal strands up to 80 \( \mu \text{m} \) wide, consisting of generative hyphae and sometimes also skeletal hyphae. Skeletal hyphae pale yellow to citrine, 1–2 \( \mu \text{m} \) wide. Subicular hyphae yellowish brown, thin- to somewhat thick-walled, 2–4 \( \mu \text{m} \) wide. Subhymenial hyphae 2–3 \( \mu \text{m} \) wide. Basidia 25–40 \( \times \) 5–7 \( \mu \text{m} \). Distr.: N. Am. Ref.: 219. 
T. brunneorufa M. J. Larsen 1974

19b. Spores warted, pale brown to umbre. Hymenial surface granulose to distinctly toothed.  
20a. Spores globose to subglobose, (4–)5–6 \( \mu \text{m} \) in diam. or 5–6 \( \times \) 4–5 \( \mu \text{m} \). Basidia 30–40 \( \times \) (5–)6–7(–8) \( \mu \text{m} \), sterigmata up to 6 \( \mu \text{m} \) long. Basidiocarp byssoid, separable. Hymenial surface granulose to toothed (teeth up to 2 mm long), dull ferrugineous brown; margin paler. Subiculum dark ferrugineous brown. Hyphal strands up to 40 \( \mu \text{m} \) wide, consisting of generative hyphae, 2–3.5 \( \mu \text{m} \) wide. Skeletal hyphae yellow to citrine, 1–2 \( \mu \text{m} \) wide. Subicular hyphae 2–5 \( \mu \text{m} \) wide, subhyaline to yellowish brown, thin- to thick-walled, often encrusted, sometimes spinulose. Subhymenial hyphae 2–3.5 \( \mu \text{m} \) wide. Distr.: whole area. Ref.: 211, 219. 
T. calcicola (Bourd. & Galz.) M. J. Larsen 1967

20b. Spores globose, 3.5(–4) \( \mu \text{m} \) in diam. Basidia 15–)20–25 \( \times \) 4–5(–6) \( \mu \text{m} \), sterigmata up to 4 \( \mu \text{m} \) long. Basidiocarp tomentose to byssoid, separable. Hymenial surface granular to toothed (teeth up to 1 mm long), ferrugineous brown; margin concolourous or paler. Subiculum concolourous. Hyphal strands up to 20 \( \mu \text{m} \) wide, consisting of skeletal and/or generative hyphae 1–3.5 \( \mu \text{m} \) wide. Skeletal hyphae yellow to citrine, 1–2 \( \mu \text{m} \) wide. Subicular hyphae 2.5–5 \( \mu \text{m} \) wide, yellowish to brown, thin- to thick-walled, often encrusted. Subhymenial hyphae 2–2.5(–3) \( \mu \text{m} \) wide. Distr.: N. Am. Ref.: 219. 
T. duemmeri (Wakef.) M. J. Larsen 1974 
Syn.: Tomentella subcalcicola M. J. Larsen 1967

21a. Hymenial surface smooth to warted or toothed, dull green to yellowish green to olivaceous. Spores usually purple in KOH.
Basidiocarp arachnoid to tomentose, separable. Margin paler than hymenial surface, fibrillose. Subiculum paler. Hyphal strands up to 30 μm wide, individual hyphae 2–3 μm wide. Subicular hyphae hyaline to citrine, thin- to somewhat thick-walled, 2.5–4.5(–6) μm wide. Subhymenial hyphae 2.5–4.5 μm wide. Basidia 20–35 × 5–7 μm. Spores globose to subglobose, pale citrine to yellow, warted, 4.5–6 μm in diam.
Distr.: whole area. Ref.: 211, 219.

**T. chlorina** (Mass.) G.H. Cunn. 1953


21b. Hymenial surface smooth to granulose or papilllose, never with green tinges. Spores not purple in KOH.

22a. Subiculum much paler than hymenial surface, pale tan to whitish. Hymenial surface grey or buff to drab brown.

22b. Subiculum concolourous or darker than hymenial surface, dark brown or greyish blue. Hymenial surface brownish or dull grey blue.

23a. Some subhymenial hyphae intricately branched, often associated with vesicle-like structures. Hymenial surface granulose, buff brown to drab brown.

Basidiocarp hyssoid to arachnoid, separable. Subiculum and margin pale tan to whitish. Hyphal strands up to 30 μm wide, individual hyphae 2–3.5 μm wide. Subicular hyphae hyaline to pale tan, thin- or rarely thick-walled and then swelling in 10% KOH. Subhymenial hyphae 3–4 μm wide. Basidia 25–35 × 6–7 μm. Spores hazel to dull brown, irregular, elongated along one axis, warted to echinate, 5–6.5 μm in diam.

**T. subcinerascens** Litsch. 1939

23b. No intricately branched subhymenial hyphae. Hymenial surface papilllose or warted, rarely smooth, grey to dull buff.

Basidiocarp arachnoid, tomentose or submembranaceous, separable. Subiculum and margin whitish. Hyphal strands up to 90 μm wide, individual hyphae 1.5–3 μm wide. Subicular hyphae hyaline to pale brown, thin- or slightly thick-walled, 2.5–4(–5) μm wide. Subhymenial hyphae 2.5–4 μm wide, sometimes green in KOH. Basidia 30–45 × 4–7(–8) μm. Spores hazel to dull brown, globose to subglobose, 5–6 μm in diam. or 5–6 × 5 μm.
Distr.: whole area. Ref.: 211, 219, 376.

**T. cinerascens** (P. Karst.) Höhn. & Litsch. 1906

Syn.: *Hypochirus capnoides* Bres. 1896; *Tomentella asterigma* R. Maire 1906; *T. subcervina* Litsch. 1933
Tomentella

24a. Hymenial surface even to minutely granulose. Basidia 35–45(–50) × 7.5–9.5 μm, often greenish in KOH.

Basidiocarp arachnoid, tomentose or submembranaceous, separable. Hymenial surface grey, greyish brown or blackish brown, some places with bluish or violaceous tints; margin paler, byssoid. Subiculum concolourous or darker. Hyphal strands up to 80 μm wide, individual hyphae 2.5–4.5 μm wide. Subicular hyphae yellowish to dull brown, thin- to thick-walled, 2.5–4.5(–7) μm wide, often with spinulose incrustations. Subhymenial hyphae 2.5–4 μm wide, sometimes encrusted. Hyphae sometimes purplish in KOH. Spores irregularly globose to lobed, brown, echinulate, 5.5–7.5(–8) μm in diam.


T. griseoviolacea Litsch. 1939

24b. Hymenial surface granulose to warted, rarely even. Basidia 20–35 × 5.5–7.5 μm.

Basidiocarp arachnoid or floccose to submembranaceous. Hymenial surface dark brown to dull greyish blue. Subiculum concolourous, margin concolourous or paler. Hyphal strands sometimes rare, up to 35 μm wide, individual hyphae 2–4.5 μm wide. Subicular hyphae dull brown, thick-walled, 2–5(–6.5) μm wide, encrusted and often spinulose. Subhymenial hyphae 3–4.5 μm wide, sometimes encrusted, sometimes with bluish or greenish diffusate in KOH. Spores globose to subglobose, rarely irregular, warted to echinulate, rarely aculeate, 5–6.5(–7.5) μm in diam.

Distr.: whole area. Ref.: 212, 219.

T. neobourdotti M.J. Larsen 1968

25a. Hyphal system dimitic. Skeletal hyphae 1–2.5(–3) μm wide.

25b. Hyphal system monomitic.

26a. Spores 7–10 μm in diam.

26b. Spores 5–8 μm in diam.

27a. Spores irregularly globose to irregular, warted to more rarely echinulate, warts often bifurcate, 7–10 μm in diam. Hymenial surface ferruginose to dull brown, hydroid when well developed.

Basidiocarp tomentose to membranaceous. Subiculum concolourous, margin concolourous or paler than hymenial surface. Hyphal strands up to 25 μm wide, consisting of skeletal and/or generative hyphae, 1–3 μm wide. Skeletal hyphae 1–2.5 μm wide. Subicular hyphae yellowish to pale brown, thick-walled, 2.5–4.5 μm wide. Subhymenial hyphae 2.5–4 μm wide. Basidia 40–65 × 7–9 μm.

Distr.: whole area. Ref.: 211, 219, 376.

T. crinalis (Fr.) M.J. Larsen 1967

Syn.: Hydnum ferruginosum Pers. ex Fr. 1821
27b. Spores irregular, globose to subglobose, aculeate or sometimes echinulate, 8–9(–9.5) μm in diam. Hymenial surface even, dark brown to umber.

   Basidiocarp submembranaceous. Subiculum chocolate brown. Hyphal strands rare, up to 35 μm wide, individual hyphae encrusted, 1.5–3 μm wide. Subicular hyphae 1.5–4.5(–5) μm wide, brownish, often encrusted and spinulose. Subhymenial hyphae 5–6.5 μm wide.

   Basidia 35–50 × 8.5–11(–12) μm.


   **T. brevispina** (Bourd. & Galz.) M.J. Larsen 1970

28a. Hymenial surface green, olive to olivaceous black or dull brown. Subicular hyphae smooth. Spores pale brown.

   Basidiocarp arachnoid to submembranaceous. Hymenial surface even to warted. Subiculum yellowish brown to ferrugineous, margin paler or concolourous. Hyphal strands up to 90 μm wide, consisting of skeletal or generative hyphae, 2–3 μm wide. Skeletal hyphae 2–2.5(–3) μm wide. Subicular hyphae yellowish to pale brown, 3–6(–7) μm wide, with thickened to thick walls. Subhymenial hyphae 2–3.5(–4) μm wide. Basidia 30–45 × 6–8 μm, often greenish in KOH. Spores lobed to irregular, echinulate, (6–)7–8 μm in diam. Distr.: whole area. Ref.: 211, 319, 376.

   **T. ferruginea** (Pers. ex Pers.) Pat. 1887

   Syn.: *Grandinia cortaria* Peck 1873; *G. rudis* Peck 1878; *Tomentella suberis* Pat. 1897; *Hypochmus fulvocinctus* Bres. 1897.

28b. Hymenial surface reddish brown, chestnut brown, dark brown or greyish blue. Subicular hyphae often encrusted and spinulose. Spores pale brown to umbrinous.

29a. Hymenial surface granulose to warted, reddish brown to chestnut brown. Subicular hyphae up to 3(–3.5) μm wide. Basidia 30–40(–50) × 6–7(–8) μm, not greenish in KOH.

   Basidiocarp arachnoid to submembranaceous. Subiculum yellowish brown, margin concolourous. Hyphal strands up to 20 μm wide, consisting of skeletal or generative hyphae, 1.5–3.5 μm wide. Skeletal hyphae 1.5–2.5 μm wide. Subicular hyphae yellowish brown, thin- to thick-walled, 2.5–3(–3.5) μm wide, often encrusted and spinulose. Subhymenial hyphae 3–4(–5) μm wide. Spores irregular, rarely globose, subglobose or lobed, echinulate, 6–8 μm in diam. Distr.: Eur., N. Am. Ref.: 211, 219.

   **T. umbrinospora** M.J. Larsen 1968

29b. Hymenial surface granulose to warted, dark brown to dull greyish blue. Subicular hyphae up to 5(–6) μm wide. Basidia 20–35 × 5.5–7.5 μm, sometimes bluish or greenish in KOH. **T. neobourdii** see 24b.
Tomentella

30a. Subiculum distinctly paler than hymenial surface. 31
30b. Subiculum concolourous or darker than hymenial surface. 49

31a. Subicular hyphae thin-walled or walls only minutely thickened (individual hyphae of hyphal strands may be thick-walled). 32
31b. At least some subicular hyphae with distinctly thickened walls. 35

32a. Some subicular hyphae ampullate, constricted at the septa, often irregular and swollen. Hymenial surface even. Sometimes irregular and contorted hyphae present in hymenium. Margin sometimes distinctly yellow. 33
32b. Subicular hyphae regular, not constricted at the septa. Hymenial surface granulose-warted. Hymenium without contorted hyphae. Margin whitish, pale yellow or pale brown. 34

33a. Hymenial surface even, brown vinaceous to purplish brown to dark brown, rarely avellaneous to buff. Margin distinct, fimbriate, pale to sulphur yellow. Basidia 30–40 × 7–9 μm, often greenish in KOH. Spores globose to irregularly subglobose, 7–8.5(–9) μm in diam., warted to echinulate.

Basidiocarp submembranaceous to membranaceous. Subiculum pale yellow or sulphureous to tan. Hyphal strands up to 80 μm wide, individual hyphae 2–4 μm wide. Subicular hyphae pale brown to yellowish, walls slightly or sometimes distinctly thickened, (2.5–) 3–5(–7) μm wide, often ampullate and swollen. Subhymenial hyphae 3.5–6(–7) μm wide.

Distr.: whole area. Ref.: 211, 219, 376.

T. ellisi (Sacc.) comb.nov.

Bas. Zygodesmus ellisi Sacc. in Syll. Fungi 4:808. 1886

33b. Hymenial surface even, avellaneous to pale brown. Margin indistinct, probably paler. Basidia 35–50 × 7–10 μm, not greenish in KOH. Spores globose to subglobose to irregular, warted to echinulate, 8–10(–11) μm in diam.

Basidiocarp encrusting, submembranaceous. Subiculum pale brown. Hyphal strands rare, up to 30 μm wide, individual hyphae 2–3.5 μm wide. Subicular hyphae pale brown, thin-walled, often swollen and constricted at the septa, without clamps, 2.5–4.3(–5) μm wide. Subhymenial hyphae 2.5–4 μm wide, some irregular and contorted and protruding in hymenium.


T. maisrei Bourd. 1918
34a. Spores irregular to lobed, 5–8(–8.5) \( \mu m \) in diam., warted to echinulate. Hymenial surface granulose to warted, buff to pale ochraceous brown. Basidiocarp tomentose to membranaceous. Subiculum and margin paler than hymenial surface. Hyphal strands rare, individual hyphae 2.5–3.5 \( \mu m \) wide. Subicular hyphae pale brown, 2.5–3.5(–4.5) \( \mu m \) wide. Subhymenial hyphae 3–3.5(–4) \( \mu m \) wide. Basidia 35–50 × 6–9(–9.5) \( \mu m \), sometimes with reddish contents.


**T. puberula** Bourd. & Galz. 1924

34b. Spores globose to subglobose, 7–10(–10.5) \( \mu m \) in diam., warted to echinulate. Hymenial surface brownish olive to cinnamon drab, granulose to warted.

