

MUSHROOMS THAT GROW ON OTHER MUSHROOMS

A Trial Key in progress listing over 380 forms



John Plischke III

Trail Key to Mushrooms Growing on Other Mushrooms

By John Plischke

Introduction

There are many different types of mushrooms that grow on other species of fungi. Some of them are included in this Key. The main goal of the Key is to make it easier to identify them without using hundreds or thousands of hard to find and difficult to understand pages of technical literature and where possible (the vast majority here) to be able to identify them without a microscope when possible.

Perhaps the easiest way to start is by visually-macroscopically identifying their host or host type and then determining the color or the attacker. One of the flaws in the key is that some of these host mushrooms are too numerous to list here so an ID could be missed but the most common host where they are encountered are included in the key. Sometimes similar looking fungi may get confused unless a microscope is used.

Hypomyces often have 2 known forms, a sexual form (teleomorph) and an asexual form (anamorph)

Instructions:

Question #1. Read all question 1's and pick the general type, shape or feature of the Host fungi. Then continue to the next number which will be one of the numbers from #2 to #24. This number will include a similar group of fungi hosts and hopefully will contain a match. Currently the key numbering system is under revision because some of the numbers contained to many species to easily deal with so these sections may be a little different in their numbering system. Some may have Such as 2 followed by a letter = 2a, 2b, 2c etc. or they may be divided down into further groups such as 2a1, 2a2, 2a3, then 2b1, 2b2, 2b3 with the letter further

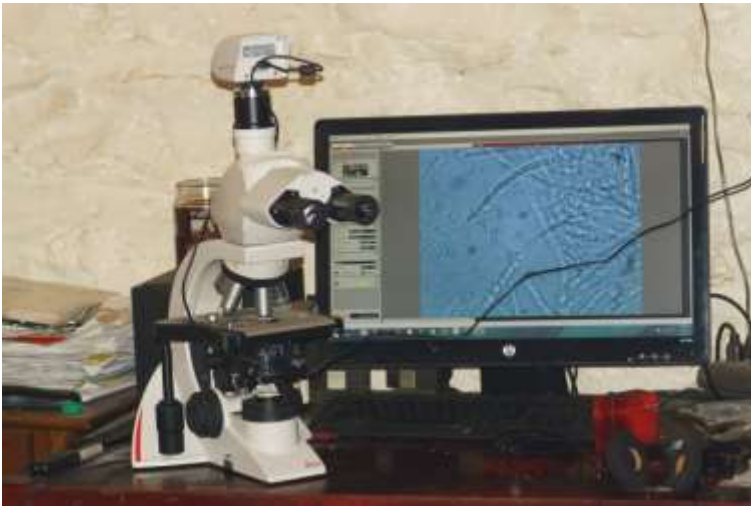
breaking down the groups. When the group is further broken down there will a section at the beginning telling what for example 2a(s) are then 2bs are then 2Cs are before using the 2a1, 2a2, 2a3 etc system. Once a number is used that is broken down to the genus and their will then more than 1 member of the genus since a number is used. A word of caution just because you see a certain genus listed in order such as numbers 1-4 all being the same genus the genus may also be listed further down in the key and the genus may be included with multiple genus that it can occur on. Hopefully this problem will get addressed and fixed when time permits.

Special thanks for encouraging me to put something together that started out with macro photos instead of micro photos goes out to Gary Samuels.

If additional comments or suggestions contact

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This Key accompanies the PowerPoint Presentation



#1. Growing on Cup shaped fungi and other ascomycetes.....Go to #2a-2x on page 26-42

Notes this includes Gyromitra, Helvella, Humaria, Lasiosphaeria, Leotia (Jelly Babies), Morchella (Morels), Sclerotinia, and on some insect fungi Beauveria, Cordyceps, Hirsutella, Isaria, and Paecilomyces, Ascobolus, Ascocoryne, Coconia, Colpoma, Geopora, Lasiosphaeria, Meliola, Mollisia, Nectria, Passalora, Phyllachora, Pyrenopeziza, Ryparobilus, Sclerotinia, Ulocladium – NOT ON EARTH TONGUES or FALSE TRUFFLES - NEXT 3 CHOICES ARE ASCOS



Gyromitra infula

Leotia lubrica



Laiosphaeria

1. Growing on Earth

Tongues.....3
(Geoglossum and Trichoglossum)



Trichoglossum

1. Growing on Carbon looking fungi (these are also ascos).....4

such as Bertia, Bytryosphaeria, Cucurbitaria, Diaporthe, Diatrypella, Diatrype, Dibotryon, Eutrybliidiella, Eutypa, Hypoxylon, Lophodermium, Massarina, Peroneutypa, Pyrenomyces, Valsa, and Xylaria



Hypoxylon rubiginosum



1. Growing on Polypores

5

Note this includes Antrodia, Bjerkandera, Daedaleopsis, Fomes, Fomitopsis, Ganoderma, Gloeophyllum, Grifola, Laetiporus, Merulius, Oligoporus, Phellinus, Piptoporus betulinus- the Birch Polypore, Polyporus, Postia, Pycnoporellus, Rigidoporus, Skeletocutis, Trametes, Trichaptum, and Tyromyces



Ganoderma applanatum
Artist Conk



Piptoporus betulinus
Birch polypore



Turkey Tail -*Trametes versicolor*



Tyromyces chioneus



Ganoderma tsugae
Hemlock Varnish Shelf



Bjerkandera adusta
Smoke Polypore

1. Growing on Stereum6
.....6
Note includes Stereum hirsutum, Stereum ostrea, Stereum sanguinolentum, and Stereum subtomentosum



Stereum ostrea



1. Growing on crust fungi - crusty looking (Basidio) fungi.....7
such as Coniophora, Dendrothele, Granulobasidium, Hymenochaete, Hymenochaetaceae, Hyphoderma, Leucogyrophana, Peniophora, Phanerochaete, Scytinostroma, Tomentella, Trechispora, Tubulicrinis, Tulasnella



1. Growing on Boletes and Bolete Like fungi

8

Note includes Austroboletus, Boletus, Gyroporus, Strobilomyces, Suillus, Tylopilus, Xerocomus etc.



Xanthoconium separans

1. Growing on Tooth Fungi

.....9
Note includes *Steccherinum adustum* = *Mycorrhaphium adustum*
and *Steccheinum*



1. Growing on Gilled Mushrooms10

Notes such as *Agaricus*, *Amanita*, *Armillaria*, *Clitocybe*, *Collybia*, *Coprinus*, *Crepidotus*, *Entoloma*, *Gymnopus*, *Lactarius*, *Lentinula*, *Lepista*, *Leptonia*, *Marasmioid* looking fungi, *Marasmius*, *Mycena*, *Nolanea*, *Paxillus*, *Pholiota*, *Pleurotus*, *Pouzarella*, *Russula*, *Tapinella*, *Tubaria*, and others



Crepidotus



Leptonia



Lactarius

Pholiota



Nolanea
Strigolissima



Agaricus



Lactarius peckii



Amanita rubescens

1. Growing on Slime Molds (Myxomycetes)

.....11

Notes such as Arcyria, Cribraria, Diachea, Diderma, Didymium, Fuligo, Hemitrichia, Lindbladia, Lycogala, Metatrachia, Mucilago, Physarum, Stemonitis, and Trichia



Hemitrichia serpula



1. Growing on rotting mushrooms that cannot be identified12



1. Growing on Chanterelles (*Cantharellus* sp.) including *Cantharellus subalbidus*, *Cantharellus cibarius*, *Cantharellus lateritius*, *Cantharellus roseocanus* and *Craterellus lutescens* and sometimes some even on *Craterellus* such as Black Trumpets.....13



Cantharellus cibarius



1. Growing on Coral Fungi

14

.....
such as *Clavulina cinerea*, *Clavulina cristata* and *Ramaria*



1. Growing on Puffballs or
Growing on Scleroderma (False Puffballs or Earth Balls)



1. Growing on Elaphomyces or other false truffles
Note False truffles are usually buried.



1. Growing on or in Jelly Fungi

17

.....
such as Auricularia, Calocera, Dacrymyces, Exidia,
Myxarium, Pseudohydnum and Tremella--- Fit here?



1. Growing on a mushroom that can not be seen, all we can see is a Squamanita.....18

Hosts are such fungi as Cystoderma, Galerina, Hebeloma mesophaeum, Inocybe oblectabilis

Growing on mushrooms that cannot be seen.....18B

1. Growing on the Splash Cup – *Cyathus striatus* a type of Birds nest Fungi or on Birds nest

Fungi.....19



1. Growing on *Aleurodiscus* there are several species.....20



1. Growing on the Xylobolus sp. Such as Ceramic
Parchment.....21



including both *Xylobolus frustulatus* and *Xylobolus subpileatus*

1. Growing on Earthstars in the Genus *Astraeus* including
Astraeus
hygrometricus.....22

1. Growing on misc mushrooms that are not be classified at this
time into another group that is listed
here.....
.....23

(2a.) Growing on *Humaria hemisphaerica*. It is yellowish becoming tannish and powder like..... **Hypomyces stephanomatis**

Asci 65-100 X 4.5-7um. Its ascospores are 9-12 X 2.5-4um. Its anamorph is **Stephanoma strigosum** and is common unlike the rare teleomorph. It is white to whitish, can be cottony. Conidia 10-15.5 X 3.5-5.5. Aleurioconidia 12-20. NA and Europe



(2b.) Growing on *Leotia lubrica* -Yellow Jelly Babies. It is white to whitish at the beginning to buff then turning greenish or blue-green then darker to almost black

.....
..... **Hypomyces leotiicola**

The pimple like perithecia are closely spaced and touching. Asci 60-100 X 4-6um. Ascospores 7-10 X 2.5-4um. The Anamorph is **Sepedonium leotiarum**. Conidia 12-17 X 2.5-4.5um, Aleurioconidia 17-25 wide. Conidiophores are 40-60um in length.



Infected *Leotia* above and unaffected below



(2c.1) Growing on insect fungi such as Beauveria, Hirsutella, Isaria, and Paecilomyces and resembling brown to black hairs growing out from the insect attacker.....**Sypstospora parasitica**

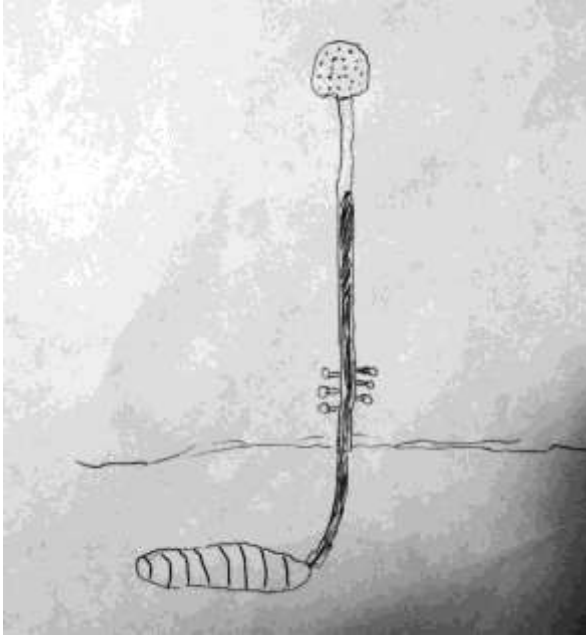
The hairs are swollen at the very base. Asci 22-34 X 6.5 X 11.5um. Ascospores brownish 4.5-9 X 2-3.5um.