Basidiocarp floccose to tomentose to membranaceous. Subiculum and margin paler, often whitish or pale yellow. Hyphal strands up to 80 \( \mu m \) wide, individual hyphae 2.5–3.5 \( \mu m \) wide, rarely 6–8 \( \mu m \) and tortuous. Subicular hyphae nearly hyaline, 2.5–3.5 \( \mu m \) wide. Subhymenial hyphae 2.5–4 \( \mu m \) wide. Basidia 40–55(–65) × 8–10(–12) \( \mu m \).


**T. asperula** (Karst.) Höhn. & Litsch. 1906

Syn.: **Tomentella gibbosa** Litsch. 1933; **T. griseocinnamomea** Wakef. 1966

35a. At least part of the spores lobed.

35b. Spores regular to irregular, but not lobed.

35a. Hymenial surface bluish black, brownish black or fuscous purple.

35b. Hymenial surface with brighter colours.

37a. Spores brown, echinulate to aculeate, lobed to irregular, (5–)6–7(–8.5) \( \mu m \) in diam. Basidia 35–50(–70) × 7–8(–9) \( \mu m \), with bluish or greenish diffusate in KOH.

Basidiocarp arachnoid to tomentose to submembranaceous. Hymenial surface granulose to warted, bluish black to brownish black, sometimes with olivaceous tinges; margin and subiculum paler, brownish. Hyphal strands up to 40 \( \mu m \) wide, individual hyphae 2–4 \( \mu m \) wide. Subicular hyphae yellowish to dark brown, with thickened walls, 3–5.5(–7) \( \mu m \) wide, often encrusted or slightly spinulose. Subhymenial hyphae 2–4.5 \( \mu m \) wide, bluish or greenish in KOH.


**T. botryoides** (Schw.) Bourd. & Galz. 1924

37b. Spores umber, echinulate to aculeate, 7–10 × 5–7(–8) \( \mu m \). Basidia 30–75 × 7–11 \( \mu m \), colourless in KOH.

Basidiocarp floccose-membranaceous. Hymenial surface even to rugulose, fuscous purple. Subiculum and margin paler. Hyphal strands present. Hyphae 3–7.5(–15) \( \mu m \) wide, often with thickened walls, no reaction with KOH.
Tomentella

Distr.: whole area. Ref.: 75.

**Thelephora penicillata** Fr. 1821

38a. Subhymenial hyphae hyaline to pale yellowish, 5–9 μm wide, often inflated at the septa. In hymenium numerous articulate, clavate, yellowish to brownish cells, 8–10 μm in diam.

Basidiocarp submembranaceous. Hymenial surface even, yellowish-brown to castaneous. Subiculum paler, margin yellowish to white. Subicular hyphae yellowish brown, thin- to somewhat thick-walled, 4–7 μm wide. Basidia 50–60 × 8–10 μm. Hyphal strands present, distinct. Spores brown, irregular to lobed, warted to echinulate, 7–9 × 5.5–8 μm.


**T. litschaueri** Svrček 1958

Note: Larsen (211) described the spores as globose to subglobose, yellowish brown, 9–12 × 6–7 μm and the subicular hyphae as pale tan. He compared it with **T. brunneoforma**.

38b. Subhymenial hyphae 2.5–5 μm wide, not inflated. Hymenium composed of basidia only.


39b. Hymenial surface dull reddish purple to ferruginous, olive or greenish. Basidiocarp normally separable.

40a. Subhymenial hyphae 2.5–4 μm wide, with red granular material in water, ochraceous to brownish in KOH. Vesicles hyaline, thin- to thick-walled, 12–20 μm in diam., rare in subiculum and subhymenium. Basidia 40–50 (–80) × 5–7 μm.

Basidiocarp hypochnoid to submembranaceous. Hymenial surface even to granulose, vinaceous brown. Subiculum and margin paler. Hyphal strands up to 15 μm wide, rare; individual hyphae 2–3 μm wide. Subicular hyphae 2–6 (–7) μm wide, with thickened walls, sometimes torulose. Spores pale brown, irregular to lobed, echinulate, (5.5–)6–8 (–9.5) μm in diam.


**T. subvinosa** (Burt) Bourd. & Galz. 1924


Basidiocarp submembranaceous. Hymenial surface even, vinaceous brown to dull cinnamon brown. Subiculum and fibrillose margin paler. Hyphal strands up to 25 μm wide, individual hyphae 2.5–4.5 μm. Subicular hyphae 3–7 μm wide, the widest without clamps. Spores pale brown, irregular to lobed, aculeolate to echinulate, 7.5–9 (–10) μm in diam.

Distr.: Eur., USSR. Ref.: 219.

**T. radiosa** (P. Karst.) Rick 1934
41a. Hymenial surface granulose to warty, dull reddish purple. Basidia 35–40(–70) × 6–8 μm, in water often with red granular contents, ochraceous to brownish in KOH.

Basidiocarp arachnoid to submembranaceous. Subiculum and fibrillose margin dull honey yellow. Hyphal strands up to 50 μm wide; individual hyphae 3–6 μm wide. Subicular hyphae hyaline to brown, thin- to thick-walled, 3–6.5(–7.5) μm wide, often greyish green in KOH (fading rapidly). Subhymenial hyphae 3.5–5 μm wide. Spores lobed to irregular, sometimes subglobose, echinulate, 6–8(–9) μm in diam., somewhat reddish in water, hyaline to pale tan in KOH.


*T. atrorubra* (Peck) Bourd. & Galz. 1924

41b. Hymenial surface granulose to warty, yellowish ferrugineous to dark ferruginous, sometimes olivaceous to greenish. Basidia 35–60 × (6–) 7–9(–10) μm, often with adhering granular material becoming green in KOH.

Basidiocarp arachnoid to tomentose to submembranaceous. Subiculum and margin yellowish brown. Hyphal strands up to 70 μm wide, individual hyphae 2–3.5 μm wide. Subicular hyphae brown, somewhat thick-walled, 2–5.5 μm wide, sometimes encrusted to spinulose. Subhymenial hyphae 3–4 μm wide. Spores yellowish, irregular to lobed, echinulate to aculeate, (6–)6.5–8.5(–9) μm in diam.

Distr.: whole area. Ref.: 211, 219.

*T. rubiginosa* (Bres.) R. Maire 1906

*Syn.*: *Hypochnus atrovirens* Bres. 1897; *Tomentella subrubiginosa* Litsch. 1939

42a. Hymenial surface even, dark brown to bistre.

42b. Hymenial surface even to warty, paler.

43a. Spores brown to bistre, irregular to irregularly globose, echinulate, 8–12 × 7.5–9 μm or 8–11(–11.5) μm in diam. Margin fimbriate, whitish.


*T. schmoranzeri* (Bres.) M.J. Larsen 1974

Note: Some resupinate species of *Thelephora* also key out here, viz. *T. atra* Weim. 1836 and *T. spiculosa* Fr. 1838. The differences between these species and *T. schmoranzeri* are faint their independency is uncertain.
43b. Spores pale tan to medium brown, warted to echinulate, up to 8.5(–9) \( \mu \text{m} \) in diam. Margin yellowish or brownish.

44a. Basidia 60–90 \( \times \) 9–14 \( \mu \text{m} \), the basal part often swollen, up to 20 \( \mu \text{m} \) in diam. Hymenial surface even, dark brown to bistre, often with vinaceous tinge; subculcum and margin somewhat paler. Hyphal strands dark brown.

Basidiocarp submembranaceous, adnate. Hyphal strands up to 50 \( \mu \text{m} \) wide, individual hyphae 2–4.5 \( \mu \text{m} \) wide. Subicular hyphae yellowish brown, 2.5–4(–5) \( \mu \text{m} \) wide, with thickened walls. Subhymenial hyphae 3–5 \( \mu \text{m} \) wide. Spores pale tan to yellowish brown, irregularly globose to subglobose, warted to echinulate, 6–7(–8.5) \( \mu \text{m} \) in diam.

Distr.: whole area. Ref.: 211, 219. 

T. terrestris (Berk. & Br.) M.J. Larsen 1974

Syn.: Tomentella umbrinella Bourd. & Galz. 1924; T. radiofusca Bourd. & Galz. 1924

44b. Basidia 30–40 \( \times \) 7–9 \( \mu \text{m} \). Hymenial surface brown vinaceous to dull purplish brown or much paler. Subculcum pale tan, yellowish or hyaline. Margin yellow. Hyphal strands hyaline to pale tan. T. ellisi, see 33a.

45a. Hymenial surface ferrugineous, olivaceous or greenish.

45b. Hymenial surface tan, buff to dull brown or purplish.

46a. Basidiocarp adnate. Hymenial surface even to granulose, yellowish ferrugineous to ferrugineous, Basidia 40–60 \( \times \) 8–11 \( \mu \text{m} \), hyaline in KOH. Spores regular, globose to subglobose, echinulate to aculeate, 6–8.5 \( \mu \text{m} \) in diam.

Subculcum and margin paler than hymenial surface. Hyphal strands to 30 \( \mu \text{m} \) wide, individual hyphae 2–4 \( \mu \text{m} \) wide. Subicular hyphae brownish, with thickened walls, 2–4(–5) \( \mu \text{m} \) wide. Subhymenial hyphae 2–4 \( \mu \text{m} \) wide.


T. ferruginella (Bourd. & Galz.) Svrček 1958

46b. Basidiocarp usually separable. Hymenial surface granulose to warted, yellowish ferrugineous to dark ferrugineous, sometimes olivaceous or greenish. Basidia 35–60 \( \times \) (6–)7–9(–10) \( \mu \text{m} \), often with adhering granular material becoming green in KOH. Spores irregular to lobed, echinulate to aculeate, (6–)6.5–8.5(–9) \( \mu \text{m} \) in diam., T. rubiginosa, see 41b.

47a. Basidia 30–40 \( \times \) 7–9 \( \mu \text{m} \). Spores aculeolate to echinulate, 7–8.5(–9) \( \mu \text{m} \) in diam. Margin pale to sulphur yellow. T. ellisi, see 33a.

47b. Basidia at least in average broader. Spores echinulate to aculeate, 7–10(–11.5) \( \mu \text{m} \) in diam. Margin not distinctly yellow.

48a. Hymenial surface medium to dull brown, bistre drab, blackish, even.
Sporos dull brown to bistre, irregular to irregularly globose, echinulate, 8–11 (–11.5) μm in diam. or 8–12 × 7.5–9 μm. See T. schwantesii under 43a.

48b. Hymenial surface pale tan to buff to yellowish brown, even. Spores pale tan to medium brown, subglobose to irregular, echinulate to aculeate, 7–10 (–11) μm in diam.

Basidiocarp submembranaceous. Subiculum and margin paler or concolourous with hymenial surface. Hyphae strands up to 40 μm wide, individual hyphae 2.5–4.5 μm wide. Subicular hyphae pale tan to pale brown, with thickened walls, 2.5–6.5 μm wide. Subhymenial hyphae 4–5.5 μm wide. Basidia 40–60 × 7–13 (–14) μm.

Distr.: Eur., USSR. Ref.: 219, 376.

T. rhodophaea Höhn. & Litsch. 1907
Syn.: T. testaceogilva Bourd. & Galz. 1924

49a. Hymenial surface pale buff, avellaneous, wood brown, cream-coloured, yellowish or pale green.

50

49b. Hymenial surface darker, brown, greyish, purplish or dark green.

58

50a. Hymenial surface even to colliculose, pale yellow, some parts pale bluish green; margin fibrillose, darker, pale yellowish brown to reddish brown. Spores irregular to lobed, echinulate, 6–7 μm in diam.

Basidiocarp membranaceous, separable. Subiculum yellowish brown. Hyphal strands up to 25 μm wide, individual hyphae 2.5–3.5 μm wide. Subicular hyphae 3–4 μm wide, with thin to thickened walls, often with greyish green encrusting material. Subhymenial hyphae 3–5 μm wide. Basidia 35–45 × 5–7 μm, sometimes pale green in KOH.


T. bicolor (Atk. & Burt) Bourd. & Galz. 1924

50b. Hymenial surface without bluish green parts. Margin concolourous or paler. Spores at least larger than 7 μm on average.

51

51a. At least some of the spores lobed.

52

51b. Spores never lobed.

55

52a. Spores irregularly globose, irregular, more rarely lobed, warted to echinulate, 5–8 (–8.5) μm in diam, not elongated along one axis. Hymenial surface granulose to warted. T. puberula, see 34a.

52b. Spores usually elongated along one axis, larger on average. Hymenial surface usually even.

53

53a. Spores warted, irregular to lobed, pale to medium brown or pale purplish brown when fresh, paler to dull buff when dry. Subiculum darker.
Tomentella


T. purpurea Wakef. 1966

53b. Spores echinulate to aculeate, 8–11 μm in diam. Hyphae regular. 54

54a. Spores irregular to lobed, pale yellow, echinulate to usually aculeate, 8–11 μm in diam. Basidia 35–45 × 7–9 μm.

Basidiocarp tomentose to membranaceous, adnate. Hymenial surface even, pale buff to wood brown. Subiculum darker, margin concolourous. Hyphal strands up to 20 μm wide, individual hyphae 2–3.5 μm wide. Subicular hyphae yellowish brown, with thickened walls, 2–4(–6) μm wide. Subhymenial hyphae 3–5 μm wide.


T. kentuckiensis M.J. Larsen 1974

54b. Spores irregularly subglobose to lobed, yellowish brown, echinulate, 8–10 μm in diam. or 8–10 × 5–7 μm. Basidia 50–70 × 8–14 μm.

Basidiocarp densely tomentose, adnate or separable. Hymenial surface buff, avelaneous or wood brown, even. Subiculum darker, margin paler. Hyphal strands up to 75 μm wide, individual hyphae 3–3.5 μm wide. Subicular hyphae pale yellowish brown, with thickened walls, 3.5–6(–7) μm wide. Subhymenial hyphae 3.5–5(–6) μm.


T. avelanea (Burt.) Bourd. & Galz. 1924

Syn.: Tomentella corticoides Wakef. 1960

55a. Spores not elongated along one taxi, 6.5–9.5 μm in diam. 56

55b. Spores usually elongated along one axis, 7–10(–11) μm in diam. 57

56a. Basidia 35–50 × 6–9(–9.5) μm. Spores warted to echinulate, 5–8(–8.5) μm across. Hymenial surface granulose to warted. T. puberula, see 34a.