Other species that grow on the fungi that grow on insects include:

(2c2.) Growing on the Cordyceps or Hirsutella that occur on insects or just the insect. It is whitish at first but develops orangish to brownish tones..... **Polycephalomyces ramosus**

It can be branched. Conidia have 2 types. 2-3 X 1-2um and 3-4.5 X 1.5-2um. Occurs in North America, Europe and elsewhere.



(2c3.) Growing with out branches on Cordyceps and Hirsutella, but branched with multiple heads on the branches when occurring on larva that is burried. It is whitish to white or with yellowish tones..... **Polycephalomyces formosus**

Conidia 1.5-3 X 1-1.5um

(2d1.) Growing on *Helvella*, It starts off as a white to whitish mold then turning pinkish then brownish.....

..... ***Hypomyces cervinigenus***

Further details have really complicated the issues of what *Helvella* we have where and what different species of *Hypomyces* grow on them. Some of these issues will be discussed on the next page.

It can cover the entire host mushroom. For a more accurate macroscopic ID look for the pinkish and brownish colored stages. The ascospores 14-24 X 2-5 um. Asci 100-140 X 2-5um. Species infected include *Helvella lacunosa*, *Helvella griseoalba*, and *Helvella macropus*. Its anamorph is ***Mycogone cervina*** and is more commonly encountered, its aleurospores are 13-18 and conidia are 10-24 X 3.5-5um.



Helvella vespertina



In the western United States perhaps one of the more common *Helvella* hosts for what we have been calling *Hypomyces cervinigenus* is what we have been calling *Helvella lacunosa*. It turns out that it appears *Helvella lacunosa* is European or at least it does not occur in the western United States.

What has been called *Helvella lacunosa* in the central and Eastern United states is a different species from those found on the other side of the Rockies. Further research needs to be done to tell exactly how many species we have and where they occur.

It appears that two different provisional names are being used for west coast *Helvella lacunosa*. *Helvella vespertina* is being used for the ones that occur under pine trees and under Doug fir trees there in the fall and in the winter. *Helvella dryophila* is being used for the ones that occur under typically oak in the spring but also much less common under other deciduous trees.

What has been called *Hypomyces cervinigenus* in California is really 2 new species, they occur on the 2 cryptic *Helvellas* that are mentioned above from the lacunose group. Each *Helvella lacunosa* group there has its own species of *Hypomyces cervinigenus* group which only occurs on that species of *Helvella*.

(2d2.) Growing on *Helvella lacunosa*, often the host is unrecognizable and rotten, all that is sometimes seen is this small tannish brown colored gilled mushroom.....**Clitocybe sclerotoidea**

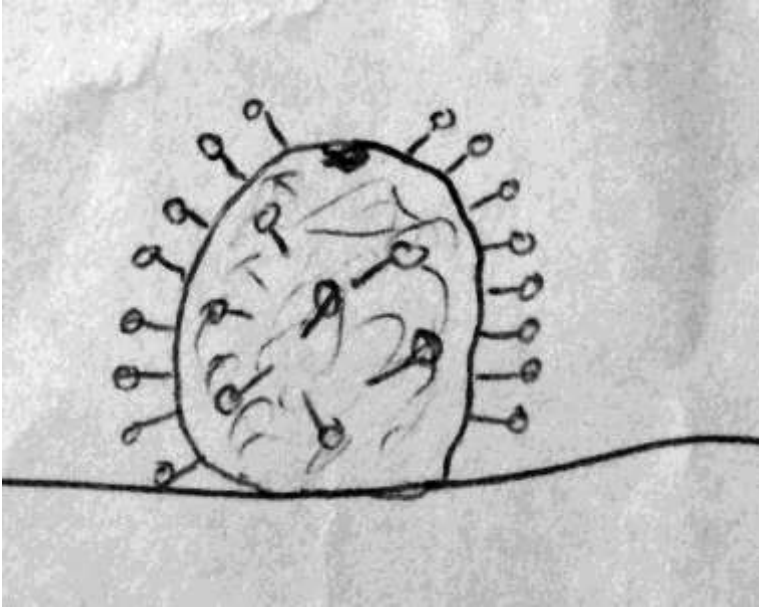
The Parasitic *Clitocybe* old name was= *Tricholoma sclerotoideum*. Its cap is 3/8 to 1 1/4 inches wide. It has a sclerotium that can vary in size but large enough to easily notice. The *Clitocybe* spores are 7-10 X 3-3.5um.



(2e.) Growing on Lasiosphaeria
ovina.....

Krieglsteinera lasiosphaeriae

It looks like tiny transparent hairs that have roundish balls on the outer end. It typically grows in quantity in the Lasiosphaeria but is very small and often a hand lens is needed to see them in detail. Typically a number grow on each Lasiosphaeria growing all over it and typically covering multiple hosts.



(2f.) Growing on Morels (Morchella)

Hypomyces cervinigenus

It starts off as a white to whitish mold then turning pinkish then brownish. It can cover the entire host mushroom. For a more accurate macroscopic ID make sure the pink or brownish colored stages are present. The ascospores 14-24 X 2-5 um. Asci 100-140 X 2-5um. Its anamorph is **Mycogone cervina** and is more commonly encountered, its aleurospores are 13-18 and conidia are 10-24 X 3.5-5um. **See photo on page 24 where this is on Helvella.**

(2g.) Growing on

Gyromitra.....

Sphaeronamella helvella

Only Gyromitra species affected are Gyromitra infula and Gyromitra ambigua. It makes the host look deformed a little, discolored and weakened. The ascispores are 8-10.5 X 3-4.5 um. Asci have 8 spores. They are 14-26 X 10-16um. Conidia 7-15 X 3-4.5um.



(2h.) Growing on *Sclerotinia sclerotiorum* -----

-----**Bionectria**

compactiuscula

It is yellowish orange to orangish colored and roundish ball in shape. It is typically sunken in the top center. It grows in groups. It is 8 spored and the asci are 50-60 X 6-8um. Ascospores 8-12 X 2.5-4um. Conidia 4.5-8.5 X 1.5-3 um. Its anamorph is *Clonostachys compactiuscula*.

Note *Sclerotinia sclerotiorum* is just one of the things that this *Bionectria* grows on including many and more often non fungal things such as soil and dead bark. Also near *pyrenomycetes*.

Note *Sclerotinia sclerotiorum* starts out looking like a whitish colored cottony mold that casuse plant rot. It produces blackish colored seed looking seed looking areas after the plant typically dies.

(2i.) Growing on some ascomycetes but also on non-fungal things such as dead bark. It is yellowish orange o orangish colored and resemble tiny roundish balls that are often darker colored in the top center..... **Bionectria ochroleuca**

Asci are 50-58 X 6.5X7.5um. Ascospores 9-11 X 2.5-4um. Conidia 4.5-6 X 2-3.5 um.

Note: its anamorph ***Clonostachys rosea*** can also grow on myxos.

(2j.) Growing on *Ulocladium atrum* that is associated with *Melampsora* that occurs on deteriorating leaves of a species of poplar tree called *Populus trichocarpa* or Black Cottonwood or California Poplar. It is roundish and yellow to orange or brown colored.....**Hydropisphaera fungicola**

Asci 80-90 X 9-11um. Ascospores 8.5-10.5 X 4-6um. Can have 2 oil drops one on each side of the pill slit.

(2k.) Growing in the spore bearing layer but not on top of
Ascocoryne sarcoides.....**Syzygospora sorana**
The spores are 7.5-10 X 6-8.5um.



(2l.) Growing on the greyish pink to yellowish green colored
discomycete Colpoma juniper which resembles a scab cut into a
branches bark. The attacker is jelly like and off white and
translucent and often cushion
shaped.....**Tremella karstenii**
= Tremella juniperina. Spores of the attacker are globe like or
almost so and are 4-6um. The spores are hyaline. Its basidia are
8.5-13 X 8-13 um. Occuring in the US and Europe.

(2m1.) Growing on Nectria cinnabarina, called the Coral Spot
Fungi. Its fruiting body is up to .3mm. In eastern North America
growing on Beech - Fagus grandifolia, and in Europe on Littleleaf
Linden -Tilia cordata
wide.....
.....**Nitschkia parasitans**
var. mijuskovicii
Nectria cinnabarina anamorph is Tubercularia vulgaris. The
Nitschkia asci are 35-65 X 5-10um. They have 8 spores.
Ascospores are 5-11 X 2-3um.

(2m2.) Growing on *Nectria coccinea* and *Nectria coccinea* var. *faginata*. That causes the beech disease on the trees and on *Nectria galligena* on cankers of *Betula* – Birch. Looks like large irregular shaped orange colored patches on the bark what are made up of orangish colored somewhat roundish balls that can sometimes be powdery.....

.....***Nematogonum ferrugineum***

= *Gonatorrhodiella highlei* this fungi imperfecti has Conidia 14-18 X 9-11um.



(2m3.) Growing on Nectria but only reported from New Zealand.....
.....**Valetoniella crucipila**

Its clavate asci are 36-44 X 7-10um. The elliptical ascospores are 8-10 X 3.5-5um.

(2n.) Growing on Pyrenomycetes.....
.....**Nitschkia brevispina**

Ascospores 9-15 X 3-4

(2o.) Growing in Orbilia. Asci 30-48 X 6-8um. 8 spored. Ascospores 8-12 X 2-2.5um. growing in Orbilia eucalypti.....
.....**Helicogonium fuisporum**

Cannot be seen without a microscope and looking inside.

There are 2 other species that grows in Orbilia. **Helicogonium orbiliarum** which also occurs in other ascos besides this one and **Helicogonium hyaloscyparum** which occurs in Orbilia and in other asco's.



(2p.) Growing on Mollisia and Pyrenopeziza species in Belgium---
----- **Tremella discicola**

(2q.) Growing on Mollisia cinerea in Denmark-----
----- **Tremella fungicola**

(2r.) Growing on Meliola sp. Mycelium including on Meliola substenospora. It looks like an Orbilia. Its host grows on leaves and the attacker is about 0.5mm in diameter. The color is yellowish to orangish or pinkish from dried material.....**Calloriopsis gelatinosa**

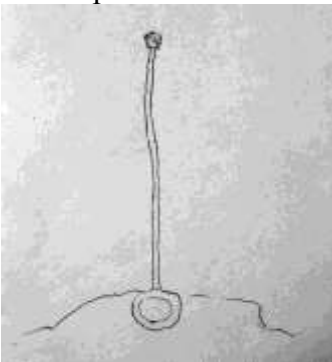
Asci 8 spored. 40-52 X 10.5-15um. Ascospores 10-16 X 3-6um. They are J-.