56b. Basidia 35–45(–55) × 9–12 μm. Spores echinulate, 7–9.5 μm in diam., globose to irregularly globose, rarely subglobose. Hymenial surface even, pale yellowish brown.

Basidiocarp adnate. Subiculum concolourous or darker than hymenial surface, margin indeterminable. Hyphal strands up to 30 μm wide, individual hyphae 2.5–3.5 μm wide. Subicular hyphae pale yellowish brown, sometimes thick-walled, 2–3.5(–4.5) μm wide. Subhymenial hyphae 3–5.5 μm wide.


T. fragilis (Bourd. & Galz.) M.J. Larsen 1974

57a. Some hyphae slightly swollen, ampullate at the septa. Irregular and contorted hyphae present in hymenium and subhymenium. T. mairei, see 33b.
57b. All hyphae regular. Hymenium only consisting of basidia. *T. rhodophlea*, see 48b.

58a. At least some subicular hyphae encrusted, often spinulose. 59

58b. Subicular hyphae never encrusted or spinulose. 64

59a. Subicular hyphae 2–5(–6.5) μm wide. 60

59b. Subicular hyphae 4–7(–10) μm wide. 61

60a. Spores 8–9(–9.5) μm across, warded, rarely echinulate. *T. brevispina*, see 27b.

60b. Spores 5.5–7.5(–8) μm across, warded to echinulate. 24

61a. Spores irregularly globose to subglobose or irregular, brownish to pale tan, warded to echinulate, ornamentation often bifurcate, 7–8(–10) μm in diam. Hyphal strands abundant, up to 80 μm wide, individual hyphae 2.5–4.5 μm wide.

Basidiocarp hypochnoid to tomentose, separable. Hymenial surface even, rarely warded, sephia or medium to dark brown. Subiculum and margin concolourous or slightly darker. Subicular hyphae pale to dark brown, often thick-walled, 4–7 μm wide, often encrusted with granular material. Subhymenial hyphae 3–4(–6) μm wide. Basidia 40–55 × 6.5–8 μm.


*T. italic* (Sac.) M.J. Larsen 1967

61b. Spores aculeate, rarely echinulate, ornamentation never bifurcate. Hyphal strands rare. 62

62a. Some subhymenial hyphae, basidia and spores green to bluish green in KOH due to the reaction of adhering material. Subicular hyphae only rarely encrusted, never spinulose.

Basidiocarp hypochnoid to byssoid. Hymenial surface even, rarely warded, fulgineous to fuscous. Subiculum darker, margin concolourous. Hyphal strands rare, up to 30 μm wide. Subicular hyphae pale to dark brown, often thick-walled, (3.5–)4–7(–10) μm wide. Subhymenial hyphae 4–6(–8) μm wide. Basidia 27–50 × 7–10 μm.

Spores tan to dark brown, globose, irregularly globose or subglobose, 7–8.5(–9) μm in diam, aculeate.

Distr.: whole area. Ref.: 211, 219, 388.

*T. ramosissima* (Berk. & Curt.) Wakef. 1960

Syn.: *Hypchoicus fulgineus* Burt 1916

62b. No greenish reaction with KOH. Encrusted subicular hyphae usually numerous, often spinulose.

Basidiocarp tomentose to feltly. Hymenial surface even, rarely warded, sephia, greyish brown or unbrinous. Subiculum darker, margin concolourous or darker. Hyphal strands rare, up to 30 μm wide, individual hyphae 3–6 μm wide. Subicular hyphae yellowish brown to golden brown, usually thick-walled, 5–8(–9) μm wide. Sub-
Tomentella

hymenial hyphae 3.5–5(–6) μm wide. Basidia 30–40 × 7–8.5 μm. Spores yellowish brown to brown, aculeate, more rarely echinulate, globose to subglobose, 6.5–8.5(–9) μm in diam. Distr.: whole area. Ref.: 211, 219.

T. violaceofusca (Sacc.) M.J. Larsen 1974
Syn.: Zygodesmus trachychaetes Ellis & Everh. 1888; Hypochnus spiniferus Burt 1916; Tomentella pseudofusca Skovsted 1950.

Note: The independence of T. neobourdocii, T. bryophila, T. ramosissima and T. violaceofusca, especially that of the last three, is doubtful. The separating characters are intergrading. Christiansen (66), for example, described a Tomentella spinifera (Burt) M.P. Christ., with numerous densely encrusted hyphae and a greenish reaction with KOH.

63a. At least some of the spores distinctly lobed. 64
63b. Spores never lobed. 68

64a. Subhymenial hyphae 4–7(–12) μm wide. 65
64b. Subhymenial hyphae 2.5–4(–5) μm wide. 66

65a. Hymenium with articulate, clavate, yellowish to brownish cells, 8–10 μm in diam. Subhymenial hyphae often inflated at the septa. T. litschaueri, see 38a.

65b. No such cells in hymenium. Subhymenial hyphae regular, 3–6(–10) μm wide.


Thelephora terrestris Ehr. ex Fr. 1821

66a. Some subhymenial hyphae in water with reddish granular contents, ochraceous in KOH. Spores echinulate. 67
66b. Subhymenial hyphae not reddish in water. Spores warted, irregular to lobed, pale to medium brown, 7–9 × 5.5–8 μm. T. purpurea, see 53a.

67a. Some subicular hyphae torulose, 3.5–6(–7) μm wide. Subiculum and subhymenium with rare vesicle, 12–20 μm in diam. T. subvinosa, see 40a.
67b. Subicular hyphae regular, 3–4(–4.5) μm wide. Vesicles absent. Basidiocarp parchment-like, membranaceous, separable or adnate. Hymenial surface even to warted, sepia to dull brown, sometimes olivaceous or with pink tinges. Subiculum concolourous, margin concolourous or paler. Hyphal strands up to 35 μm wide, individual hyphae 1.5–3 μm wide. Subhymenial hyphae 2.5–4 μm wide. Basidia 30–45(–50) × 7–9(–10) μm. Spores irregular to lobed, echinulate, yellowish brown to brown, 6–8(–10) × 6–7(–8) μm.
Distr.: whole area. Ref.: 211, 219.

*T. puniccea* (Alb. & Schw. ex Pers.) Schroet. apud Cohn 1889
Syn.: *Hydnum epiphyllum* Schw. 1832; *Hypochnos elaeodes* Bres. 1897; *Zygodesmus granulosus* Peck 1881; *Zygodesmus chloro-chaetes* Ellis 1881; *Tomentella lasicola* Bourd. & Galz. 1924.

68a. Subicular hyphae rarely exceeding 4.5 μm in width. 69
68b. Subicular hyphae wider than 4.5 μm on average. 70


70a. Basidia (6.5–)7–10 μm wide. Spores aculeate, more rarely echinulate; with bifurcate ornamentation if warted. Subicular hyphae often encrusted. 71
70b. Basidia narrower or wider. Spores warted to echinulate, ornamentation not bifurcate. Subicular hyphae smooth. 72

71b. Hymenial surface dull brown or sepia. 61


Basidiocarp densely tomentose to submembranaceous. Subiculum darker, margin paler than hymenial surface. Hyphal strands up to 25 μm wide, individual hyphae 2.5–4 μm wide. Subicular hyphae brownish, sometimes swollen and irregular, 4–6(–7.5) μm, with thickened walls. Spores irregular to rarely globose, warted to echinulate, 7–9.5 μm in diam., brownish.


*T. albo-marginata* (Bourd. & Galz.) M.J. Larsen 1970


Basidiocarp tomentose to submembranaceous. Subiculum concolourous to darker, margin concolourous or paler than hymenial surface. Hyphal strands up to 30 μm wide, individual hyphae 3–4 μm wide. Subicular hyphae brown, regular, 4–6(–6.5) μm wide, with thickened walls. Spores globose to subglobose, warted to echinulate, 6–8(–9.5) μm in diam., dark brown.

Distr.: Eur., USSR. Ref.: 219.

*T. pilatii* Litsch. 1933

73a Spores globose to subglobose, 4–4.5 μm in diam.
Tomentella

73b. Spores larger.

74a. Basidia and subhymenial hyphae partly bluish black in KOH. Subicular hyphae with thin to slightly thickened walls, smooth, 2.5–4 μm wide.
   Basidiocarp arachnoid to mealy-floccose. Hymenial surface even to warted, pinkish buff to brownish yellow or dark olive when dry.
   Subiculum and margin paler. Subhymenial hyphae 3–5 μm wide.
   Basidia 25–40 × 6–8 μm. Spores globose, subglobose or irregular, warted to echinulate, 4.5–6.5(–7.5) μm in diam.
   **T. molybdaea** Bourd. & Galz. 1924

74b. Basidia and subhymenial hyphae hyaline to pale brown in KOH. Subicular hyphae with distinctly thickened walls.

75a. Basidia 12–15(–20) × 5–6 μm. Hymenial surface dull brown to brownish buff, even. Subicular hyphae brown to dull brown, with thickened walls, 2.5–4(–5) μm wide, smooth.
   Basidiocarp tomentose to submembranaceous. Subiculum concolourous to darker than hymenial surface, margin darker to paler when old. Subhymenial hyphae 2–3(–4) μm wide. Spores globose to subglobose, brownish, warted to echinulate, 4–5 μm in diam.
   **T. griseo-umbra** Litsch. apud Lundell & Nannf. 1936

   Basidiocarp tomentose to membranaceous. Subiculum paler to concolourous with hymenial surface, margin paler, arachnoid to farinaceous. Subhymenial hyphae 2–3.5 μm wide. Spores globose to subglobose, pale to medium brown, warted, 4.5–5.5 μm in diam.
   **T. subalpina** M.J. Larsen 1972

76a. Subhymenial hyphae and basidia often with red granular contents in water, becoming ochraceous in KOH.

76b. Subhymenial hyphae and basidia never with red granular contents.

77a. Hymenial surface granulose to papillose, pinkish buff to buff. Vesicles absent.
   Basidiocarp floccose to submembranaceous. Subiculum and margin paler than hymenial surface. Subicular hyphae pale to dull brown, with thickened walls, 2.5–3(–4) μm wide. Subhymenial hyphae (2–)2.5–3(–4) μm wide, adhering crystalline material green in KOH. Spores subglobose to irregularly globose or lobed, echinulate, pale brown, (6–)7–8(–8.5) μm in diam.
   Distr.: whole area. Ref.: 211, 219.
   **T. coerulea** (Bres.) Höhn. & Litsch. 1907

77b

78a

78b

79a

79b

80a

80b

81a

81b

82a

82b

83a
Tomentella

Syn.: *Tomentella papillata* Höhn. & Litsch. 1908; *Hypochlora cervinus* Burt 1916; *Tomentella sordida* Wakef. 1969

77b. Hymenial surface even to warted, reddish to vinaceous brown. Vesicles often present in subiculum or subhymenium. 78

78a. Spores pale brown to hazel, globose to irregularly globose, rarely lobed, echinulate, 7–8(–9.5) μm in diam. Hymenial surface granulose to warted, bright to dull reddish cinnamon.

   Basidiocarp pulverulent. Subiculum and margin paler than hymenial surface. Subicular hyphae hyaline to subhyaline, often with thickened walls, 2–4(–5) μm wide, some torulose. Subhymenial hyphae 2.5–4(–5) μm wide. Vesicles often present in subiculum and subhymenium, hyaline, up to 20 μm in diam. Basidia 45–60 × 6.5–7.5 μm, in water often with red granular material.

   Distr.: whole area. Ref.: 211, 219.

   *T. lateritia* Pat. 1894

   Syn.: *Tomentella punicea* auctt.

78b. Spores pale brown, irregular to usually lobed, echinulate, (5.5–)6–8 (–9.5) μm in diam. Hymenial surface even to granulose, vinaceous brown. *T. subvinosa*, see 40a.

79a. At least some of the spores distinctly lobed. 80

79b. Spores never lobed. 89

80a. Hymenial surface even to warted, bright green to olive brown.

   Basidiocarp hypochnoidal to tomentose. Margin paler than hymenial surface, subiculum brownish. Subicular hyphae brownish, often with greenish tint, thick-walled, 4–5 μm wide, often with torulose ampullate and/or swollen cells. Subhymenial hyphae 3.5–4 μm wide.

   Basidia 35–40 × 7–9 μm. Spores irregularly globose to lobed, echinulate to usually acuteate, pale yellow to hyaline, 7–8.5(–9) μm in diam.


   *T. olivascens* (Berk. & Curt.) Bourd. & Galz. 1924

80b. Hymenial surface without greenish tints. (When faintly olivaceous then spores 6–7 μm in diam.) 81

81a. Subicular hyphae at least on average narrower than 4 μm, but swellings may be present. Hymenial surface usually with buffy or ochraceous tints. 82

81b. Subicular hyphae at least 4 μm wide. Hymenial surface ferrugineous to dark brown or vinaceous brown, sometimes wood-brown. 86

82a. Subicular hyphae with distinctly thickened walls. 83

82b. Subicular hyphae with thin or slightly thickened (0.3 μm) walls. 85

Tomentella

83b. Subiculum darker than or concolourous with hymenial surface. Some subhymenial hyphae torulose.

84a. Subicular hyphae with constrictions and swellings, yellowish to pale brown, with thickened walls, (2–)2.5–4.5(–9) μm wide. Hymenial surface even, grey to greyish buff. Spores echinulate, irregularly globose to irregular, rarely lobed, (5–)7–9 μm in diam.
   Basidiocarp hypochnoid to tomentose. Subiculum concolourous with or darker than hymenial surface, margin concolourous to white. Subhymenial hyphae 3–4(–5) μm wide, often torulose. Basidia 30–45(–65) × 7–9(–10) μm.
   T. epigaea (Burt) M.J. Larsen 1965

84b. Subiculae hyphae regular, with thickened walls, 2–4(–6) μm wide. Hymenial surface even, very pale buff to wood brown. Spores echinulate to normally aculeate, irregular to lobed, 8–11 μm in diam. T. kentuckiensis, see 54a.

85a. Hymenial surface even to minutely granulose, dull grey with a faint olivaceous tinge.
   Distr.: N. Am. Ref.: 221.
   T. angulospora M.J. Larsen 1975

85b. Hymenial surface warted to granulose, buff to pale ochraceous brown. T. puberula, see 34a.