(2s.) Growing on a tomato leaf spot or mold called Passalora fulva = Cladosporium fulvum.....
.....**Hadsfordia pulvinata**

(2t.) Growing on Ascobolus and Ryparobilus pachyascus, both of these ascos occur on dung.....
.....**Sphaeronaemella fimicola**

=Viennotidia fimicola

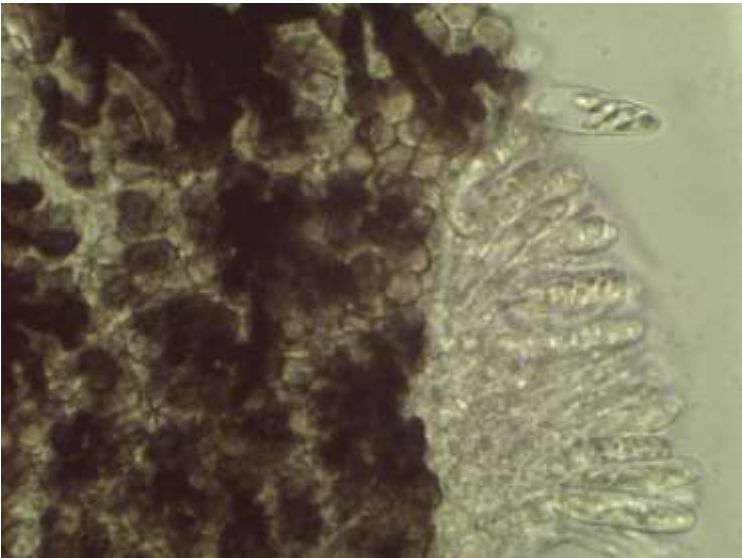
Its spores are on the drops that form on top.



(2u). Growing inside various ascos such as
Pyrenopeziza..... **Helicogonium trabinelloides**



Pirottaea cf. *imbricata*



Helicogonium trabinelloides



(2v1.) Growing on the asco Phyllachora but also other fungi. Phyllachora is a leaf spot looking fungi that can grow on leaves. The attacker is disk shaped to somewhat flat or convex. It is stalkless to having a very small one. 0.4 to 1.5 mm in diameter. The fertile area is olive to grayish when fresh but turning brownish shades when dried
out.....

.....**Parencoelia andina**

Ascospores are hyaline, 5-6.5 X 3.5 – 5um. Asci 70-90 X 7-9um with a crozier. Reported from Ecuador. Basically these are scabby disk looking fungi that occur on the leaf spots.

(2v2.) Growing on the asco Phyllachora but also others. Phyllachora is a leaf spot looking fungi that can grow on leaves. The attacker is somewhat flat. It is stalkless and attached directly at the base to the host fungi. 0.3 to 1.0 mm in diameter. It is tannish to brownish colored. It is downy to scaly/scuffy on the outer
parts.....

.....**Parencoelia myriostylidis**

Ascospores are roundish 4-5um in diameter. The asci are 8 spored. J-. Asci 65-80 X 6.5-7um. Reported from Ecuador and Mexico. Basically these are scabby disk looking fungi that occur on the leaf spots. Its anamorph has conidia 4-5 X 2.5-3.5um.

(2w.) Growing on the asco Phyllachora and Cocconia sp.. Phyllachora is a leaf spot looking fungi that can grow on leaves. Cocconia also occur on leaves. The attacker is disk shaped, stalkless and attached directly at the base to the host fungi. 0.5 to 1.0 mm in diameter. It is darker brown to brownish colored. It is downy to scaly/scuffy on the outer parts.

.....**Parencoelia biparasitica**

Ascospores 8-12.5 X 4.5-7um. Asci have 4 to 8 spores. J-. They are clavate, 72-132 X 9.5-13 um. Reported from Ecuador. Basically these are scabby disk looking fungi that occur on the leaf spots.

2x1. Growing on *Geopora arenicola* (Fuckel) Höhnelt

.....**Melanospora breviostris** looks like little roundish colored balls. Its ascospores are 26-30 X 12-14um and are reported to be symmetric. There are typically numerous attackers and they are more roundish pear shaped with a pointy beak looking end at the top.

The host typically grows in sandy areas and is uncommon. The attacker is known from Europe.

The host is also attacked by**Melanospora tulasnei**

It is dark brownish to blackish in color. A hand lens should be used to check for it since it is so tiny and easy to overlook. Its ascospores are 18-24 X 10-15 um in length and reported to be symmetrical. Has 8 spored asci. Typically no more than 1/3 to 1/2 of the attacker can be seen, the rest of it is embedded in the host. There are typically numerous attackers and they are pear shaped with a pointy beak looking end at the top.

Which is the more common of the 2 attackers of the cup fungi

2x2. Growing on *Geopora cooperi* (Obermeyer) Höhnelt

.....**Microthecium geopora**

Its ascospores are 28-30 X 13-16.5 um. There are typically numerous attackers and they are roundish in shape with out a beak. Occurs in North America as well as Europe.

(3.) Growing on the Earth Tongue both *Geoglossum* sp. and *Trichoglossum* sp. Covering the host or at least part of it starting with the head and turning it whitish.....See A and B Below

The NA Anamorph is ***Papulaspora candida***, which is what, is most commonly found and it resembles a circle with petals around it like a flower. In NA the Conidia 10-18 X 3-5um and Papulospores 18-28um. Conidiophores 40-100um in length.

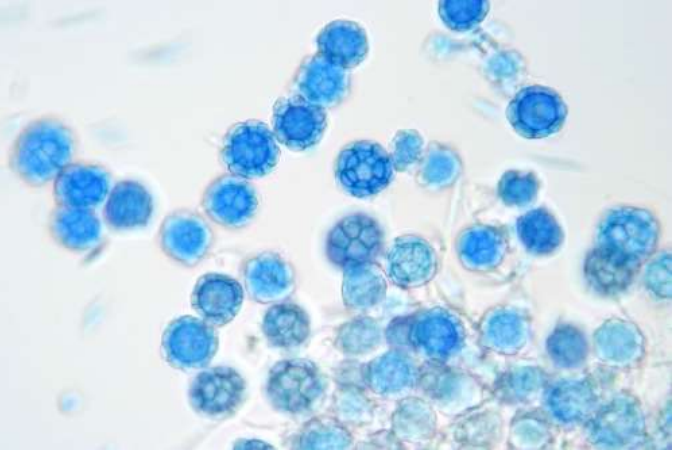


(3a.) Growing in North America.....***Hypomyces papulasporae* var. *americanus***

Asci 75-125 X 4-5.5um. Ascospores 13-17 X 2.5-4um, Asci 75-130 X 4-5.5um.

(3b.) Growing in Europe **Hypomyces papulasporae var. papulasporae**

Papulaspores not as large as American collections but the conidia are larger



(3c.) Growing on the Earth Tongue both *Geoglossum* sp. and *Trichoglossum* sp. It is yellowish brown colored and the perithecia are greenish yellow colored.....

.....***Gelatinopsis geoglossi***

Past names include *Micropyxis geoglossi*, *Hypomyces geoglossi*, and *Peckiella geoglossi*. Occurs in at least North Eastern US. It is 8 spores. Asci 50-76 X 4-5um. Spores 10-12 X 3-4um But Pfister reports a different size – Asci 28-46 X 6.5-8.5 and spores 7.5-10.5 X 2.5-3.5um. Note in France it was reported From Turkey Tails (*Trametes* sp.)

4. Growing on carbon looking

Fungi..... See 4A-4y Below

(4a1.) Growing on Xylaria such as but not including Dead Man’s
Fingers, the pimple looking perithecia are yellowish to yellowish
orange colored “not red” and it is whitish and fuzzy around them
and in other
areas.....

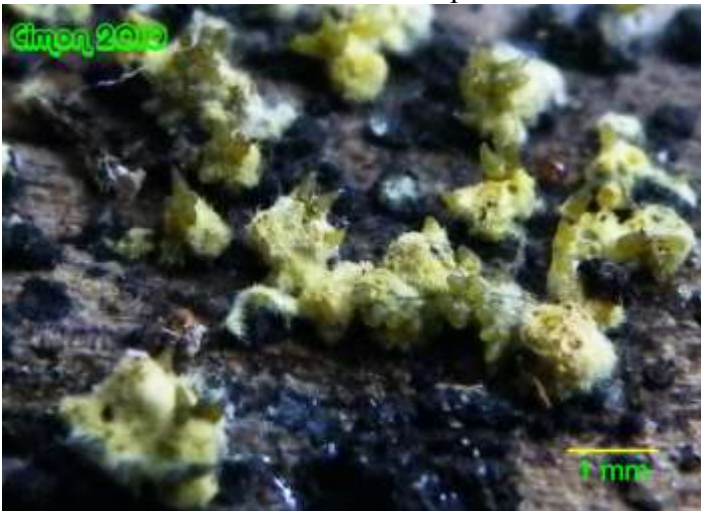
.....**Neobarya xylariicola**

Asci 155-250 X 4-6um. It has 8 spores per asci. Its
ascospores are around 90-150 X 1.5-2um. Its anamorph is
Calcarisporium sp. Whose conidia are 3.5-13 X 2.0-4.5um. In
our area in the continental U.S. and Canada a look alike **Neobarya
lutea** does not occur in the continental U.S., it is more southern. It
also grows on old Xylaria but it has yellow colored pimples and
ascospores are thinner 90-120 X 1.0-1.5um. Asci 180-250 X 3.5-
5.5um.

(4a2.) Growing on Xylaria in Costa Rica-----**Tremella armeniaca**

(4b.) Growing on Bertia moriformis but also on Cucurbitaria. The
pimple like perithecia are greenish when fresh. Typically growing
in groups..... **Neobarya parasitica**

Asci 100-150 X 5-9um. The ascospores are 150-200 X 3-4 um.
There are 8 in the tube. Its anamorph is unnamed.



(4c1-6.) Tiny and reddish in color perhaps with some orange tones on a few of them.....Cosmospora sp. see descriptions and comments below

The anamorph of Cosmospora can be needed for ID especially for the bottom row of 3.

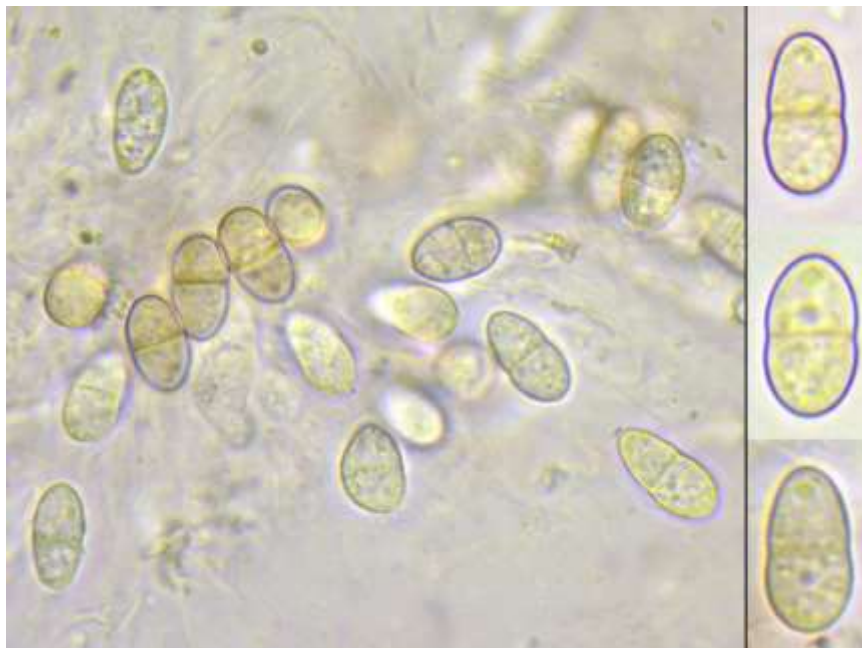
Top row of 3 much easier to ID

<p>C. diminuta Ascospores 20-32X6-10um Arranged in 2 rows. Hosts include Bytryosphaeria and Valsa. Anamorph Fusarium sp. Conidia 26-60X2.5-5um</p>	<p>C. papilionacearum Ascospores 14-20 X 5.5-7 Arranged in 2 rows. Hosts are asco on plant leaves Porodella grammodes & P. perisporioides. Anamorph Unknown if there is one.</p>	<p>C. magnusiana Ascospores 10-15 X 4.5-6um Arranged in 1 row but can overlap about ½ way. Host Diatrypella and several trees. On Eutypella prunastri. Anamorph Fusarium epistoromum. Conidia 16-27 X 2.5-4um.</p>
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Nectria magnusiana





C. episphaeria

Ascospores 8-11 X 3.5-5
 Looks like they may overlap 1/2 way.
 Host older and often decaying stromatic asco's on deciduous trees. On Diatrype stigma and on Hypoxylon fragiforme and Diaporthe oncostoma
 Anamorph **Fusarium aquaeductuum var. medium**
 Macroconidia 36-50 X 2.5-3.5um.
 Microconidia 6-9 X 2-3um. Note Cosmospora

C. purtonii

Ascospores 8-11 X 4-5.5 They become arranged in 2 rows.
 Reported host -old stomata of immersed pyrenomyces, likes Diatrype Stigma also deciduous tree bark.
 Anamorph **Fusarium aquaeductuum var. aquaeductuum.**
 Macroconidia 20-24 X 1.5-2

C. vilior

Ascospores 6-12 X 3.5-5.5
 Becoming slightly overlapping with age.
 On older members of Xylariaceae and others.
 Anamorph **Acremonium berkeleyanum**
 Conidia 7.-10 X 4-5um.