86a. Subicular hyphae often swollen and ampullate, torulose, dark brown to pale brown, becoming thick-walled, 4–6.5(–8) μm wide. Subhymenial hyphae 4–7(–11) μm wide, often torulose, some with thickened to thick walls.
   Basidiocarp floccose to tomentose or submembranaceous. Hymenial surface even, wood brown to vinaceous brown. Subiculum concolourous or darker, margin paler. Basidia 50–65 × 7–12 μm. Spores irregular to lobed, echinulate, brown, 7.5–10(–11) μm in diam.
   Distr.: whole area. Ref.: 211, 219, 388.
   T. sublilacina (Ellis & Holway apud Arthur & al.) Wakef. 1960
   Syn.: Tomentella castanea (Bourd. & Galz.) Donk 1933; T. pseudopannosa Wakef. 1969

86b. Subicular and subhymenial hyphae regular.

87a. Spores irregular to lobed, usually elongated along one axis, warted to echinulate, 6.5–10 × 4–9 μm. Thelephora terrestris, see 65b.

87b. Spores irregularly globose to lobed, rarely elongated along one axis, echinulate to aculeate, (7–)8.5–10.5(–12) μm in diam.
88a. Spores irregularly globose to lobed, echinulate to typically aculeate, yellow to yellowish brown, (7–)8–10(–12) μm in diam. Hymenial surface even to warted, yellowish brown or ferrugineous to dark brown, subiculum darker, margin concolourous.

Basidiocarp floccose to membranaceous. Subicular hyphae yellowish brown to brown, with thickened to thick walls, 4–6.5(–9) μm wide. Subhymenial hyphae 4–6 μm wide. Basidia 30–45(–70) × 8–11 μm.


T. fuscoferruginosa (Bres.) Litsch. 1941

88b. Spores irregular to lobed, echinulate, brown, 8.5–10.5 μm in diam. Hymenial surface even, dull buff brown, subiculum paler, margin nearly white.

Basidiocarp hypochnoid to tomentose. Subicular hyphae hyaline, thick-walled, 4.5–6.5 μm wide. Subhymenial hyphae 3–4.5 μm wide.

Basidia 40–60 × 7–10 μm.

Distr.: N. Am. Ref.: 221.

T. carbonaria M.J. Larsen 1975

89a. Hymenial surface whitish, buff, avellaneous, ochraceous, yellowish, wood brown or pale ochraceous brown.

90

89b. Hymenial surface darker, brown, green, ferrugineous, fulgineous, olivaceous, violaceous or bistre.

97

90a. Basidia at least 10 μm wide.

91

90b. Basidia up to 10 μm wide.

93

91a. Spores globose, aculeate, pale brown, (9–)10–12(–14) μm in diam., aculei up to 3 μm long.

Basidiocarp hypochnoid to floccose to membranaceous. Hymenial surface pale brown to dark reddish brown. Subiculum and margin concolourous to darker. Subicular hyphae tan to yellowish brown, (3.5–)4.5–8 μm wide, with thickened walls. Subhymenial hyphae 4–6 μm wide. Basidia 40–70 × (8.5–)10–12(–14) μm.


T. brevadulce (Brinkmann apud Bres.) Bourd. & Galz. 1924

91b. Spores elongated along one axis or irregular, rarely globose, warted to echinulate.

92


Basidia 40–50 × (8–)10–14 μm, not swollen in the basal part.

Basidiocarp floccose to membranaceous. Subicular hyphae brownish, 3–6(–7) μm, with thickened walls. Subhymenial hyphae 3.5–5.5 μm wide. Spores globose to subglobose to irregular, warted to echinulate, brown (8.5–)9.5–11.5(–12.5) μm in diam.


T. atramentaria Rostrup 1894
Tomentella

Basidiocarp tomentose to mealy-velvety. Subicular hyphae 3–4.5 (–6) μm wide, brownish, with thickened walls. Subhymenial hyphae 3–5 μm wide. Spores irregularly globose to irregular, warted to echinulate, brown, 6–10(–11) μm in diam.
T. nitellina Bourd. & Galz. 1924

93a. Spores at least 8 μm in diam.
93b. Spores up to 8(–8.5) μm in diam., smaller on average.

94a. Some subicular hyphae with swellings and constrictions. Some subhymenial hyphae irregular and contorted, protruding into the hymenium. Hymenial surface even, avellaneous to pale brown. Basidia colourless in KOH. Spores 8–10(–11) μm in diam. T. mairei, see 33b.
94b. Subicular hyphae regular, brownish, 2–3.5 μm wide, with thin to thickened walls. Subhymenial hyphae regular or torulose, but not protruding in hymenium, 3.5–6.5 μm wide, some green in KOH. Basidia 35–45 × 7–8(–9) μm, partly green in KOH. Spores subglobose to broadly ellipsoid, warted to echinulate, brownish, 7.5–9 × 5–7 μm or 8.5–9(–9.5) μm in diam.
Basidiocarp floccose to membranaceous. Hymenial surface even to granulose, buffy brown to castaneous. Subiculum darker, margin paler.
T. cladii Wakef. 1969

95a. Hymenial surface even, white to greyish to pale greyish yellow.
Basidiocarp floccose to membranaceous. Subiculum and margin concolourous with hymenial surface. Subicular hyphae thin-walled, hyaline, 3.5–5 μm wide. Basidia 40–50 × 8–10 μm. Spores subglobose to irregular, echinulate, (5.5–)7–8 × 5–7 μm in diam.
T. fatrensis Svrček 1958

95b. Hymenial surface even to warted, buff to pinkish buff to pale ochraceous brown.

96a. Spores 4.5–6.5(–7.5) μm in diam. Basidia and subhymenial hyphae partly black in KOH. Hymenial surface pinkish buff to brownish yellow or dark olive. T. molybdaea, see 74a.
96b. Spores 5–8(–8.5) μm in diam. Basidia and subhymenial hyphae not reacting with KOH. Hymenial surface buff to pale ochraceous brown. T. puberula, see 34a.

97a. Hymenial surface ferrugineous to orange brown.
97b. Hymenial surface not ferrugineous or orange brown.
98a. Subicular hyphae brownish, 4–7(–8.5) μm wide, thin- to thick-walled. Subhymenial hyphae 4–6 μm wide, sometimes with yellow encrusting material. Spores globose to subglobose, rarely irregular, echinulate to aculeate, 7(–8)–11(–12) μm in diam. Subiculum darker than hymenial surface.

Basidiocarp floccose to tomentose. Hymenial surface ferrugineous to reddish orange. Basidia 40–60 × 7–11(–12) μm, sometimes with yellow encrusting material.

Distr.: whole area. Ref.: 211, 219, 376, 388.

**T. bryophila** (Pers.) M.J. Larsen 1974


99a. Hymenial surface with greenish, citrin or olivaceous tinges.

99b. Hymenial surface with brownish or violaceous tinges.

100a. Spores globose to subglobose, warted to echinulate, yellowish, 8–12 μm in diam. Subiculum and margin darker than hymenial surface.

Basidiocarp tomentose to membranaceous. Hymenial surface olive brown to dull citrine. Subicular hyphae olive brown, 2.5–4.5(–6) μm wide, with thickened walls. Subhymenial hyphae 3.5–5 μm wide. Basidia (45–)50–60 × 7.5–11(–15) μm, contents often ochraceous in KOH.


**T. viridescens** (Bres. & Torrend apud Torrend) Bourd. & Galz. 1928

100b. Spores globose to subglobose, echinulate to aculeate, up to 8.5(–9) μm in diam. Subiculum and margin paler than hymenial surface.

101a. Spores globose, rarely irregularly globose, 5.5–6.5(–7.5) μm in diam. Subicular hyphae thin-walled, hyaline, 2.5–3 μm wide. Subhymenial hyphae regular, 2–3.5 μm wide.

Basidiocarp membranaceous. Hymenial surface granulose, greyish or dull brown with olivaceous tinge. Subiculum and margin paler or concolourous. Basidia 30–45 × 6–7(–8) μm.


**T. donkii** Litsch. 1941

101b. Spores irregularly globose to lobed, 7–8.5(–9) μm in diam. Subicular hyphae thick-walled, 4–5 μm wide, often with ampullate and swollen cells, torulose. Subhymenial hyphae 3.5–4 μm wide. **T. olivascens**, see 80a.

102a. Subicular hyphae brown, (2.5–)3–6(–8) μm wide, often wavy, becoming thick-walled, walls swelling in KOH (immediately in 10%, gradually in 2% KOH).
Tomentella

Basidiocarp hyphocnoid to tomentose or submembranaceous. Hymenial surface even, dark brown to purplish brown. Subiculum and margin concolourous or darker. Subhymenial hyphae 4–6(–8) μm wide. Basidia 35–60 × 8–11(–13) μm. Spores globose to subglobose, echinulate to usually aculeate, brownish, (7–)8–9.5(–11.5) μm in diam.


T. ruttneri Litsch. 1933

102b. Subicular hyphae not swelling in KOH. 103

103a. Subicular hyphae at least more than 4.5 μm on average. 104

103b. Subicular hyphae rarely exceeding 4.5 μm in width, on average narrower than 4 μm. 115

104a. Spores globose, aculeate, rarely echinulate. 105

104b. Spores subglobose, ellipsoidal or irregular, rarely globose, warted to echinulate. 109

105a. Spores at least on average larger than 8.5 μm. 106

105b. Spores up to 8.5 μm in diam. 108

Basidiocarp hyphocnoid to tomentose. Hymenial surface even, dull greyish brown. Subiculum concolourous. Subicular hyphae yellowish brown, thick-walled, 4–7 μm wide, often torulose and then up to 9 μm wide. Subhymenial hyphae 3–5 μm wide. Spores globose to rarely irregular globose, echinulate, pale brown, 8–11 μm in diam.

Distr.: N. Am.; Ref.: 221.

T. kootenaensis M.J. Larsen 1975

106b. Basidia at least 8.5 μm wide. 107

107a. Spores (9–)10–12(–14) μm in diam. T. bresadolae, see 91a.

107b. Spores 8–9(–9.5) μm in diam. T. brevispina, see 27b.

108a. Spores 5–6.5(–7.5) μm in diam. T. neobourdoti, see 24b.

108b. Spores 6.5–8.5(–9) μm in diam. 62

109a. Basidia 5–7.5 μm wide. 110

109b. Basidia more than 8 μm wide, at least on average. 111

110a. Most subicular hyphae encrusted, spinulose. Spores 5–6.5(–7.5) μm in diam. T. neobourdoti, see 24b.

110b. Subicular hyphae smooth. Spores 6–8(–9.5) μm in diam. T. pilatii, see 72b.

111a. Subicular hyphae thin-walled, pale brown, 4–6 μm wide. Spores subglobose to ellipsoidal, sometimes reniform or minutely irregular, warted, 8–11.5 × 6.5–8.5 μm, pale brown to brown. Basidia 40–50 × 8–10 μm. No reactions with KOH.
Basidiocarp tomentose to membranaceous. Hymenial surface even, dark violaceous to castaneous. Margin and subiculum paler. Subhymenial hyphae 4–7 μm wide.


**T. junecicola** Svrček 1958


112b. Subiculum paler than hymenial surface. *T. carbonaria*, see 88b.

Note: When hyphal strands are not observed in *T. schmoranzieri* (see 43a), this species is indistinguishable from *T. carbonaria*.

112c. Subiculum concolourous with or darker than hymenial surface.

113a. Hymenial surface even to warted, isabelline to chocolate brown, often with pinkish tint. Subicular hyphae 3–10(–12) μm wide. *Thelephora terrestris*, see 65b.

113b. Hymenial surface even, dark brown to bistre, rarely dark yellowish brown. Subicular hyphae 3–6(–7.5) μm wide.


115a. Basidia at least 8.5 μm wide.

115b. Basidia up to 8–9 μm wide.

116a. Spores subglobose to ellipsoid, 7.5–9 × 5–7 μm or 8.5–9(–9.5) μm in diam. Subicular hyphae smooth. Subhymenial hyphae 3.5–6.5 μm wide, some green in KOH. *T. cladii*, see 94b.

116b. Spores globose to subglobose, rarely irregular, 5–6.5(–7.5) μm in diam. Subicular hyphae smooth or encrusted. Subhymenial hyphae 2–4.5 μm wide.

117a. Subicular hyphae typically encrusted or spinulose, 2–5(–6.5) μm wide. *T. neobourdottii*, see 24b.

117b. Subicular hyphae smooth.


118b. Subicular hyphae with thickened walls, 2.5–3.5(–4) μm. Hymenial surface buff brown to dark brown.

Basidiocarp hypochnoid to tomentose. Margin paler than hymenial surface. Subhymenial hyphae 2.5–3.5(–4) μm wide. Basidia 40–60 × 6–7.5 μm. Spores globose to subglobose, echinulate, brown, 5–6.5(–7) μm in diam.

Distr.: N. Am. Ref.: 221.

**T. fraseri** M.J. Larsen 1975
Tomentellina

**TOMENTELLINA** Höhn. & Litsch. 1906

Basidiocarp annual, resupinate, effused, arachnoid, tomentose or hypochnoid, separable. Hymenial surface even, hispid, brownish, darkening in KOH. Hyphal strands present. Hyphal system dimitic. Skeletal hyphae yellowish, intertwining. Subicular hyphae brown, with thickened walls; clamps rare or absent. Subhyphal hyphae thin-walled, hyaline to brownish, without clamps. Cystidia originating from subiculum or subhymenium, brown, thick-walled, septate, single or in fascicles, projecting. Basidia in clusters, often sphaero-pedunculate when young, clavate, often with median septum, sometimes with yellowish contents, with (2–)4 sterigmata. Spores brownish, thick-walled, warted and warts often dichotomously branched, irregularly globose to lobed, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Tomentellina ferruginosa* Höhn. & Litsch. 1906

Distribution: in the whole area.

References: 127, 211.

Monotypic. Basidiocarp tomentose to hypochnoid, separable. Hymenial surface even, hispid, sometimes hydnoid, ferrugineous to dark brown. Subiculum concolourous or darker, margin paler. Hyphal strands present. Skeletal hyphae yellowish, 1.5–2 μm wide. Subicular generative hyphae brown, thick-walled, 3.5–6(–7.5) μm wide. Subhyphal hyphae hyaline to yellowish, thin-walled, 2.5–4(–6.5) μm wide. Clamps only found on subicular hyphae, sometimes completely absent. Cystidia brown, thick-walled, septate, 100–200 × 4–7(–10) μm, single or in fascicles. Basidia (25–)35–50(–60) × 5–8(–9) μm. Spores irregularly globose to lobed, (6–)7–11 μm wide, warted and warts often dichotomously branched.

Distr.: whole area. Ref.: 66, 127, 211, 376.

*T. fibrosa* (Berk. & Cirt.) M.J. Larsen 1974

Syn.: *Kneiffiella bombycina* P. Karst. 1895; *Tomentellina ferruginosa* Höhn. & Litsch. 1906; *Hypochnus canadensis* Burt 1916

**TOMENTELLOPSIS** Hjortstam 1970


Basidiocarp annual, resupinate, effused, hypochnoid, pellicular or submembranaceous, separable. Hymenial surface discontinuous to continuous, often pulverulent, even, cream-coloured, yellowish, green or brownish. Subiculum loose, arachnoid. Hyphal strands may be present. Hyphal system typically monomitic. Hyphae thin-walled, hyaline to brownish, 1–5 μm wide, branching at right angles, without clamps or with a few at the basal hyphae. Sterile hymenial elements absent. Basidia clavate to subcylindrical, often somewhat
constricted, with 4 sterigmata. Spores globose to ellipsoid, hyaline to pale brown, warted to aculate, thin-walled, not amyloid.

Substrate: saprophytic on decayed wood of angiosperms and gymnosperms, rarely on soil.

Type species: *Corticum echinosporum* Ellis 1881

Distribution: in the whole area.

References: 157, 159.

1a. Hymenium with distinct yellowish or greenish tinge, 2
1b. Hymenium with cream, pinkish or brownish tinge, 3

2a. Spores globose to subglobose, echinulate to aculate, 4–6.5(–7) μm in diam., spines 0.5–1 μm long.
   - Basidiocarp arachnoid to pellicular, sometimes submembranaceous.
   - Hymenial surface cream-coloured to sulphur yellow to greenish yellow. Hyphae 2.5–5 μm wide. Hyphal strands rare.
   - Basidia 20–30 × 6–9 μm.
   - Distr.: whole area. Ref.: 66, 157, 211, 376.
   - *T. echinospora* (Ellis) Hjortstam 1970
   - Syn.: *Tomentella incarnata* P. Henn. 1898; *Hypocnus pennsylvanicus* Overh. 1929

2b. Spores ellipsoid, warted to aculate, (5.7–)6–7(–7.2) × (3.5–)4–5 μm, warts up to 0.5 μm long.
   - *T. bresadoliana* (Sacc. & Trotter) comb. nov.
   - Syn.: *Corticum viride* Bres. apud Höhn. & Litsch. 1907 non − Berk. apud Hooker 1855; *Athelia viridis* Parm. 1967; *Bysocrisella pallito-citrina* M.P. Christ. 1970

3a. Spores hyaline to subhyaline, globose to subglobose, echinulate, 4–5 μm in diam., spines c. 0.5 μm long.
   - Basidiocarp effused, hypochnoid to pellicular. Hymenial surface light brown. Basal hyphae hyaline to subhyaline, c. 5 μm wide.
   - Basidia 20–35(–50) × 5–6 μm.
   - Distr.: Eur. Ref.: 159.
   - *T. pusilla* Hjortstam 1974

3b. Spores larger, 4

4a. Spores echinulate to aculate, spines 1–2(–2.5) μm long. Subiculum and margin brown.
   - Basidiocarp pellicular to submembranaceous. Hymenial surface cream-coloured to brownish. Hyphae yellowish to pale brown, 3–6
Tomentelopsis

μm wide. Basidia 25–45 × 6–9 μm. Spores hyaline to pale yellow, subglobose to broadly ellipsoid, (4–)5–7.5 × 4.5–6 μm.
T. zygodesmoides (Ellis) Hjortstam 1974
Syn.: Hypochus tabacina Bres. apud Brinkmann 1908.

4b. Spores aculate to echinulate, spines 0.5–1 μm long. Subiculum and margin whitish.
Basidiocarp pellicular to membranaceous. Hymenial surface cream-coloured to pinkish and often red-spotted. Hyphae hyaline, 3–5 μm wide. Basidia 30–40 × 5–7 μm. Spores hyaline or somewhat pinkish, globose to broadly ellipsoid, 5.5–7 μm in diam.
T. submollis (Svěček) Hjortstam 1974
Note: Hjortstam (159) describes T. submollis as having a light brown basidiocarp and pale brown subicular hyphae. Spores subglobose to rarely globose (figured ellipsoid), 5–7 × 4–5 μm.

TRECHISPOR A P. Karst. 1890

Syn.: Tomentella P. Karst. 1889, non ~ Pat. 1887; Cristella auctt. non ~ Pat. 1887; Phlebiella P. Karst. 1890

Basidiocarp annual, resupinate or rarely substipitate, arachnoid, byssoid or membranaceous, loosely adnate. Hymenial surface even, odontoid or reticulate, typically whitish or pale yellowish. Hyphal strands sometimes present. Hyphal system typically monomitic. Hyphae hyaline, often ampullate at the septa, up to 4(–8) μm wide. Clamps present. Conidia, cystidia and spinulose hyphal cells sometimes present. Basidia short-cylindrical to clavate, rarely podo- or pleurobasidium, with 2–4 stergmata. Spores hyaline, rarely yellowish or pale ochraceous, globose, ellipsoid or reniform, rarely irregular, typically thin-walled, smooth or ornamented, not amyloid.
Substrate: saprophytic on leaves and decayed wood or bark of angiosperms and gymnosperms.
Type species: Trechispora onusta P. Karst. 1890
Distribution: in the whole area.
References: 251.

1a. Spores smooth, thin-walled (subgenus Laevispora).  2
1b. Spores irregular or ornamented (subgenus Trechispora).  6

2a. Spores globose to subglobose, 3.5–4.5(–5) × 3–4(–4.5) μm.
Basidiocarp effused, waxy pruinose to waxy membranaceous, up to 100 μm thick. Hymenial surface typically warted to odontoid, with up to 200 μm long teeth, cream-coloured, pale yellowish to ochraceous or fulvous. Hyphae 2–4 μm wide, inflated up to 8.5 μm.
Trechispora

Basidia 11.5–17(–23) × 5–7(–7.5) μm.
Distr.: whole area. Ref.: 66, 162, 251.

T. mutabilis (Pers.) Liberta 1966

Syn.: Odontia olivascens Bres. 1892; Corticium sulphurellum Hohn. & Litsch. 1908; Grandinia abrotani Velen. 1922

Note: Athelopsis viridula Parm. 1968 is microscopically identical with T. mutabilis (fide Hjortstam & Larsson 1978), but the colour is a brighter yellow. We do not think that this is sufficient reason to separate A. viridula from the above species.

2b. Spores not globose to subglobose.

3a. Spores tear-shaped, ovoid or ovoid-ellipsoid, 3–5 × 2–4 μm.
Basidiocarp effused, pruinose to arachnoid, pellicular or membranaceous, up to 200 μm thick. Hymenial surface whitish to buff, cracked. Margin pruinose to fimbriate. Hyphae (1–)1.5–3.5 μm wide, with thin to thickened walls; swellings up to 7.5 μm wide. Basidia 8.5–18 × 3.5–6 μm.
Distr.: whole area. Ref.: 66, 251.

T. cohaerens (Schw.) comb.nov.
Syn.: Corticium confine Bourd. & Galz. 1911; C. submicroporum Litsch. 1927

Distr.: Eur., N. Am.

4a. Spores allantoid, 3–3.5 × 1.4–1.6 μm.
Basidiocarp effused, thin, membranaceous. Hymenial surface even to slightly grandinioïd, cream-coloured. Hyphae hyaline, 2–3 μm wide, swellings up to 5 μm wide. Basidia 8–13 × 3–4 μm.
Distr.: Eur.

T. lunata (Romell apud Bourd. & Galz.) Jülich 1975

4b. Spores at least 1.8 μm wide.

5a. Spores narrowly ellipsoid to suballantoid, 3.5–6(–7) × 2–3(–4.5) μm.
Basidia 14–20 × 4–4.5 μm.
Basidiocarp effused, membranaceous to subpellicular, adnate, up to 175 μm thick. Hymenial surface pale yellowish, cracked. Margin sometimes with hyphal strands. Hyphae 1.5–3 μm wide, swellings up to 9.5 μm wide.
Distr.: whole area. Ref.: 127, 251.

T. amianthina (Bourd. & Galz.) Liberta 1966
Syn.: Corticium crustulinum Burt 1920

5b. Spores narrowly ellipsoid to subcylindrical, 3–4 × 1.8–2.2 μm. Basidia 8–13 × 3–4.5 μm.
**Trechispora**

Basidiocarp effused, arachnoid to pellicular, separable, up to 75 μm thick. Hymenial surface white. Margin with hyphal strands. Hyphae 1–4 μm wide, swelling up to 7.5 μm wide.


**T. byssinella** (Bourd.) Liberta 1966

6a. Hymenial surface poroid.  
6b. Hymenial surface not poroid, at most slightly reticulate.

7a. Cystidia numerous, cylindrical, encrusted, with thin to thickened walls, 31–68 × 4–8 μm.  
Basidiocarp effused, soft, white to cream-coloured, up to 1 mm thick. Pores rounded to angular, up to 1 mm deep, 4–5 per mm, edges somewhat fimbriate. Margin arachnoid, sometimes with hyphal strands. Hyphae 1.5–3.5 μm wide, often encrusted with large crystals; swellings up to 8 μm wide. Basidia 10–13(–15.5) × 4–6 μm. Spores subglobose to narrowly ovoid, thin-walled, echinulate, 2.5–4 × 2–3.5 μm.

Distr.: N. Am. Ref.: 251. 

**T. regularis** (Murrill) Liberta 1973  
Syn.: *Poria submollusca* Murrill 1920; *P. arachnoidea* Murrill 1920; *P. tenuissima* Speg. 1923; *P. velata* Rick 1937; *P. subvulgaris* Rick 1937

7b. Cystidia absent.  
Basidiocarp effused, fragile, white to cream-coloured, up to 2 mm thick. Pores rounded, angular or sinuate, (2–)3–4(–5) per mm, edges fimbriate or splitting. Margin arachnoid, often with hyphal strands. Hyphae 2–4 μm wide, often encrusted; swellings up to 8 μm wide. Basidia 8.5–16.5(–18) × 4–6 μm; spores subglobose to ovoid, thin-walled, echinulate, 2.5–4 × 2.5–3 μm.

Distr.: whole area. Ref.: 251. 

**T. mollusca** (Pers. ex Fr.) Liberta 1973  
Syn.: ?*Polyporus subtilis* (Schrad.) ex Fr. 1821; *P. candidissimus* Schw. 1832; *P. gordoniensis* Berk. & Br. 1865; *P. hymenocystis* Berk. & Br. 1879; *Trechispora onusta* P. Karst. 1890; *Physisporus fragilimus* P. Karst. 1903

8a. Arthroconidia, aleuropores or chlamydospores present.  
8b. No vegetative propagules.

9a. Irregularly shaped arthroconidia present, 4–8 × 2.5–4.5 μm. *T. farinacea*, see 14b.  
9b. Arthroconidia absent.

10a. Aleurio(chlamydo)-spores subglobose, ovoid or ellipsoid, smooth, thin-to thick-walled (1 μm), somewhat truncate, 4.5–7 × 3–4.5 μm. Spores ovoid to broadly ellipsoid, thin-walled, echinulate, 2.5–3.5 × 2–3 μm.
Basidiocarp effused, membranaceous, separable, up to 200 μm thick. Hymenial surface warted to grandinioid, buff to pale yellowish. Margin fimbriate or with hyphal strands. Hyphae 1–4 μm wide, swellings up to 5.5 μm wide. Conidia terminal on hyphoid conidiophores. Basidia 8–23 × 4–5.5 μm. On angiosperms.

Distr.: whole area. Ref.: 251.

*T. alnicola* (Bourd. & Galz.) Liberta 1966

10b. Aleurio(chlamydo-)-spores globose to subglobose, thick-walled (0.8–1.5 μm), rugose, 5–7 μm in diam. Spores broadly ellipsoid to subreniform, thin-walled, echinulate, 3.5–4.5 × 2–3 μm.

Basidiocarp effused, pruinose to submembranaceous, separable. Hymenial surface even, white. Margin fibrilllose or with hyphal strands. Hyphae 2–3 μm wide, swellings up to 7 μm wide. Conidia terminal on hyphoid conidiophores. Basidia 8.5–12 × 4–5 μm.

Distr.: N. Am. Ref.: 155, 251.

*T. invisiata* (H.S. Jacks.) Liberta 1966

11a. Spores up to 4 μm long. 12

11b. Spores at least 4 μm long. 15

12a. Spores turbinate (triangular), thin-walled, slightly warted at the apex, 3–3.5(–4) × 2–3 μm.

Basidiocarp effused, farinose, pellicular or membranaceous, adnate, up to 200 μm thick. Hymenial surface even to minutely reticulate, cream-coloured to pale yellowish. Margin fibrilllose or with hyphal strands. Hyphae (1–)1.5–3 μm wide, swellings up to 8 μm wide. Basidia (8–)9.5–14 × (3–)3.5–5 μm.


*T. subsphaerospora* (Litsch.) Liberta 1973

Syn.: *Cristella trigonospora* M.P. Christ. 1960

12b. Spores not turbinate. 13

13a. Globose to ovoid cells 2–4 × 2–3.5 μm, with delicate spines, 4–13 × 0.5 μm, laterally or terminally on some hyphae. Spores globose to subglobose, stellate, 2.5–4 × 2.5–3.5 μm, warts ± 0.5 μm long.

Basidiocarp effused, farinose to granulose, adnate, up to 100 μm thick. Hymenial surface even to slightly reticulate, cream-coloured to buff. Margin pruinose. Hyphae 1–3 μm wide, swellings up to 8.5 μm wide. Basidia 8–12 × 3.5–4.5 μm.


*T. stellulata* (Bourd. & Galz.) Liberta 1966

13b. Spinulose cells absent. Spores echinulate or irregularly warted, ovoid, ellipsoid or subcylindrical. 14

14a. Spores irregularly ovoid to subcylindrical, 3–3.5 × 2–2.5 μm, with irregularly scattered obtuse warts. Hymenial surface even to farinose-reticulate, white, cream-coloured or honey-yellow.
Basidiocarp effused, arachnoid to submembranaceous, up to 150 μm thick. Margin fibrillose to fan-shaped. Hyphae (1.5–2–3(–3.5) μm wide, swellings up to 7 μm wide. Basidia (7–)8–12 × 4–5 μm.