**Cosmospora sp.
on stromatic
pyrenomycete**



Cosmospora episphaeria was Nectria



Cosmospora vilior

(4d1.) Growing on or with *Hypoxylon archeri* or its mycelium. It is whitish and gelatinous and found on wood.....

Tremella fuciformis

Spores 7-14 X 5-9um. It is an excellent edible mushroom and is delicious cooked and topped with canned cherries in syrup.



Tremella with cherries



(4d2.) Growing on *Hypoxylon rubiginosum* often yellowish with orangish tones. When young it can be orangish when cut or bruise orangish after time. When mature it becomes greenish at places or develops greenish tones and has dark colored pimples. When mature ones are cut in half they have yellow to creamy colored inside but right next to the skin are little blackish roundish balls that the pimples go down into.....

Thuemenella cubispora

Asci 60-65 X 5-5.5um. Spores 5.5-7 X 3-4um. There are 8 spores per asci. On fallen Maple and Box elder logs are the place to look. Its anamorph is *Nodulisporium* sp.





(4d3.) Growing on Hypoxylon in Brazil-----**Tremella anomala**

(4d4.) Growing on Hypoxylon in Taiwan-----**Tremella flava**

(4d5.) Growing on Hypoxylon in Taiwan-----**Tremella resupinata**

(4e.) Growing on carbon looking

fungi..... the Yellow Cushion
Hypocrea – *Hypocrea chromosperma*. Here in the US it was
incorrectly called by the European name *Hypocrea gelatinosa*. It
is irregularly rounded and somewhat cushion shaped. About 1/8
inch in both height and width and yellowish cream colored with
green tones at places and gets covered with little bumps all over
it.....***Hypocrea chromosperma***

It also grows on rotted wood. Asci 80-100 X 5-6um. Distal part
ascospores 4-4.5 X 4.4.5. Proximal Part ascospores 4-4.5 X 3.5-
4um. Conidiophores 7-14.5 X 2.5-3.5um. Conidia 4-6.5 X 3.5-
4um. Its anamorph is ***Trichoderma chromospermum***

**NOTE: *Hypocrea strictipilosa* grows on ascos and basidios as
well as wood and looks very similar. Its Asci are 90-100 X 5-7
um. Distal part ascospores differ by being large 5-5.5 X 4.5-
5um. Proximal part ascospores are also larger 5.5-6.5 X 4.5-
5.5um. Conidia 4.5-5 X 3.5-4um. Its anamorph is
*Trichoderma strictiple***

(4f1.) Growing on what is thought to be A Diatrype sp. and is
shiny and reddish in color. Spores 3-4 X3-
4um.....***Hypocrea scutellaeformis***

(4f2.) Growing on *Diatrype stigma* and *Diatrype albopruinosa*.....

Nitschkia collapsa

The *Nitschkia* spores are 12-18 X 4-6µm. On numerous trees.



(4f3.) Growing on Diatrype in Taiwan-----**Tremella nivalis**

(4f4.) Growing in Diatrype
disciformis.....

.....**Achroomyces henricii**

This mushroom requires a scope to see it. Its Basidiospores are
20-23 X 10-11.5um.

(4g1.) Jelly like Growing on Diaporthe (Diatrypales) it is
somewhat clear colored but becoming brownish with age or getting
purplish tones. It is somewhat cushion shaped but has wavyness.

.....**Tremella globispora**

Spores 5-8 X 6-9um. They are hyaline to brownish colored.
This parasite shrivels up and typically cannot be spotted in hot dry
weather. There can be numerous ones on a branch. One
European host tree was Salix but it also grows on other types of
deciduous trees. Its anamorph is **Coryne albida**

(4g2.) Growing on Diaporthe in Costa Rica---**Tremella lilacea**

(4g3.) Growing on Diaporthe in England----**Tremella moriformis**

(4h.) Growing on typically black colored Diatrype, Diaporthe, and Eutypa. It is cushion shaped to brain shaped. It is jelly like and 4/16 to 3/8 inches. It is smooth soon becoming wrinkled and brain looking. It can be buff to grayish to brownish with age.

.....**Tremella indecorata**
Spores 8-15 X 8-12.5um. They are hyaline to brownish colored. Conidia 2.5-4.5 X .5-1.5um. Typically on deciduous wood types.

Compare to Tremella subanomala if it's a distinctive species.

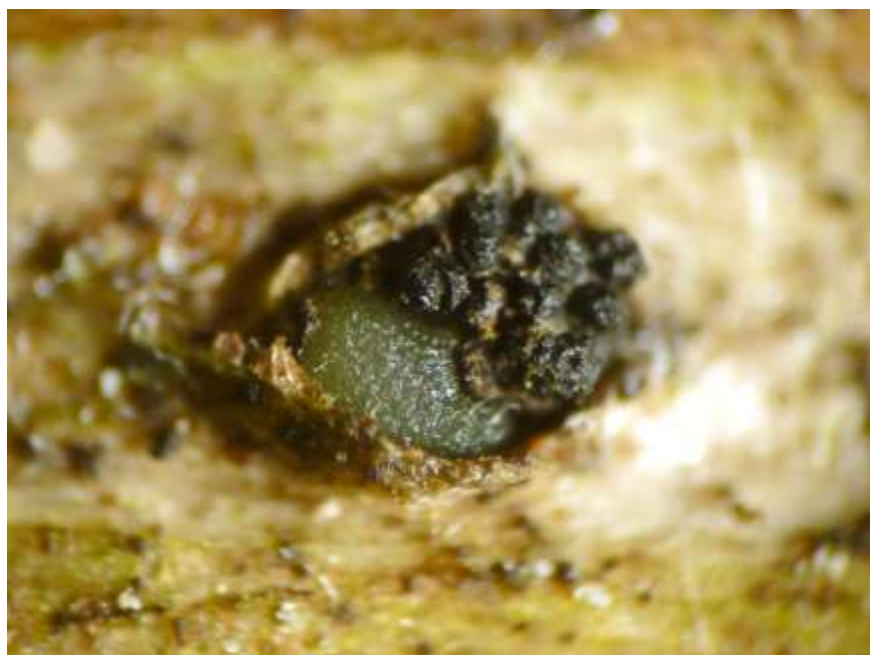
(4i.) Growing on a small black carbony looking ball that has protrusions called Peroneutypa heteracantha that resembles a mini clump of Dead Man's Fingers- Xylaria. The host fungi are embedded in the wood. Often on various tree branches but sometimes growing on the above host

fungi.....**Nitschkia grevillei**
Ascospores 6-9 X 1.5-2.5um.

(4j.) Growing on black pyrenomycetes that grow on wood such as Cucurbitaria berberidis. It is olive green to or becoming black and jelly like and 1-6mm in diameter and ½ to 3mm

tall.....**Tremella exigua**
Spores 8-12 X 7.5-11um.





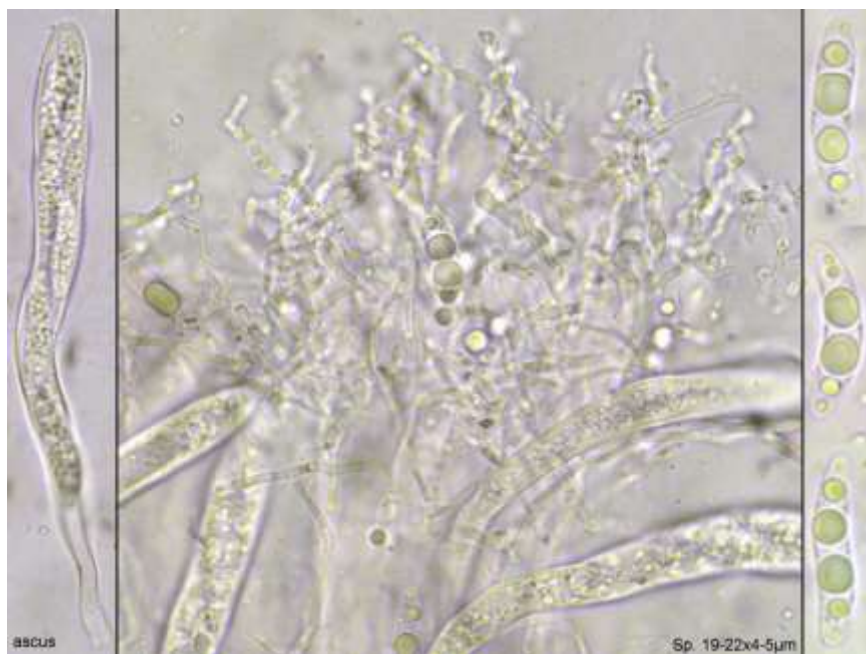


(4k.) Growing on pyrenomycetes that are often black and crusty. It is whitish and disc to cup shaped. It is very small and fuzzy.....

Polydesmia pruinosa

Found in North America and Europe. Asci 78-110 X 8-10.5um. Its spores are 14-21 x 3.5-5um.





(4l.) Growing on *Eutrybliella hysterina* = *Rhytidhysteron hysterinum* a blackish crusty fungi that can sometimes be orangish or reddish when and where sunken in the center also reported from Panama on *Rhytidhysteron rufulum*

.....**Unguiculariopsis ravenelii** = **Pithyella hamata**

It is 0.4 – 1.0 mm in diameter. It is cup shaped and brownish but often with grayish or olive tones. It has hairs. The asci are 8 spored and J- 42-50 X 4.5-6.0um. Reported from China and Europe but its host fungi also occur in North America. Its host fungi grows on Boxwood (*Buxus sempervirens*).

(4m.) Growing on *Diatrypella* in Costa Rica ---**Tremella nigrifacta**

(4n.) Growing in *Massarina arundinacea* a carbon scab looking fungi in Belgium ----- **Tremella spicifera**
The *Tremella* basidia are 10-15 X 6-9um. Basidiospores 4-5um and round. Conidia 5-9 X 2.5-4um.

(4o.) Growing on *Lophodermium* in Scotland-----

----- **Tremella translucens**

(4p.) often Growing on Carbon looking fungi such as *Diatrype*, *Eutypa* and *Hypoxyylon* but also without a parasitic fungal host.....

.....**Capronia nigerrima**

Ascospores 10-18 X 5-6.5um. Ascispores 50-68X 8-16um.





(4q.) Growing on Diaporthe and other pyreno's. The attacker is 6mm-10mm in diameter and jellylike and grayish to brownish colored.....

Tremella diaporthicola

Its basidiospores are 5.5-7.5 X 5.5-7um. Growing in North America and Ukraine. It does not have clamps like with Tremella globispora.

(4r.) Growing on Dibotryon morbosum or syn. Apiosporina morbosa. It starts out white but turns pinkish.....Trichothecium roseum

The photo below has 2 fungi attacking the black cherry knot, first is a roundish black looking balls then the Trichothecium roseum. Note that this fungi does not need a fungi host?, I believe it has also been reported on tomatoes. And Polypores.





(5.) Growing on polypores

..... See A-U
Below

(5a1.) Growing on the pore surface of *Fomes fomentarius*. It is whitish to cream in color often with pinkish tones. Its pores are often angular and 5-7 per mm.

..... ***Junghuhnia nitida***

It is occasionally found growing on the fomes but typically without a fungal host just on wood. Its spores are 2-4.5 X 2-3um.



(5a2.) Growing on *Fomes fomentarius*. Reported from Austria and Quebec Canada. A larger clump of it can cover up to 5 ¼ inches across the polypore but it can also be much smaller. The mushroom is yellowish brownish greenish with the pimples being darker greens and brownish blacks. Its flesh is yellowish to brownish.....

.....**Hypocrea fomiticola**

Asci 95-160 X 5-7um. The ascospores are greenish colored. Distal part ascospores 4-8 X 4-5.5um. Proximal part ascospores 4-9 X 2.5-5um. Its anamorph is **Trichoderma fomiticola**. Conidia 3.5-10 X 2.5-4um.



(5b.) Growing on Ganoderma, Fomes and Rigidoporus such as R. lineatus and R. microporus, looking fan shaped like a Chinese folding fan or like a upside down umbrella variable.

.....**Sporophagomyces chrysostomus**

=Hypomyces chrysostomus. It can be whitish to creamy yellow or with pinkish and can be fuzzy or more solid. It often can be peeled off its host. Asci 80-100 X 5-6um. Ascospores 9.5-15 X 3-4um. Its anamorph is Acremonium lindtneri. Conidia 10-25 X 2-5um.

Note: There is only one other species in this genus

Sporophagomyces lanceolatus which looks similar but its ascospores are 30-36 X 3-5um, only on Rigidoporus and in Puerto Rico. and perhaps S. moellerianus.



(5c.) sometimes they grow on themselves such as with this artist conk – Ganoderma

When trees fall over that have fungi on them, new fruit bodies may form with their pores facing downwards.



(5d.) Growing on Ganoderma and Laetiporus but also others, with yellowish in color, yellowish orange and yellowish brown, and pimpled resembling *Hypocrea americana*.....

..Hypocrea pulvinata

Asci 60-95 X 3-5.5um. Its distal part-ascospores are 3.5-5 X 2.5-4um, proximal part ascospores 3.5-5 X 2.5-4um.



(5e.) Growing on The Birch Polypore - *Piptoporus betulinus* where it is typically found but also on *Fomitopsis pinicola* and others but less commonly encountered on these hosts. Yellowish in color sometimes also having orange or off brown tones in addition, and typically found on the pores.....***Hypocrea americana***

= was *Hypocrea citrina* var. *americana* this mushrooms name changed when it became its own species. Asci 50-100 X 3.5-6um. Its distal part-ascospores are 2.5-4 X 3-4.5um, proximal part-ascospores 2.5-4 X 3-4.5um and are almost the same length and width.







(5f1) Growing on Fomitopsis

3 species here but the one we are talking about is **Melanospora lagenaria** and *Ophiostoma polyporicola* on Fomitopsis



Thicker and not black. more orangish in color



(5f2) Growing on Fomitopsis and black hair looking.
Ophiostoma polyporicola





(5f3.) Growing on Fomitopsis pinicola and other polypores in Europe, Japan and North America.....

.....**Hypocrea protopulvinata**

The cylindrical asci are 55-75 X 3.7-5.5um. Distal part ascospores 3-4.2 X 2.5-4.0um. Proximal part 3.5-4.5 X 2.5-3.5um. Conidia 4-16 X 3-9.5um.

(5g.) Growing on various polypores turning them reddish, hosts include the Birch Polypore – *Piptoporus betulinus*, it is a very small .2-.5mm creamy to blackish, cup shaped asco.....

Hyphodiscus hymeniophilus

The ascospores are 5.5-8.5 X 2.5-3.5um. Its anamorph is ***Catenulifera rhodogena***. Conidia 2.5-5 X 1.5-2.5um.



(5h.) Growing on the underside of older *Trametes versicolor* and *Trichaptum biforme*. The 2 forms with look like either small black pimples on the pores or small black hair look at the tubes.....

Ascocodinaea polyporicola

The loupe will often be needed to see them. It is 8 spored. Ascospores 12.5-16 X 5-6.5um. The anamorph stage is the one that looks like hairs but are really the conidiophores. Although the photo below by Noah Siegel is growing on *Fomes fomentarius* we are not certain what it is but you can see hairs



(5i.) Growing on *Trametes versicolor* and others but most common on it, buff around the pimples which are orangish, reddish orange, salmon-brown, or peach colored.....

.....**Hypomyces polyporinus**

Turns reddish with KOH drop on surface. Other hosts include *Polyporus* sp., *Trametes pubescens* and the Wood Ear - *Auricularia auricula*. Asci 94-120 X 4-5.5um. Ascospores 15 -22 X 3-4um. The buff colored anamorph is **Cladobotryum clavisorum** but it is just buff colored. Conidia 20-30um X 7-9um.



(5j1.) Growing on Trichaptum, a hand lens is often needed to see the black colored stalked heads that grow on top of some of them

Phaeocalicium polyporaem

The black hairs resemble matchsticks hence the common name Match Stick Fungi. They are about 1/16 inch tall. The Violet Tooth Polypore Trichaptum biforme is a favorite host, but also on T. abietinum. It is fairly commonly collected on T biforme



(5j2.) Growing on Trichaptum looks whitish around the buff to yellowish colored occasionally a light brownish color, perithecia pimples and whitish and more fuzzy and threadlike elsewhere.....

.....**Hypomyces sibirinae**

A southeastern US Species. Also on Polyporus sp. Asci 110-130 X 4.5-6.5um. Ascospores 14-20 X 3.5-4.5um. Anamorph **Cladobotryum hughesii**. Conidia 10-30 X 3.5-6um.

(5k1.) Growing on and covering both the upper and lower surface of Tyromyces/Oligoporus, not jelly like.....**Hypocrea pallida**

=*Protocrea pallida*. It also grows on other mushrooms but easiest to ID on the host above. It looks orangish colored but can be white in places it can also be light yellowish. The perithecia are orange and turn reddish with a drop of KOH. Asci 54-62 X 2.5-3um. Distal part-ascospores 2.5-3 X 2-2.5um, proximal part-ascospores 3.0-3.5 X 2.0-2.5um. Conidia 2-5.5 X 1-2um. Its anamorph is believed to be **Gliocladium penicillioides**.



(5k2.) Growing in or on *Tyromyces lacteus* = *Oligoporus lacteus*, or *Postia caesia*- It is jelly like look inside the tube area, a scope may be needed.....**Tremella polyporina**

Spores globe shaped to almost globe shaped 4.5-6 X 5-6um. The spores often have oil drops. Conidia 4-6 X 2-3um, they are hyaline. The best trick, before getting out the scope, is to make a good guess on if they are present and mature is to look for slimy goo to jelly on the hosts pore surface. Occurring in Europe and North America.



(5k3.) Growing in Tyromyces = Oligoporus so far only know from Spain.....

.....**Tremella telleriae**

Its close to Tremella polyporina if it is indeed a different species, it suppositadly has larger basidia.



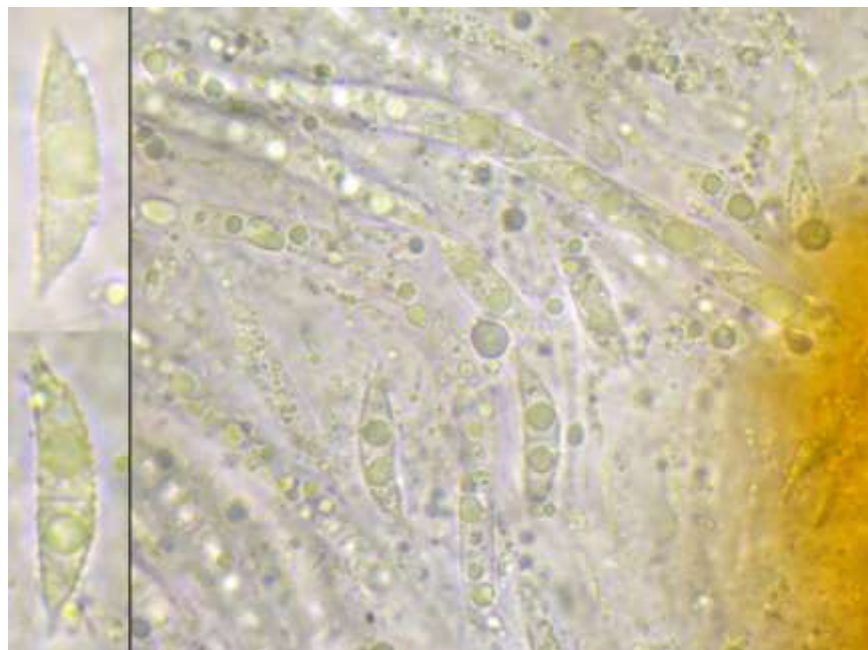
(51.) Growing on polypores, typically found when orange colored, has perithecia pimpled looking, turns reddish purple to purplish with a drop of KOH. Hosts include *Stereum* and *Trametes versicolor*.....

Hypomyces aurantius It can cover the pores or entire host mushroom. Asci 100-160 X 6-7 um. Ascospores 20-25um x 4-6um. The white colored anamorph is **Cladobotryum varium**. Hosts include *Trametes versicolor*. Conidia 10-20 X 6-8um. Here is not on a polypore but rather (photoed) on *Coltricia cinnamomea*



Note: Hypomyces subiculosus looks similar but grows in the southern North America and not northern. Its ascospores differ by being 14-16 X 4-6um.