Distr.: whole area. Ref.: 251.

**T. microspora** (P. Karst.) Liberta 1966

Syn.: *Corticium subnullium* Burt 1926; *Hypochnus sphaerosporus* Maire sensu M.P. Christ. 1960

14b. Spores ovoid to ellipsoid, echinulate, 3–4(–4.5) × 2.5–3(–3.5) μm. Hymenial surface pruinose, even to hydnoid, white, cream, buff or pale grey.

Basidiocarp effused, arachnoid, pellicular or submembranaceous, up to 200 μm thick. Teeth cylindrical to subulate, sometimes fused at the base, up to 1.6 mm long. Margin fibrillose or with hyphal strands. Hyphae (1.5–)2–4 μm wide, with thin to thickened (0.5 μm) walls; swellings up to 8 μm wide. Basidia (7.5–)8.5–17 × 3.5–5(–6) μm.

Distr.: whole area. Ref.: 66, 127, 251.

**T. farinacea** (Pers. ex. Fr.) Liberta 1966

Syn.: *?Hydnum niveum* (Pers.) ex Fr. 1821; *Hydnum stevensonii* Berk. & Br. 1875; *Hypochnus sphaerosporus* Maire 1905; *Corticium submutabile* Höhn. & Litsch. 1907; *Tomentella araneosa* Höhn. & Litsch. 1907; *Cristella caucasica* Parm. 1965

15a. Basidiocarp at first arachnoid, byssoid or tomentose, soon overrun by branching, anatomosing fertile strands. Often wine-red with KOH. 16

15b. Basidiocarp not overrun by branching fertile strands. No reaction with KOH. 17

16a. Basidiocarp wine-red with KOH. Spores hyaline to slightly yellowish, ovoid to broadly ellipsoid, echinulate to asperulate, 4–6(–7) × 3–4(–4.5) μm. Hymenium varying in colour from buff or honey to hazel or umber.

Basidiocarp up to 250(–500) μm thick. Margin fibrillose, fan-shaped or with hyphal strands. Hyphae subhyaline to light brown, 2–5 μm wide, swellings up to 8.5 μm wide. Basidia 12–23 × 5–7 μm. Common.

Distr.: whole area. Ref.: 66, 127, 251.

**T. vaga** (Fr.) Liberta 1966

Syn.: *Thelephora sulphurea* (Pers.) ex Fr. 1821; *Athelia sericea* Pers. 1822; *?Thelephora fumosa* Fr. ex Pers. 1822; *Odontia fuscica* Cooke & Ellis 1881; *?Tomentella menieri* Pat. 1886; *O. tenuis* Peck 1891; *Hypochnus filamentosus* Burt 1926 non ~ Pat. 1891; *T. lurida* Skovsted 1950; *Cristella donkii* Parm. 1965; *?Xenasmatella sanguinescens* Svrček 1973

16b. No reaction with KOH. Spores hyaline, ellipsoid to narrowly ovoid, echinulate to asperulate, 4.5–7 × 2.5–3.5 μm. Hymenial surface white to buff or honey-yellow.

Basidiocarp up to 150 μm thick. Margin fimbriate or with hyphal
strands. Hyphae hyaline to slightly yellowish, (1.5–)2–3.5 μm wide, often encrusted, swellings rare, up to 8 μm wide. Basidia 10–18 (–22.5) × 4–7 μm. Rare. Distr.: whole area. Ref.: 251.

**T. christiansenii** (Parm.) Liberta 1966


**T. pallido-aureantiaca** Gilberts. & Buddington 1970

Note: The correct place of this species is probably in or close to *Tomentella*.

17b. Spores ovoid to broadly ellipsoid, echinulate to asperulate. Hyphal system monomitic.

18a. Basidiocarp membranaceous, up to 400 μm thick, often with variously formed marginal extensions free from the substratum. Needle-like crystals absent. Spores hyaline to slightly yellowish, ovoid to ovoid-ellipsoid, asperulate, (4–)4.5–7.5 × 3–4.5 μm. Hymenial surface even or slightly warted, white to pale yellowish. Margin byssoid to fibrillose. Hyphae (1–)1.5–3 μm wide, swellings up to 8.5 μm wide. Basidia 14–31 × 4.5–6(–7) μm. Distr.: whole area. Ref.: 66, 251.

**T. fastidiosa** (Pers. ex Fr.) Liberta 1966

Syn.: *Thelephora foetida* (Pers.) Ehrenb. ex Becker 1828; *Hydnellum alliaceum* Weinman 1832; *Grandinia membranacea* Peck & Clinton 1879

18b. Basidiocarp arachnoid, farinose-reticulate or thin-membranaceous, with hyphal strands, no marginal extensions, up to 100 μm thick. Needle-like crystals present on hyphae. Spores hyaline, ovoid to ovoid-ellipsoid, strongly echinulate (spines 0.5 μm long), 4–5 × 2.5–3 μm. Hymenial surface even, white. Margin arachnoid or with hyphal strands. Hyphae 1–2.5 μm wide; swellings up to 7 μm wide. Basidia 11–17 × 4.5–6 μm. Distr.: whole area. Ref.: 66, 127, 251.

**T. praeflccata** (Bourd. & Galz.) Liberta 1966

Syn.: *Corticium suffocatum* Bourd. & Galz. 1911 nom. – Peck 1878
Tubulicium

TUBULICUM Oberw. 1965
Syn.: Tubulixenasma Parm. 1965
Incl.: Litschauerella Oberw. 1965

Basidiocarp annual, resupinate, effused, ceraceous. Hymenial surface even, hispid under a lens, pale coloured. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps. Cystidia conical, multi-radicate, with thick multi-layered walls, the inner wall slowly dissolving in KOH, the surface ensheathed with cylindric or dendritic hyphae. Basidia terminal or pleurobasidioïd, clavate to subcylindrical, with a basal clamp, 4-spored. Spores hyaline, thin-walled, smooth or warted, globose, cylindrical to sigmoid, not amyloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms and on ferns.

Type species: Peniophora vermifera Bourd. 1910

Distribution: in the whole area.

References: 303.

1a. Spores cylindrical to sigmoid. Cystidia smooth, ensheathed with simple or dendritic hyphae.

1b. Spores globose. Cystidia encrusted with crystalline material, not or only slightly ensheathed with normal hyphae.

Basidiocarp effused, closely adnate, somewhat ceraceous. Hymenial surface even, whitish. Hyphae hyaline, c. 2 μm wide, thin-walled, with clamps. Cystidia conical, at the base with many roots, 80–125 × 10–20 μm, thick-walled, encrusted. Basidia terminal or pleurobasidioïd, cylindrical to clavate, 12–20 × 4–8 μm. Spores hyaline, globose or subglobose, 4.5–15 μm in diam.


T. clematis (Bourd. & Galz.) Oberw. 1965
Syn.: Peniophora abietis (Bourd. & Galz.) Sartory & Maire 1921;
Hypochnus albus Burt 1926

2a. Spores sigmoid, 16–24 × 3.5–4.5 μm, smooth.


Distr.: whole area. Ref.: 303, 405, 406.

T. vermifera (Bourd.) Oberw. 1965


**Epithele capitata** D.P. Rogers & Boquiren 1971

**TUBULICRINIS** Donk 1956

Basidiocarp annual, resupinate, effused, adnate, pruinose, ceraceous or membranaceous, rarely crustaceous. Hymenial surface even to minutely reticulate or hispid. Margin pruinose. Hyphal system monomitic. Hyphae hyaline, thin- to thick-walled, with clamps, sometimes amyloid; wall thickenings soluble in KOH. Lyocystidia present, thick-walled, usually multi-radicate, projecting, acute, obtuse or with an apical bulb, sometimes amyloid. Wall layered, material between inner and outer layer soluble in KOH. Lumen narrow, abruptly expanding at the apex (except in *T. chaetophorus*, apex thin-walled. Basidia hyaline, thin- or basally thick-walled, clavate to cylindrical or subcylindrical, single or in small clusters, rarely amyloid, with (2-)4 sterigmata.

Spores hyaline, smooth, thin-walled, globose to ellipsoid or narrowly cylindrical to allantoid, not amyloid.

Substrate: saprophytic on decaying wood.

**Type species:** *Coricium glebulosum* Bres. 1898

Distribution: in the whole area.

References: 304.

1a. Cystidia with apical umbrella-shaped cap, which is up to 10 μm in diam., has 9–18 prongs and is not soluble in KOH.


**T. hamatus** (H.S. Jacks.) Donk 1956

Syn.: *?Peniophora umbracula* G.H. Cunn. 1955

1b. Cystidia without umbrella-shaped cap.

2a. Cystidia acute.

2b. Cystidia obtuse or capitate.

3a. Spores ovoid to subcylindrical, 2.5–3.5(–4) μm wide, up to 2(–2.5) times as long as wide.

3b. Spores narrowly cylindrical, 1.5–2.5 μm wide, about 3 times as long as wide.

4a. Most cystidia apically covered with an acute conical cap, which is not soluble in KOH. Spores ovoid to ellipsoid, 4.2–5.5(–6) × (2.5–)3–3.5 μm.
Tubulicrinis


T. inornatus (H.S. Jacks.) Donk 1956

4b. Cystidia without apical cap. Spores ellipsoid to subcylindrical, larger.

5a. Cystidia (60–)120–200 × (6–)7.5–12 μm, typically amyloid; lumen capillary all over its length.
Basidiocarp effused, membranaceous, sometimes cracked, up to 250 μm thick. Hymenial surface reticulate, white to cream-coloured or yellowish, sometimes with greenish tinge. Hyphae with thin to thickened walls, 1.7–3(–4) μm wide. Basidia 10–20(–25) × (3.5–)4–5.5 μm. Spores ellipsoid to subcylindrical, (4–)5.5–7(–7.5) × (2.2–)2.5–3.5(–4) μm. On gymnosperms.
Distr.: whole area. Ref.: 304, 405, 406.

T. chaetophorus (Höhn.) Donk 1956
Syn.: Peniophora abnormis Bourd. & Galz. 1928; P. dissoluta Overholts 1934

5b. Cystidia (40–)50–90(–110) × (3–)4–6 μm, not amyloid; lumen somewhat expanded in the upper part.
Distr.: Eur., USSR. Ref.: 304, 406.

T. effugienis (Bourd. & Galz.) Oberw. 1965

6a. Cystidia 50–150 × 7–15 μm, conical, not or weakly amyloid. Spores cylindrical, slightly curved, 6–7.5(–9) × 1.5–2.5 μm.
Basidiocarp effused, submembranaceous. Hymenial surface hispid, white to cream-coloured. Hyphae thin- to somewhat thick-walled, 2–4 μm wide. Cystidia with capillary lumen which expands abruptly at the apex. Basidia 12–20 × (3–)4–5 μm, often with thickened walls.
Distr.: whole area. Ref.: 304, 406.

T. subulatus (Bourd. & Galz.) Donk 1956

6b. Cystidia 40–75(–90) × (3–)4–6.5(–7) μm, cylindrical, acute, not amyloid. Spores cylindrical, slightly curved, 6–9 × 2–2.5(–2.8) μm.
Basidiocarp effused, very thin. Hymenial surface hispid, white to pale ochraceous. Hyphae thin- to slightly thick-walled, 2–4(–5) μm wide. Cystidia with capillary lumen which expands abruptly at the apex. Basidia 8–20 × 4–5.5(–5.8) μm, with slightly thickened walls.

T. hirtellus (Bourd. & Galz.) J. Erikss. 1958
7a. Spores globose or ellipsoid to subcylindrical, up to twice as long as wide. 8
7b. Spores narrowly cylindrical, often curved, at least (2.5—)3 times as long as wide.

8a. Cystidia with distinct apical bulb, not or very weakly amyloid. 9
8b. Cystidia without apical bulb, but lumen widened toward the apex; distinctly amyloid. 12

9a. Spores at least 5 μm long. 10
9b. Spores up to 5 μm long. 11

10a. Cystidia directly under bulb 0.5—1.5(—2) μm wide. Spores globulose to ellipsoid, 5—6.5 × 3—4.5 μm.
   Basisiocarp effused, pruinose, very thin. Hymenial surface even to minutely reticulate, hispid, hyaline, whitish or greyish. Hyphae with thin to thickened walls, 1.5—3(-3.8) μm wide. Cystidia 35—65 (-70) × (1.5—)2—3.5 μm, apical bulb up to 7 μm wide, not or very weakly amyloid. Basidia clavate or stalked, 8—18 × 4—6 μm.
   T. sceptraferus (H.S. Jacks. & Weresub apud Weresub) Donk 1956

10b. Cystidia directly under bulb 3.5—7 μm wide. Spores ellipsoid, 7—9 × 4—5.5 μm.
   Basisiocarp effused, crustaceous, very thin. Hymenial surface even, hispid, whitish. Hyphae with thin to thickened walls, 2—4.3 μm wide. Cystidia 90—150 × (5.5—)7—9(—10) μm, apical bulb up to 14(—16) μm wide, not amyloid. Cystidia occasionally without apical bulb, 90—150 × 7—9 μm. Basidia clavate to cylindrical, 18—22 × 6—7.5 μm.
   Distr.: N. Am.  Ref.: 304.
   T. regificus (H.S. Jacks. & Deardan) Donk 1956

11a. Spores ellipsoid, (3—)3.5—5(—5.5) × 2—3.5(—3.8) μm.
   Basisiocarp effused, submembranaceous, very thin. Hymenial surface even to minutely reticulate, hispid, whitish to greyish or cream-coloured. Hyphae with thin or slightly thickened walls, 2—3 μm wide. Cystidia 40—80 × (3—)3.5—5.5 μm, apical bulb up to 10 μm wide. Basidia clavate, 7—12 × 3.5—5 μm.
   Distr.: whole area.  Ref.: 405, 406.
   T. accedens (Bourd. & Galz.) Donk 1956

11b. Spores globose to broadly ovoid, 3.2—4.3 μm in diam. or 4—5 × 3.5—4.5 μm.
   Basisiocarp effused, submembranaceous, very thin. Hymenial surface reticulate, white to yellowish, hispid. Hyphae thin-walled, 2—3 μm wide. Cystidia 40—65 × 3—5 μm, apical bulb up to 8 μm wide. Basidia clavate or stalked, 6—10 × 4—5 μm.
   T. thermometrus (G.H. Cunn.) M.P. Christ. 1960
Tubulicrinis

12a. Spores globose to subglobose, 4–5 µm wide.
   Distr.: Eur., N. Am.  Ref.: 162.