(5m.) Growing on polypores, white to whitish or cream or buff to peach in color and can have yellowish tones and can have smaller whitish splotches, and crusty on polypores it does not turn reddish with KOH drop on its

surface.....**Hypomyces mycophilus**

In this the teleomorph state it is basically found on polypores such as *Trametes versicolor* but occasionally others, perhaps *Auricularia*, there are only 5 collections of the teleomorph so it is rare. The perithecia pimples are orangish to peach colored or with brownish tones. Asci 140-150 X 4-6um. Ascospores 16-24 X 5-6.5um. NOTE also grows on *Stereum*. The anamorph is ***Cladobotryum polypori***, which is buff in color and looks like cotton. Conidia 14-24 X 7.5-10um. The anamorph also grows on other species including gilled mushrooms, tooth fungi, polypores and *Stereum* etc. Chlamydospores 20-30 X 18-26um. **ALSO NOTE the key for this one could use some work since it is not listed in this key on its other hosts**

(5n.) Growing on polypores especially the Hemlock Varnish Shelf – *Ganoderma tsugae*. It is greenish to blackish green. Also reported to be a dark brown but I have never seen it this color. It is roundish..... **Hypocrea lixii**

Asci 60-100 X 4-5.5um. Ascospores are greenish colored. Distal part ascospores 3.5-5 X 3.5-4.5um. Proximal part Ascospores aprox 4-5.5 X 3.-4.5um. Conidia 2.5-3.5 X 2.5-3.0 um. On wood, plant, leaves, soil and fungi but my favorite place is on *Ganoderma tsugae*. The Conidia are 2.5-3.5 X 2.5-3.0um, they are yellowish green. The more commonly found anamorph is **Trichoderma harzianum**.





**Hypocrea lixii
on Polypore**



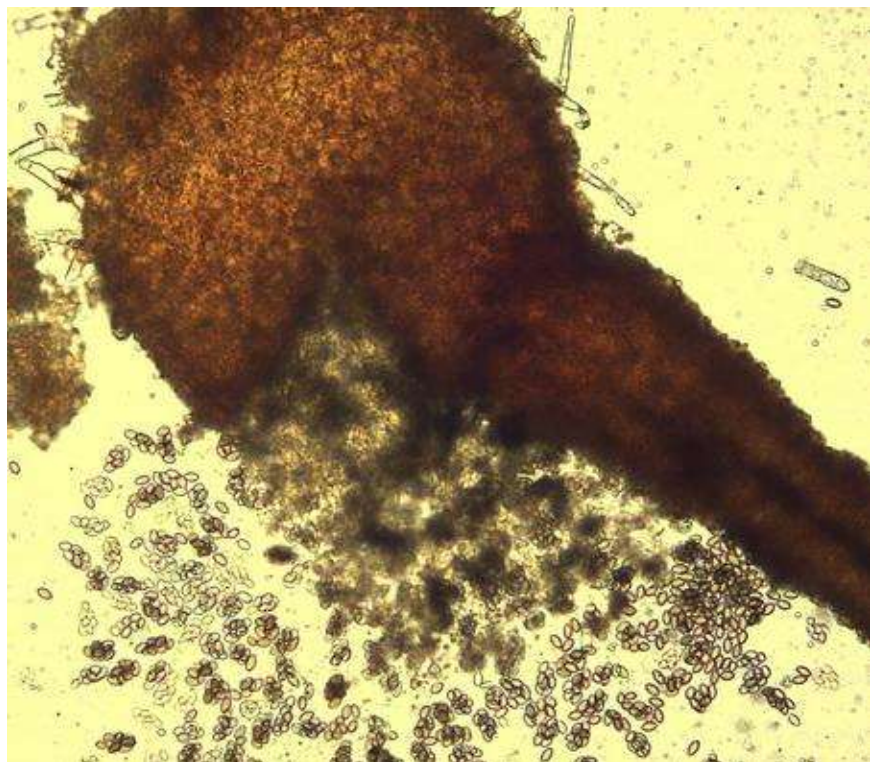
**Trichoderma harzianum
On Ganoderma tsugae**

(50.) Growing on Bjerkandera – such as the Smoke Polypore
.....Melanospora lagenaria

Its spores are limoniform. Often growing on the spore
producing side. Spores 12-21 X 7-14um.







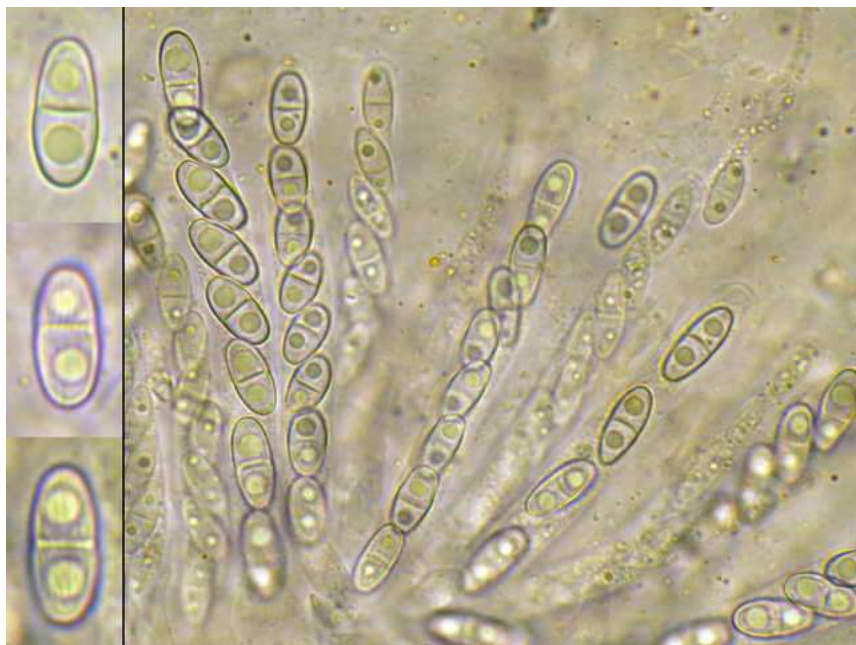
(5p). Growing on polypores typically on the pored area.
It resembles tiny orange colored balls that can have a beak in the center that can be other colors.....**Hydropisphaera peziza** =
Nectria peziza Sometimes called Yellow Spot

Note it can also grow on rotted wood and bark as well as dung and others. It has been reported on *Polyporus squamosus* and *Trametes versicolor*. Its spores have 2 oil drops with a line between them. The asci are 8 spored. Asci 60-76 X 8-10um. Ascospores 10-14 X 5-7um.





Hydropisphaeria peziza



(5q.) A unknown Grifola Mold



(5r.) It is whitish becoming buff the pimples are faintly yellow to off pinkish to reddish with brown tones.....

.....**Hypomyces tegillum**

Asci 130-140 X 5-10um. Ascospores 30-40 X 5-9um. Conidia 16-46 X 8-14 um. It has chlamydospores.

(5s.) So far only know to grow only on a single species of polypore, Antrodia infirma which occurs on pine. It is the only species that occurs on polypores.....

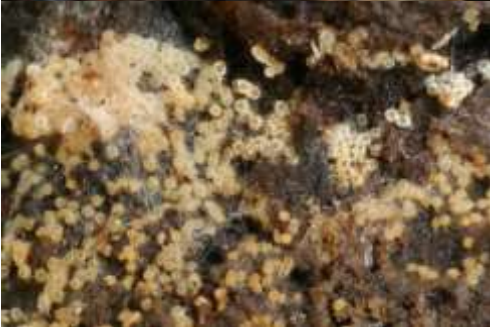
.....**Syzygospora lapponica**

It was described from Finland – European species. NOTE they grow inside the basidiocarps of the Antrodia. Spores 5-7 X 1.5-2um

(5t.) Growing on the pores of certain types of polypores such as Skeletocutis such as *S. nivea* where it is most commonly reported and perhaps *Bjerkandera* and *Trametes*. Its pimples are yellowish to amber but sometimes with olive or brown tones. Then whitish around them

Protocrea farinosa

Old name was *Hypocrea farinosa*. Its asci are 55-80 X 3-4.5um. It has 16 part spores. Has a *Gliocladium* anamorph. NOTE: It appears that there are 3 species of them that grow on *Skeletocutis* with one undescribed one being from NA and the other undescribed one being from Europe. *H. decipiens* is similar but does not grow on *Skeletocutis*



(5u) Growing on *Skeletocutis papyracea* and also *Merulius*

.....***Gelatinopsis septata***

Nova Hedwigia **64**(1-2): 159 (1997)

Its ascospores are 9-15 X 3-5 um. Found in France

(5v.) Typically growing on wood but sometimes on older or decaying non gilled fungi.....

Sistotrema brinkmannii

Its basidiospores are 4-5.5X 2



On *Bjerkandera adusta*



On *Trametes hirsuta*

(5w1.) Typically growing on wood but sometimes on older or decaying non gilled fungi such as polypores, It is purplish gray to violet or pinkish in color.....

..... **Tulasnella violea**

Its basidiospores are 5-9 X 5.5-7.5um.



(5w2). Growing on Polypores.....

..... **Hypomyces orthosporus**

Note it can also just grow on wood without fungi. Its anamorph is **Cladobotryum orthosporum**

(5x). Growing on wood of dead and typically deciduous trees such as old fallen logs or on old polypores such as Fomes but also other polypores. It can be yellowish colored.....

.....**Gloeoporus pannocinctus**

It can sometimes be peeled off the host. It can be a little cheese like but also harder. Its pores are very small. Its spores are 3.5-4.5 X .5-1um.



(5y). Growing on The Thin Maize Polypore – *Daedaleopsis confragosa*, That when fresh its gills can bruise pinkish. The attacker which I do not know can cover the pores and is reddish colored.



THIS NEEDS FIXED IT IS *Cladobotryum varium* on *Daedaleopsis confragosa* its teleomorph is *Hypomyces aurantius*

(5z.) Growing on *Polyporus tenuiculus* in Puerto Rico.....

.....***Hypomyces favoli***

Asci 105-145 X 7-10.5um. Ascospores 13-20 X 6-10um. The anamorph is *Cladobotryum* sp. Its conidiophores are 4-8um in width.

(5extra1.) Growing on Rigidoporus lineatus in Puerto Rico. Growing on the hosts spore producing area and often on the wood around the mushroom. It is whitish and can often be peeled away.....**Hypomyces puertoricensis**
The asci ar 115-135 X 7-10um. Ascospores 11.5-15 X 4-6um. Its anamorph is Cladobotryum sp. Conidia 28-42 X 7-11um.

(5extra2.) Growing on Phellinus in Illinois. Growing on the hosts spore producing area. It is whitish becoming greenish then changing color again.....
.....**Hypomyces viridigriseus**
Asci 100-145 X 7-8um. Ascospores 15-25 X 4-7um. Its Anamorph is **Cladobotryum viridigriseum**. Conidia 16-30 X 7-11um they are green. The brown to orangish chlamydo spores are 14-18um in diameter.

(5extra3.) Growing on Phellinus in Europe.....
.....**Hypocrea sp. 14**
Description unavailable.

(5extra4.) Growing on *Gloeophyllum odoratum*, it is whitish and looks like little spines or *Hericium* like.....

.....***Mucronella bresadolae***

Note that this is a non typical occurrence and this mushroom typically just grows on conifer wood.

(5extra5)

Not common on the birch polypore there by chance *Pycnoporellus fulgen*



(5extra6). Growing on polypores including Fomes and Ganoderma. It is reported to be somewhat common. It looks somewhat translucent and whitish and sort of finely messed up hair looking.....

.....**Rhinotrichella globulifera**

For references see Helfer 1991 and Folia Cryptog. Estonica.; V34, 1999, pp15-31, and Studies in Mycology; v45; 2000, pp83-94

(5extra7). Growing on Piptoporus betulinus and other Piptoporus species. It can be found in the host tubes.....

.....**Endomyces polyporicola** =

Dipodascus polyporicola The Asci are typically 4 to 6 spored but have been reported up to 10 spored. The Hyaline ascospores are ellipsoid 4.5-6 X 3-5um,.

6. Growing on

Stereum.....,,.....

See A-K Below

(6a1.) Not Jelly like and growing on the underside of Stereum. It is pimpled and they are yellowish to orangish or orangish brown and whitish to buff around the pimples. May need a loupe to see the pimples

better.....

.....**Hypomyces syndiodiophorus**

It prefers Stereum ostrea, Stereum subtomentosum Stereum hirsutum as hosts. Asci 94-132 X 4-5.5um. Ascospores 13-18 X 3-4.5um, its anamorph **Cladobotryum uniseptatum** is whitish colored only and whose conidia 10-17 X 5-8um. Chlamydo spores 20-48 X 7-14um. This mushroom was described from PA

(6a2.) Not Jelly like and growing on the underside of Stereum sp. It is pimpled and they are yellowish to gold. May need a loupe to see the pimples. Since the pimple colors can be close to the mushroom above a microscope can be helpful.....

.....**Sphaerostilbella aureonitens**

Asci 70-110 X 3-5um. Ascospores 7-12 X 2-3um.

The whitish Anamorph is **Gliocladium penicillioides**.

Conidia 2.5-5 X 1-2um.



Hypomyces syndiodiophorus and Sphaerostilbella aureonitens, see above, look similar use a scope

(6b3.) Jelly like growing on or beside Stereum sp. It is brownish to reddish brown or brownish black colored rarely blackish. Unusually large specimens can be 6 inches across.....

.....**Tremella foliacea**

The Jelly leaf is parasitic on Stereum mycelium. It can grow near Stereum rugosum but the host can be on the opposite side of a branch or log with it attacking the mycelium deep in the wood. Spores 7-12 X 6-9um. It is typically found with deciduous wood but sometimes with conifers. Stereum hirsutum is a less common host in Europe but also reported with other Stereum sp., No studies of North American Hosts that aware of. In Scandinavia reported with undetermined host. When conidia are present they are 2-6 X 1.5-4um.





Tremella foliacea Spores 1000x, in melzers

(6b4.) Jelly like and growing on or beside *Stereum sanguinolentum*. It is white to creamy often developing yellowish, pinkish or light brownish tones but sometimes pink and orange tones can be present.....**Tremella encephala**

The inside is whiter colored when sliced in half. And this core is believed to be the host's hyphae. The outer part is jelly like while the center interior is more firm and not jelly like. Grows on fallen conifer wood. Spores 6-11 X 6.5-9um.



(6b5.) Jelly like and growing on or beside *Stereum hirsutum*. It is brownish colored. And the core inside looks very similar in appearance to the core on *Tremella encephala*.....

.....**Tremella steidleri**

Its conidiospores are 2.5-4.5 X 2-3um. Basidiospores 7-10.5 X 5.5-7.5um. European and Czech Republic.

(6c's) needs additional info if jelly like or not or placed in the key correctly

(6c1.) The perithecia pimples are black colored, growing on the underside of *Stereum ostrea* and *Stereum*

hirsutum.....**Ascocodinaea**
stereicola

The pimples have black colored hair like growths use a scope or hand lens. Asci 60-100 X 6-9um. 8 spored. Ascospores 10-13 X 4.5-6um. The anamorph *Codinaea* sp. looks like grayish black to black colored hair like growths but the pimples are not present. Conidiophores 30-100 X 2.5-6.5um

(6c2.) Growing on *Stereum* but also others such as *Phanaerochaete* and *Hyphoderma*, resembling a very tiny black colored ball with numerous hairs that are about ½ its thickness coming out like spines from all around the ball. Its spores have 3 pill lines going across

it.....**Helminthosphaeria corticiorum**

Its asci are 85-130 X 5.5-9um. Ascospores are 13-17 X 5-6.5um. Reported only from *Corticaceae*. Reported from North America and Europe and others.

(6c3.) Growing on *Stereum* in China -----**Tremella aurantialba**

(6c4.) Growing on *Stereum* in Australia-----**Tremella australiensis**

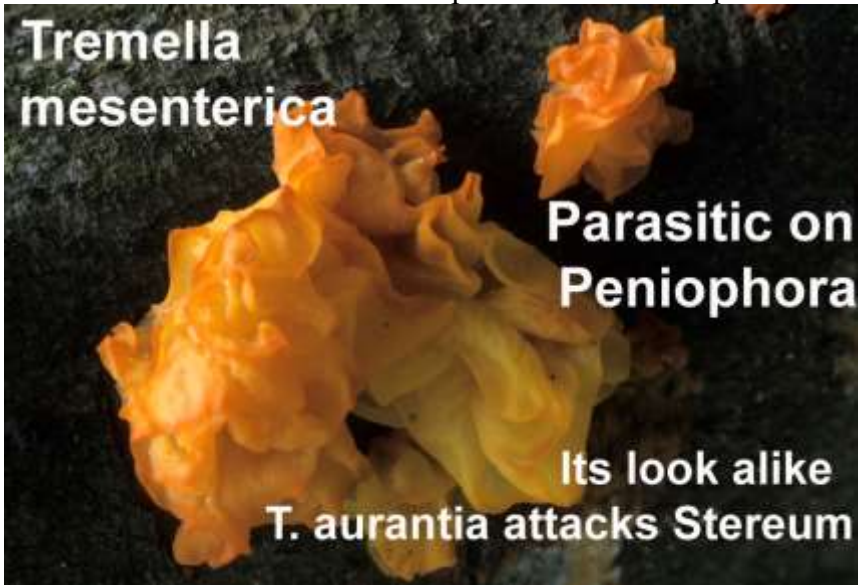
(6c5.) Growing on *Stereum* in South Africa--- **Tremella microspora**

(6c6.) Growing on *Stereum sanguinolentum* in Taiwan----
Tremella neofoliacea

7 Growing on crust Fungi see a-u below

(7a1.) Jelly like, growing on Peniophora sp. A crust Fungi.....**Tremella mesenterica**

=Tremella lutescens -The Witches Butter. It is faint yellowish to yellowish orange colored. Jelly like and often brain looking with lobes. Spores 9-18 X 8-12um they are hyaline to a little yellowish colored. Often with oil drops in the spores. It can get up to 2 ¼ inches in diameter but sometimes larger. Typically on hardwood. A favorite host is Peniophora aurantiaca but elsewhere it is reported on Peniophora incarnata and limitata and Peniophora violaceolvida. This Tremella is reported as an edible species.



(7a2.) Jelly like, growing on Peniophora sp. A crust Fungi.....**Tremella versicolor**

Orangish colored sometimes with brownish or reddish tones and somewhat disc shaped. Its conidiophores are 3-5 X 1.5-5.5um

(7a3.) Growing on *Peniophora cinerea* or *Peniophora lycii* and perhaps others. The attacker looks like little darker colored dots all over it, use a hand lens.

.....
..... *Trichosphaerella decipiens*



(7a4.) Growing in *Peniophora lycii* a violet gray colored crust fungi that is often found on dead branches.....

..... ***Hormomyces peniophorae***

The host *Peniophora lycii* occurs in Europe. The attacker conidia are 4-5 X 2.5-3um.

(7b1) Growing on *Tubulicrinis angustus* a crust..... ***Platyglaea bispora***

(7b2.) Growing in *Tubulicrinis angustus* a crust looking fungi.....

..... ***Achroomyces bispora***



(7c.) Growing on Tomentella sp (a crust).....

.....Melanospora caprina

Note it also grows on Armillaria rhizomorphs sometimes

(7d1.) With gills Growing on Hymenochaete tabacina

.....**Clitopilus daamsii**

Note the Hymenochaete is occasionally an alternate host for this Clitopilus. Clitopilus daamsii spores are pinkish and 7-12 X 5-7um.

(7d2.) Growing on Hymenochaete tabacina in Europe-Germany. 1-3mm wide and about half that thick. It is orangish red to reddish brown colored. Its pimples are blackish.....

.....**Hypocrea parestonica**

Asci 80-120 X 5-7um. Ascospores olive colored. Distal part 3.9-6 X 3-5um. Proximal part 4-6.5 X 3-4.5um. Its anamorph is **Trichoderma parestonicum** and its larger and greenish colored. It has Conidiophores. Its greenish yellow conidia are 3-5 X 2.5-3.5um.

(7d3.) Without gills, an asco growing on *Hymenochaete tabacina*.....

Hypocreopsis lichenoides

Looks like a mass of many lobes to multiple finger looking. Somewhat like a hand gripping onto the wood. Often on *Salix* but other trees. Ascospores are 20-30 X 6-9um. Its anamorph is ***Stromatocrea cerebriformis***



(7d4.) Without Gills and asco growing on *Hymenochaete corrugata*..... ***Hypocreopsis rhododendri***

It is brownish orange in color. Looks like a mass of many lobes to multiple finger looking. Its pimples are darker colored. Often on Hazel. Asci 80-100 X 7-11. Ascospores 12-17 X 12-14um. There are 8 spores per Ascus and they are hyaline

(7d5.) Without Gills growing on Hymenochaete sp and others. It is irregularly roundish, reddish to reddish brown.....**Hypocrea ceramica**

Distal part ascospores 4-5.5 X 3-4um. Proximal part ascospores 4-5.5 X 3-4um. Conidia 3-4 X 2.5-3um. Its ascospores are greenish colored. This is a North American species.

Note it also grows more commonly on old rotting fallen wood, more so than the resupinate basidiomycetes.

An extremely similar looking species **Hypocrea estonica** also grows on Hymenochaete.

(7d6.) Growing on Hymenochaete in Europe. It is 1mm to 3mm wide and thinner than that. It is reddish to reddish orange with darker greenish to blackish looking pimple spots. When present and visible the mycelium is whitish colored.....

.....**Hypocrea estonica**

Asci 76-110 X 4.9-6.5um. Distal part ascospores 3-6 X 3-5.5um. Proximal part ascospores 3-6.5 X 3-5um. Ascospores have yellowish, greenish or brownish tones. Its anamorph is **Trichoderma estonicum**. The anamorph is greenish colored and conidia are 2.5-4.5 X 2-2.5um and are greenish colored.

(7e.) Growing on fungi in Hymenochaetaceae but also rotting fallen wood. Its an off yellowish color with orangish peritheia. Around 1 cm wide when mature. Almost resembling a crust.....**Hypocrea cinereoflava**

The asci are 55-80 X 3-5.5um. Distal Part ascospores 2.5-4.5 X 2-3.5um. Proximal part ascospores 2.5-4.5 X 2-3um. Conidia 2-4.5 X 1.5 -2 um. Its anamorph is **Stibella flavipes**.

(7f1.) Growing on *Phanerochaete sordida* but cannot be macroscopically spotted.....

.....**Tremella sarniensis**

Basidia 9-12 X 7-9um. Roberts reports the Conidiospores are cylindrical and 8 X 2.5um. Basidiospores 5-7 X 4-6um.



(7f2.) Growing on *Phanerochaete sordida*, Growing on the spore producing area on the surface.....