12b. Spores ellipsoid to subcylindrical, often curved, (4–)5–6(–7) × 2–2.5 µm.
   Basidiocarp effused, very thin. Hymenial surface even, hispid, whitish to greyish or pale ochraceous. Hyphae with thin to thickened walls, 2–3(–4) µm wide. Cystidia cylindrical, 50–80 × (4–)5–8(–10) µm, thick-walled, apically thick-walled but hardly widened, distinctly amyloid. Basidia clavate, often basally somewhat thick-walled, 10–15 × 4–6 µm.
   Distr.: Eur., USSR.  Ref.: 304, 406.
   T. borealis J. Eriks. 1958

13a. Cystidal wall apically asymmetrically thickened.
   Basidiocarp effused, thin, soft membranaceous. Hymenial surface even to somewhat reticulate, white to pale ochraceous, hispid. Hyphae with thin to thickened walls, 2–4(–5) µm wide. Cystidia cylindrical, 45–100(–150) × (4.5–)5–8(–8.5) µm, amyloid, often somewhat encrusted. Basidia clavate, somewhat thick-walled, 8–18 × (3–)4–5(–5.5) µm, amyloid, in clusters. Spores cylindrical, curved, (4.5–)5–7.5 × (1.5–)2–2.5(–3) µm.
   Distr.: whole area.  Ref.: 304, 405, 406.
   T. calothrix (Pat.) Donk 1956
   Syn.: ?Peniophora pirina (Bourd. & Galz.) Bourd. & Galz. 1928; ?P. delectans Overholts 1934.

13b. Cystidial thickenings symmetrical.

14a. Spores ellipsoid to subcylindrical, often curved, (4–)5–6(–7) × 2–2.5 µm. T. borealis, see 12b.

14b. Spores cylindrical, up to 2 µm wide, usually larger.

15a. Cystidia with apical bulb up to 11 µm wide.
   Basidiocarp effused, pruinose to membranaceous. Hymenial surface even, hispid, white to cream-coloured or greyish. Hyphae with thin to slightly thickened walls, 2–3 µm wide. Cystidia 50–100 × (3.5–)5–8(–9) µm, weakly amyloid. Basidia clavate to cylindrical, sometimes with thickened walls, 7–15(–18) × 3.5–5 µm. Spores (4–)5–7(–8.5) × (1–)1.5–2 µm, narrowly cylindrical, curved.
   Distr.: whole area.  Ref.: 304, 405, 406.
   T. juniperinus (Bourd. & Galz.) Donk 1956

TYL
Syn.: *Tubulicrinis sororius* (Bourd. & Galz.) Oberw. 1965

15b. Cystidia without apical bulb.


*T. angustus* (D.P. Rogers & Weresub apud Weresub) Donk 1956


17a. Cystidial lumen gradually expanding toward the apex. Cystidia 50–100 × 5–9 μm, amyloid.

Distr.: whole area. Ref.: 304, 406.
*T. medius* (Bourd. & Galz.) Oberw. 1965

Syn.: ?*Tubulicrinis orientalis* Parm. 1967

17b. Cystidial lumen abruptly expanding toward the apex.

18a. Expanded part of lumen more or less globose, about as long as wide. Cystidia 60–120 × 5.5–12 μm, amyloid.

*T. propinquis* (Bourd. & Galz.) Donk 1956

18b. Expanded part of lumen cylindrical. Cystidia 60–170 × 6–12 μm, faintly or distinctly amyloid.

Distr.: whole area. Ref.: 304, 406.
*T. glebulosus* (Bres.) Donk 1956

Syn.: *Peniophora gracillima* Ellis & Everh. ex D.P. Rogers & H.S. Jacks. 1943

**TYLOSPORA** Donk 1960

Syn.: *Tylospora* Donk 1957, non ~ Botsch. 1952

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface even, pale coloured. Hyphal system monomitic. Hyphae hyaline to pale yellowish, thin- to somewhat thick-walled, cylindrical, with clamps. Cystidia lacking. Basidia hyaline, narrowly clavate, with a basal clamp, (2–)4-spored.
Tylospora

Spores hyaline, triangular of irregularly shaped, smooth or covered with warts, thin-walled, not amyloid.

Substrate: on wood of angiosperms and gymnosperms, plant debris and soil.
Type species: Corticium trigonospermum Bres. 1905
Distribution: in the whole area.
References: 66, 186.

1a. Spores of triangular shape, the surface smooth, 4-5.5 \( \times \) 4-5 \( \mu \)m.
   Basidiocarp soft membranaceous. Hymenial surface even, whitish to
coloured. Hyphae pale yellowish, somewhat thick-walled, 3.5-4.5 \( \mu \)m wide, with clamps, loosely covered with small granules.
   Basidia 20-25 \( \times \) 4-6 \( \mu \)m.
   Distr.: whole area. Ref.: 66, 186.
   T. asterophora (Bon.) Donk 1960
   Syn.: Corticium trigonospermum Bres. 1905

1b. Spores of irregular shape, the surface with warts, 6-7 \( \times \) 5-6 \( \mu \)m.
   Basidiocarp soft membranaceous. Hymenial surface even, whitish to
coloured. Hyphae hyaline to pale yellowish, somewhat thick-
   walled, 3.5-5 \( \mu \)m wide, with clamps, the surface often granular.
   Basidia 20-25 \( \times \) 5-6 \( \mu \)m.
   T. fibrillosa (Burt) Donk 1960

VARARIA P. Karst. 1903

Syn.: Asterostromella Höhn. & Litsch. 1907
Incl.: Dichostereum Pilát 1926

Basidiocarp annual or perennial, resupinate, effused, tomentose. Hymenial
surface even, tuberculate or rarely poroid, often farinaceous; margin distinct or
not, sometimes rhizomorphic. Hyphal system monomitic. Generative hyphae
hyaline, thin-walled, with or without clamps. Dichohyphidia in hymenium and
subiculum, hyaline to yellowish brown, thick-walled, dextrinoid. Gloeocystidia
often present, sometimes sulpho-positive. Basidia not forming a continuous
hymenium, utriform to cylindrical, with (2-)4 sterigmata. Spores hyaline, thin-
to somewhat thick-walled, smooth or ornamented with warts or ridges, globose
to navicular or fusoid, amyloid or not.

Substrate: saprophytic on wood of angiosperms and gymnosperms.
Type species: Ratulum investiens Schw. 1832
References: 123, 321, 398.
Distribution: in the whole area.

1a. Spores globose to ellipsoid, up to twice as long as broad.
1b. Spores cylindrical, navicular or fusoid, at least twice as long as broad.
2b. Spores smooth, not amyloid. Gloeocystidia sulpho-negative or absent. (When spores smooth and amyloid, cf. Scytinostroma.) 5

3a. Spores ellipsoid in side view, (4.5–)5–5.5–(6) × 3–4 µm, with small warts and ridges.
   Basidiocarp annual or perennial. Hymenial surface even to papillose or grandinoid, cream to ochraceous. Hyphae 2–2.5 µm wide. Dichohyphidia abundant, branches up to 4 µm wide. Gloeocystidia cylindrical to fusoid, 15–35(–60) × 4–6 µm. Basidia 15–30 × 3.5–5 µm.
   Distr.: whole area. Ref.: 123, 321, 398.
   V. granulosa (Fr.) Laurila 1939

3b. Spores globose to subglobose, typically larger. 4

   Basidiocarp effused. Hymenial surface even, pale buff to cinnamon buff. Hyphae 2–3 µm wide. Branches of dichohyphidia up to 2 µm wide. Basidia 25–45 × 5–6 µm. Spores globose to subglobose, with ridges, (5.5–)6–8 × 5.5–7 µm.
   V. effuscula (Cooke & Ellis) D.P. Rogers & H.S. Jacks. 1943

   Basidiocarp effused, up to 1 mm thick. Hymenial surface even to slightly warty, honey-yellow. Margin and subiculum darker. Hyphae 2–3 µm wide. Dichohyphidial branches up to 2 µm wide. Basidia up to 60 × 3.5–6 µm. Spores globose to subglobose, with distinct warts or ridges, (5.5–)6–7.5 × 5.5–6.5 µm.
   Distr.: N. Am. Ref.: 123, 398.
   V. pallescens (Schw.) D.P. Rogers & H.S. Jacks. 1943
   Syn.: ?Thelephora insinans Schw. 1832; ?Corticium sordulentum Cooke & Massee 1888; ?Corticium thelephoroides Ellis & Everh. 1885
   Note: The insufficiently known Astrostromella dura Bourd. & Galz. differs mainly in the minutely ornamented spores (and lack of gloeocystidia?). Distr.: Eur., N. Am.

   Basidiocarp effused. Hymenial surface even, cream-coloured to pale ochraceous; margin similar or sometimes rhizomorphic. Branches of dichohyphidia up to 4 µm wide. Gloeocystidia 3–5 µm wide.
   Distr.: N. Am. Ref.: 123.
   V. sphaericospora Gilberts. 1965

5b. Spores subglobose to ovoid, up to 5 µm long. Basidia up to 30 × 5 µm. 6

6a. Clamps absent. Spores subglobose to ovoid, 2.7–3.7 × 2.2–2.7 µm. Gloeocystidia 20–70 × 6–18 µm.

Distr.: Eur., USSR. Ref.: 321.

V. ochroleuca (Bourd. & Galz.) Donk 1930


Distr.: USSR. Ref.: 321.

V. vassilievae Parm. 1965

7a. Spores up to 11 μm long.

7b. Spores at least 11 μm long.

8a. Clamps present. Spores fusiform, widest in the middle, acute or rarely filiform at the ends, 8–11(–12) × 2.7–4.5 μm, with amyloid supra-hilar plage.


Distr.: whole area. Ref.: 123, 321, 398.

V. investitensis (Schw.) P. Karst. 1898

Syn.: Corticium alatum Berk. & Curt. 1873; Thelephora subochracea Peck 1893

Note: The description is after European material. American authors give deviating spore dimensions; Gilbertson (123): 7–8.5 × 3–3.5 μm, and Welden (398): 13–14(–21) × 3.5–4.5 μm.

8b. Clamps absent. Spores cylindrical to fusiform, not amyloid.


Distr.: N. Am. Ref.: 123, 321.

V. racemosa (Burt) D.P. Rogers & H.S. Jacks. 1943


V. gallica (Bourd. & Galz.) Bond. 1953
10a. Clamps absent. Spores 16–22 × 2.5–3.5 μm, narrowly fusoid.


Distr.: N. Am. Ref.: 123, 321.

V. phyllophila (Masse) D.P. Rogers & H.S. Jacks. 1943

10b. Clamps present at nearly all septa. Spores up to 16 μm long.

11a. Spores amygdaliform or cylindrical and curved at the apiculate end, (11–)12–14(–16) × 4–4.5 μm. Dichohyphidia thin-walled, with many, but short branches, forming clusters.


Distr.: N. Am. Ref.: 123, 398.

V. pectinata (Burt) D.P. Rogers & H.S. Jacks. 1943

11b. Spores lacrimiform, 11–16 × 3–5 μm. Dichohyphidia thick-walled, with long branches which may be several times short dichotomously branched near the apex.

Basidiocarp effused, tomentose. Hymenial surface even, pale ochraceous buff to pinkish buff. Hyphae 1–3 μm wide. Gloeocystidia with thin or somewhat thickened walls, clavate, often with apical bulb, 28–40 × 4–9 μm. Basidia utriform, 40–45 × 5.5–6 μm.

Distr.: N. Am. Ref.: 112.

V. athabascensis Gilberts. 1970

**VESICULOMYCES** Hagström 1977

Basidiocarp annual, resupinate, effused, membranaceous. Hymenial surface even to tuberculate, sometimes becoming rimose when dry, whitish to yellow or ochraceous. Hyphal system monomitic. Hyphae hyaline, thin-walled, without clamps. Gloeocystidia sulpho-negative, vesicular to sometimes flexuosocylindrical. Basidia clavate, with 4 stigmata. Spores hyaline, thin-walled, smooth, globose to subglobose, amylloid.

Substrate: saprophytic on wood of angiosperms and gymnosperms.

Type species: *Thelephora citrina* Pers. 1822

Distribution: in the whole area.

References: 148.

Monotypic. Basidiocarp effused, adnate, up to 500(–800) μm thick, membranaceous. Hymenial surface even to tuberculate, whitish to distinctly yellow, becoming ochraceous when dry. Hyphae thin-walled, 1.5–3 μm wide. Gloeocystidia in subiculum vesicular, 40–70 × 10–20
Vesiculomyces

μm, in hymenium clavate to flexuous-cylindrical or rarely fusiform, 45–80 × 6–9 μm. Basidia clavate, 30–50 × 5–7 μm. Spores globose to subglobose, (4–)5–7 μm in diam. or 6–8 × 5–6.5 μm.
V. citrinum (Pers.) Hagström 1977
Syn.: Thelephora radiosa Fr. ex Pers. 1822; Gloeocystidium alutaceum (Schrad.) ex Bres. 1897

VUILLEMINIA Maire 1902
Basidiocarp annual, resupinate, effused, ceraceous to somewhat gelatinous, developing on decorticated wood or under the bark, which finally curves back. Hymenial surface even, greyish, cream-coloured, reddish brown and often with a violaceous tinge. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps. Hyphidia present, simple. Basidia utriform to clavate, large. Spores hyaline, ellipsoid to typically cylindrical and curved, thin-walled, smooth, not amyloid.
Substrate: saprophytic on undecayed wood of angiosperms.
Type species: Thelephora comedens Nees ex Fr. 1821
Distribution: in the whole area.
References: 66.

Distr.: whole area. Ref.: 66.
V. comedens (Nees ex Fr.) Maire 1902
Syn.: Thelephora decorticans Pers. 1822; Vuillemia megalospora Bres. 1926

XENASMA Donk 1957
Incl.: Xenasmatella Oberw. 1965

Basidiocarp annual, resupinate, effused, ceraceous to gelatinous, more rarely membranaceous, typically indistinct when dry. Hymenial surface even, sometimes pruinose or pulverulent. Hyphal system monomitic. Hyphae hyaline, thin-walled, with clamps, walls often gelatinized. Cystidia, cystidioles or gloeo-cystidia may be present. Basidia more or less cylindrical, usually pleurobasidious, with (2–)4(−6) sterigmata. Spores hyaline, thin- or slightly thick-walled, smooth or ornamented, globose to ovoid, ellipsoid, cylindrical or allantoid, amyloid or not. Ornamentation of some species soluble in KOH.
Substrate: saprophytic on decayed wood of angiosperms and gymnosperms, rarely on humus.
Type species: Corticium rimicola P. Karst. 1896
Distribution: in the whole area.
References: 66, 241, 303.
Note: The genus is here accepted in a broad sense. The delimitation to some species of Trechispora is not yet clear.

1a. Spores amyloid. 2
1b. Spores not amyloid. 5

2a. Spores distinctly allantoid. 3
2b. Spores ellipsoid to slightly curved. 4

3a. Basidia 6–12 × 4–6 μm, encrusted with yellowish granular material, soluble in KOH. Hymenial surface olive brown.
Basidiocarp gelatinous, up to 30 μm thick. Hyphae 1.5–3 μm wide, with gelatinized walls. Spores allantoid, 5–7 × (1.5–)2–3 μm.
X. lloydii Liberta 1960

Basidiocarp gelatinous. Hyphae (0.5–)1–2(–2.5) μm wide, with gelatinized walls. Spores allantoid, 5–6 × 1.5–2(–2.5) μm.
Xenasmatella allantospora Oberw. 1965

4a. Spores ellipsoid to slightly curved, 4–5 × 2–3 μm.
Basidiocarp gelatinous. Hymenial surface greyish white to bluish grey, sometimes greyish ochraceous. Hyphae (0.5–)1–2.5(–3) μm wide, with gelatinized walls. Basidia 5–10(–14) × 4–5 μm.
X. grisellum (Bourd. & Galz.) Liberta 1960
Syn.: Corticium pruina Bourd. & Galz. 1928; C. sebacinaeforme
Bourd. & Galz. 1928; C. subtilascens Litsch. 1928

4b. Spores ellipsoid to slightly curved, 5.5–7 × 2.5–3.5 μm.
Basidiocarp gelatinous. Hymenial surface greyish to bluish grey.
Hyphae 1–2.5 μm wide, with gelatinized walls. Basidia 10–16 × 4–5 μm.
Distr.: N. Am. Ref.: 175, 241, 303.
X. ralinum (H.S. Jacks.) Liberta 1960

5a. Cystidia and/or cystidioles present. 6
5b. Cystidia and cystidioles absent. 11

6a. Spores smooth, cylindrical to allantoid, 5.5–8 × 1.5–2.5 μm. Cystidia apically whip-like elongated.
Basidiocarp ceraceous to gelatinous. Hymenial surface whitish to greyish blue. Hyphae 1–2(–3) μm wide, smooth or slightly encrusted.
Xenasma

Cystidia basally cylindrical, becoming abruptly narrowed to a filiform end, 20–60 × 3–5 μm, projecting up to 45 μm, the basal part encrusted. Basidia narrowly cylindrical, 10–20 × 3–4 μm.
X. subcalceum (Litsch.) Oberw. 1965

6b. Spores warted, ornamentation soluble in KOH.

7a. Spores globose, warted, 5.5–7.5 μm in diam. Cystidia thin-walled, clavate, cylindrical or subulate, 40–60 × 6–10 μm, some with 1–3 apical bulbs.
Distr.: N.Am. Ref.: 164, 175
Xenasmatella inopinata (H.S. Jacks.) Hjortstam & Ryv. 1979

7b. Spores ellipsoid. Cystidia sometimes capitate, but never with several apical bulbs.

8a. Basidia with (3–)4–6–7 sterigmata.

8b. Basidia with (2–)4 sterigmata.

9a. Spores ellipsoid, warted, 5–7 × 3–4 μm. Cystidia typically capitate, often with 3–5 blunt lobes at the apex, 20–60 × 2–4(–6) μm.
X. pruinosum (Pat.) Donk 1957
Syn.: Peniophora chordalis Hohn. & Litsch. 1906; P. subgelatinosa Litsch. 1928

9b. Spores ellipsoid, warted, 5.5–9 × (3.5–)4–6(–7.5) μm. Cystidia typically capitate, but never lobed, 10–30 × 3–6 μm.
X. praeteritum (H.S. Jacks.) Donk 1957


**X. rimicola** (P. Karst.) Donk 1957

10b. Cystidia thin-walled, cylindrical to capitate, 15–37 × 3–4 μm, apical bulb up to 6 μm wide.

Basidiocarp gelatinous. Hymenial surface whitish to bluish grey. Hyphae 1.5–3.5 μm wide, with gelatinized walls. Basidia cylindrical, 15–40 × 5–8 μm. Spores ellipsoid, warted, 8–12 × 4.5–6 μm, warts spirally arranged around the spore.

**X. pulverulentum** (Litsch.) Donk 1957

11a. Spores smooth. 12

11b. Spores warty, ornamentation not or hardly soluble in KOH. 14

12a. Spores narrowly ovoid to fusoid, 5.5–7 × 1.5–2 μm.

Distr.: N. Am. Ref.: 248.

**X. gaspescium** Liberta 1966

12b. Spores ovoid to ellipsoid, at least 3 μm broad. 13


Basidiocarp ceraceous to gelatinous, up to 400 μm thick. Hymenial surface whitish grey to ochraceous. Hyphae 1.5–4(–5) μm wide. Spores ovoid to narrowly ellipsoid, 5–10.5 × 3–5 μm.
Distr.: whole area. Ref.: 241, 303.

**X. filicinum** (Bourd.) M.P. Christ. 1960
Syn.: **Corticium pseudotsugae** Burt 1926; **C. asseriphilum** Litsch. 1934

13b. Basidia cylindrical, 8–14 × (4.5–)5–7 μm.

Basidiocarp gelatinous, up to 30 μm thick. Hymenial surface hyaline to whitish grey. Hyphae 1.5–4(–5) μm wide, with gelatinized walls. Spores ovoid to ellipsoid, 5–7(–7.5) × 3.5–4.5(–5) μm.
Distr.: whole area. Ref.: 241, 303.

**X. subnitens** (Bourd. & Galz.) Liberta 1960

14a. Spores at least 3 μm broad. 15

14b. Spores up to 3 μm broad. 16

15a. Spores globose to ovoid, 3.5–6 × 3–6 μm, more rarely ellipsoid, 5–6 × (3–)3.5–4 μm, warted. Basidia 9–17(–20) × 5–8 μm.

Basidiocarp ceraceous to gelatinous. Hymenial surface even or minutely reticulate, rarely raduloid, whitish grey, bluish grey or ochraceous. Hyphae 1–3 μm wide, with gelatinized walls.
Distr.: whole area. Ref.: 241, 303.

**X. tulasnelloideum** (Höh. & Litsch.) Donk 1957
Xenasma

Syn.: Corticium incaenum Burt 1926
Note: Xenasmataceae decipiens Hjortstam & Ryv. 1979 also keys out here. It differs in the membranaceous to slightly crustaceous basidiocarp and the slightly thick-walled, globose spores, 5–6 μm in diam. Distr.: Eur. Ref.: 164.

15b. Spores ellipsoid, (5–)5.5–7 × 3–4 μm, coarsely warty. Basidia 7–13 × 5–6 μm.
Basidiocarp ceraceous to gelatinous. Hymenial surface even, bluish grey. Hyphae 1.5–3 μm wide, with gelatinized walls.
Distr.: N. Am. Ref.: 246.
X. californicum Liberta 1965

16a. Spores ovoid to ellipsoid, warty to echinate, 4–5 × 2.5–3 μm.
X. tenuiculum (Litsch.) J. Erikss. 1958
Note: Contrary to Liberta (241), Oberwinkler (303) found no pleurobasidium in the type specimen.

16b. Spores ellipsoid to slightly curved, warted. Hyphal strands often present.

17a. Most spores only warted at the abaxial (convex) side, ellipsoid to slightly curved, 4–6 × 2–3 μm.
X. subflavido-grisea (Litsch.) Parm. 1968

17b. Spores completely covered with warts, ellipsoid to slightly curved, 4–4.5 × 2–2.5 μm.
Basidiocarp ceraceous to gelatinous. Hymenial surface greyish to bluish grey. Hyphae 1–2.5 μm wide, with gelatinized walls. Basidia 8.5–13(–15) × 4.5–6 μm.
Distr.: N. Am. Ref.: 175, 241, 303.
X. insperatum (H.S. Jacks.) Donk 1957

XENOSPERMA Oberw. 1965

Basidiocarp annual, resupinate, effused, pruinose to ceraceous-crustaceous, adnate. Hymenial surface even, whitish. Hyphal system monomitic. Hyphae hyaline, thin-walled, more or less distinct, with gelatinized walls and clamps. Sterile hymenial structures absent. Basidia typically pleurobasidious, cylindrical to subclavate, with two stout, curved sterigmata. Spores hyaline, pyramidal (turbinate), thin-walled, not amyloid.

Substrate: saprophytic on decayed wood or bark.
Xylobolus

Distribution: Europe, North America.
Type species: *Xenasma ludibundum* D.P. Rogers & Liberta 1962
References: 303.

Monotypic. Basidiocarp effused, closely adnate, up to 30 μm thick, pruinose to ceraceous-crustaceous. Hymenial surface even, whitish. Hyphae hyaline, thin-walled, 1–3 μm wide. Basidia cylindrical to subclavate, bifurcate at the base, 6.5–10.5 × 5–8 μm, with two sterigmata up to 10.5 μm long. Spores hyaline, pyramidal, 5–9 × 4.5–8 μm.


*X. ludibundum* (D.P. Rogers & Liberta) Oberw. 1965

**XYLOBOLUS** P. Karst. 1881

Basidiocarp annual or typically perennial, resupinate, effused, effused-reflexed or flabelliform, coriaceous to corytk. Abhymenial surface (when exposed) feltly or tomentose, often concentrically zoned. Hymenial surface even or somewhat tuberculate, pale coloured, often cracked. Hyphal system seemingly dimitic. Generative hyphae hyaline to brownish, thin- to thick-walled, clamps absent or rare (except one tropical species with abundant clamps). Acanthohypidia present, hyaline to brownish, with thin to thick walls. Cystidia and/or gloecystidia present or absent, hyaline to pale brown, with thin to thickened walls, sometimes encrusted or with yellowish contents. Cystidioles often present. Basidia clavate to nearly cylindrical, in small clusters, with (2–)4 sterigmata. Spores hyaline, thin-walled, smooth, ellipsoid to cylindrical, amyloid.

Substrate: saprophytic on wood of angiosperms.
Types species: *Stereum frustulosum* Fr. 1838
Distribution: in the whole area.
References: 10, 182.

1a. Spores ellipsoid to subcylindrical, rarely cylindrical, 6–9 × 2.5–4 μm.

Basidiocarp effused or usually effused-reflexed to flabelliform, coriaceous. Abhymenial surface tomentose to hisrate, pale to dark brown, blackish when old, often zoned. Hymenial surface pinkish yellow to purplish, often cracked. Skeletoid hyphae hyaline to yellowish to dark brown, 4–6 μm wide, walls 1–2.5(–3) μm thick. Generative hyphae hyaline to yellowish, thin- to thick-walled, 3–7(–8) μm wide, without clamps. Acanthohypidia cylindrical, thin- to thick-walled. Cystidia hyaline to pale brown, typically thick-walled, often with yellowish contents, up to 8 μm wide. Cystidioles present. Basidia clavate to cylindrical, 24–33(–40) × 5–7 μm.


*X. illudens* (Berk.) Boidin 1958
Syn.: *Stereum archeri* Berk. 1860; *S. pannosum* Cooke 1879; *S. spiniferum* Lloyd 1914; *S. zonarium* Lloyd 1917; *S. nitens* Lloyd 1922.
1b. Spores ellipsoid, up to 5.2 μm long

2a. Basal layer with hyphae parallel to the substrate absent. Basidiocarp at first tuberculiform, attached by a narrow base, becoming confluent, strongly cracked. Cystidia absent.

Hymenial surface even to slightly tuberculate, pale buff to avellaneous. Skeletoid hyphae yellowish to dark brown, 4–6 μm wide, walls up to 2 μm thick. Generative hyphae hyaline to yellowish, thin- to thick-walled, 3–5 μm wide. Acanthohyphidia hyaline to brownish, thin- to thick-walled. Gloeocystidia rare, sulpho-negative. Cystidioles often present. Basidia clavate to cylindrical, 16–35 × 3.5–5 μm. Spores ellipsoid, 3.5–5.2 × 2.5–3(–3.5) μm.

Distr.: whole area. Ref.: 178, 182, 234, 367.

**X. frustulatus** (Pers. ex Fr.) Boidin 1958

Syn.: *Thelephora sinuans* Pers. 1822; *Stereum frustulosum* Fr. 1838; *Th. perdit* Hartig 1878; *S. nummularium* Velen. 1922

2b. Basal layer with hyphae parallel to substrate present. Basidiocarp typically effused-reflexed, not consisting of numerous small confluent tubercules. Cystidia typically present, hyaline to yellowish brown, thick-walled, often somewhat encrusted.

Hymenial surface even or slightly plicate, sometimes cracked, light buff to ochraceous. Abhymenial surface tomentose to feltly, pale to dark brown. Skeletoid hyphae yellowish to dark brown, 4–7 μm wide, walls up to 3 μm thick. Generative hyphae hyaline to yellowish, 3–5 μm wide, with thin or thickened walls. Acanthohyphidia hyaline to yellowish, thin- to thick-walled, sometimes rare. Cystidioles sometimes present. Basidia clavate to cylindrical, 18–30 × 3.5–5 μm. Spores ellipsoid, 4–4.8 × 2.5–3 μm.

Distr.: whole area. Ref.: 182, 234.

**X. subplicatus** (Berk. & Curt.) Boidin 1958

Syn.: *?Stereum cinereo-badium* Klotzsch 1843; *S. insigne* Bres. 1891; *Hymenochaete tibidense* P. Henn. 1899; *S. sepium* Burt 1920; *S. hiugense* Imazeki 1939

Note: The closely related, but imperfectly known *X. annosus* (Berk. & Br.) Boidin with a (sub)tropical distribution is also reported from North America.
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