.....**Syzygospora pallida**

Basidiospores 7-9 X 4.5-6.5um. A hand lens may be needed to help spot it. **Note European.**

(7g.) Growing on the crusty mushroom *Leucogyrophana mollis* = *Amylocorticiellum* molle.....

.....**Syzygospora mycophage**

It is light salmon colored. Basidiospores 5.5-8.5 X 4.5-7um. European.

(7h.) Growing in not on an off whitish and sometimes pored, crust fungi that are often found on fallen branches etc. The fungi being attacked is Trechispora

microspora.....**Tremella invasa**

It is not macroscopically seen. Its spores are 3-4 X 2.5-3um.



(7i1.) Growing on corticioid basidio's that are resupinate. Resembling tiny black balls.

.....**Helminthosphaeria hyphodermiae**

Asci 60-100 X 5-10um. Ascospores 9-12 X 4-6um. Found in Europe and Russia.

(7i2.) Growing on corticioid basidio's that are resupinate. Resembling tiny black balls. Affected mushrooms include Grandina, Hyphoderma, Sterelaes.....

..... **Helminthosphaeria odontiae**
Asci 90-120 X 5-9um. Ascospores 7-11 X 3.5-6.5um. Found in Europe.

(7j.) Growing on Dendrothele macrospora in Spain ---- **Tremella dactylobasidia**

(7k.) Growing on Scytinostroma odoratum in Spain -----
----- **Tremella hymenophaga**

(71.) Growing on *Granulobasidium vellereum* which is a whitish to pinkish colored basidio crust that often grows on dead logs and branches. The attacker is yellowish and very thin.....

.....**Filobasidiella lutea**

The host is also known by older names of *Corticium bresadolae*, *Corticium vellereum*, and *Hypochnicium vellereum*. The attackers basidiospores are globose and 4-6um. The anamorph of *Filobasidiella* is **Cryptococcus sp.**



(7m.) Growing in or close by the crust *Tulasnella violea* but also in other fungi.....

.....**Spiculogloea minuta**

A microscope is needed to see its spores etc. when occurring in a fungi. Its basidiospores are 8-12 X 2-2.5um.
Start here



(7n1.) Growing in *Hyphoderma praetermissum* which is typically a light colored crust fungi.....

.....**Occultifur corticiorum**

This mushroom is not seen visually. Its conidiophores are 6-9 X 3-4um. Its conidia are ellipsoid and are 5-6.5 X 3.5-4.5um. Its Basidiospores are 5-7 X 4-4.5um. It does not have clamp connections

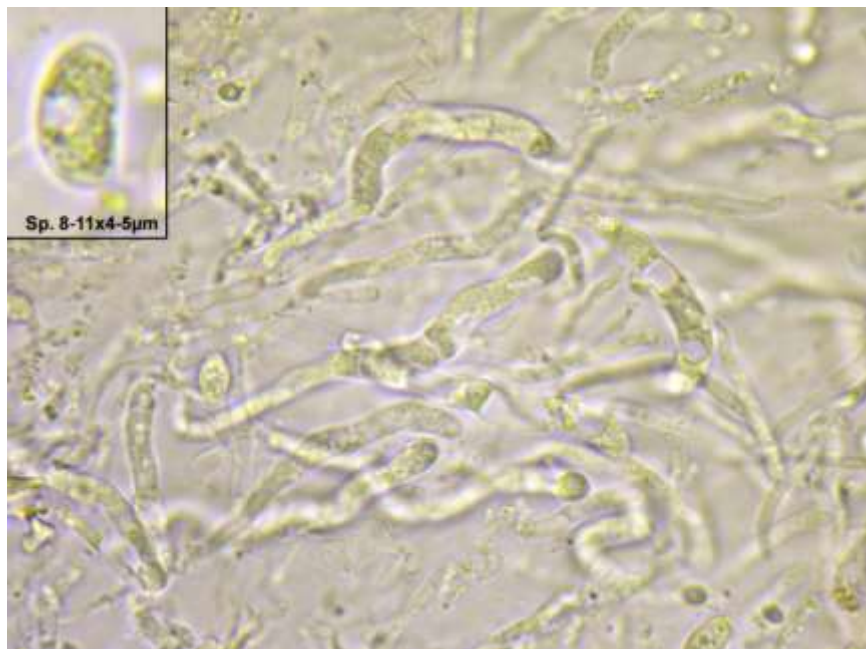
NOTE: Another mushroom **Colacogloea peniophorae** attacks the same host fungi. One difference is that it has clamp connections.



(7n2.) Growing in *Hyphoderma praetermissum* which is typically a light colored crust fungi then it grows on it.....

Colacogloea peniophorae





(7o.) Without Gills growing on Coniophora puteana A wet Rot. The host grows on both deciduous and conifers the trees are typically dead. Often on logs and trunks. The attacker looks like roundish galls. It starts out whitish but becomes yellowish to beige, buff, or tan. It is up to 5mm. The little galls as they grow look like a large tumor with irregular roundish distortions all over its irregular shape, sort of like how some jelly fungi look.....

.....**Nodulisporium cecidiogenes**

Conidia hyaline, 6-17 X 3.5-7um. Can have oil drops. Reported in Europe, A photo on MO from PA resembles it.

(8.) Growing on Boletes and Bolete Like fungi

(8a.) Growing on *Tylopilus rubrobrunneus*

.....**Hypomyces melanocarpus**

Really deforms the cap and deforms the stalk somewhat.

The Ascospores 28-36 X 7.5-10um. The anamorph is a Sepedonium.



(8b.) Growing on *Suillus pictus* = *Suillus Spraguei*, it is whitish becoming yellowish or olive brown in color.....

Hypomyces completus

Asci 175-210 X 5-7 um. Ascospores 25-36 X 5-9um. It also occasionally grows on other Boletales but this is the most common and easiest host witch to ID it on. It can cover all the outer parts of the host *Suillus*. Anamorph **Sepedonium brunneum**, the imperfect, which is a lot more common of the 2. It is white and cotton like and not firm as above then becoming a hot chocolate powder colored brown and it is then powdery. Conidia 15-24 X 5.5--8um. The aleurioconidia 17-23 and round to roundish.



(8c.) It is white to whitish becoming yellowish or darker. Growing on many types of boletes but often the host Bolete is unidentifiable. A microscope will also be needed to make the final ID

Hypomyces chrysospermus

Also reported on Paxillus and Rhizopogon. Grows on Boletaceae. Commonly called Golden Hypomyces it has 3 forms first the whitish and chalk like (**Verticillium**) stage then turning yellowish Anamorph- **Sepedonium chrysospermum** where it is very powder like, then orange to reddish brown when it finally becomes pimpled. The final stage is very rare. The entire host mushroom eventually gets attacked. Asci 100-160 X 6.5-9um. Ascospores 14-22 X 4-6um. Really like Xerocomus. The conidia are 7-22 X 3-10um. Aleurioconidia 12-22 round to roundish.



Compare with Hypomyces microspermus. Macroscopic ID is not possible. The spore size must be checked. H. microspermus has spores that are 10-14 X 3-4um.

NOTE: I was told The Hypomyces in CA on xerocomus-type boletes includes four species - two each in the H. microspermus and H. chrysospermus clades. They may be published by UC Riverside people in the next couple years.

(8d.) Also growing on at least several species of boletes. The perithecia pimples are buff to orangish to orangish brown colored or also having reddish tones. Basically the attacker is white to whitish at first turning buff to brown in color with

age.....**Hypomyces boletiphagus**

Asci 65-95 X 4-5um. Ascospores 8-14 X 2.5-4um. Hosts include Austroboletus, Gyroporus castaneus, Strobilomyces etc. It is uncommon. KOH makes yellowish to reddish. Its anamorph is Sepedonium sp. which is buff to light brown colored. Conidia 7-16 X 2-5um. Aleurioconidia 22-30um.



Compare with *Hypomyces microspermus*, *Hypomyces chrysospermus*, and *Hypomyces chlorinum*. Macroscopic ID is not possible. The spore size must be checked.



(8e.) Growing on boletes white to buff or yellow or yellowish brown. The pimple like perithecia, are buff, amber or brown. It can cover all parts of the host..... **Hypomyces chlorinigenus**

Asci 70-90 X 3-5um. Ascospores 7.5-12 X 2-4um. Hosts can include the anamorph is **Sepedonium chlorinum** which starts off white and cotton like but becomes yellowish. Conidia 7-14 X 2.5-6um. Aleurioconidia 30-45 X 15-20um.



(8f.) It is white to whitish becoming yellowish. The pimples are yellow to orange or red or brown. The ascospores also turn purple in KOH. A microscope will also be needed to make the final ID.....

..... **Hypomyces microspermus**

Asci 110-120 X 4-6um. Its ascospores are 8-14 X 3-4um. It grows on many types of boletes including *Boletus badius* and *Xerocomus*. All parts of the host can become attacked. The perithecia pimples turn purple in KOH. The anamorph is **Sepedonium microspermum**. It is cottony and white to yellowish colored. Conidia 8-15 X 3-6um. Its aleurioconidia are 9-15um and round to roundish.



Compare with *Hypomyces chrysospermus*. Macroscopic ID is not possible. The spore size must be checked. *Hypomyces chrysospermus* has spores that are 14-22 X 4-6um.



NOTE: I was told The *Hypomyces* in CA on xerocomus-type boletes includes four species - two each in the *H. microspermus* and *H. chrysospermus* clades. They may be published by UC Riverside people in the next couple years.

(9.) Growing on Tooth Fungi

(9a.) Growing on a tooth fungi *Steccherinum adustum* = *Mycorrhaphium adustum*. It is typically found when orangish colored and peritecia pimpled looking but can occasionally be whitish then reddish when mature.....

.....***Hypomyces aurantius***

Also grows on Polypores such as *Trametes*. It can cover the pores or teeth or the entire host fungi. When finding it on *Steccherinum* I typically see it only covering the teeth and have to turn the mushroom over to spot it. It turns reddish purple to purplish with a drop of KOH. Asci 100-160 X 6-7 um. Ascospores 20-25um x 4-6um. The white colored anamorph is ***Cladobotryum varium***. Conidia 10-20 X 6-8um.



Hypomyces subiculosus looks similar but grows in the southern North America and not northern. Its ascospores differ by being 14-16 X 4-6um.

(9b.) Growing on steccheinum ochraceum in Europe and America.
It is yellowish colored and 0.5 to 0.8mm
wide.....

.....**Hypocrea thelephorica**

Its distal part spores are 3-5-3.8um wide. Conidia 4-4.6 X 2.8-3.0um.

(10.) Growing on Gilled Mushrooms

(10a.) Growing on Agaricus. It is whitish colored and makes the Agaricus develop deformed. It is most commonly identified on Agaricus bisporus in mushroom farms but can grow on other types of mushrooms. Commonly called the Wet Bubble Disease.....**Mycogone perniciosa**
=Hypomyces perniciosus. Aleuriospores 10.5-15 X 2.5-3.5um.
Others include Coprinus, Pluteus, and Panaeolus.



(10a2.) Suspected to be growing on or affecting Agaricus bisporus mycelium in commercial mushroom farms.....

.....**Clitopilus passeckerianus**

Note there are a couple Clitopilus that are suspected of doing this. They have pinkish colored spore prints.

(10a3.) Growing on Agaricus bistorus caps causing spotting.....**Aphanocladium album**

Not this is not the only Agaricus cap spot. Microscopy is needed for the correct ID

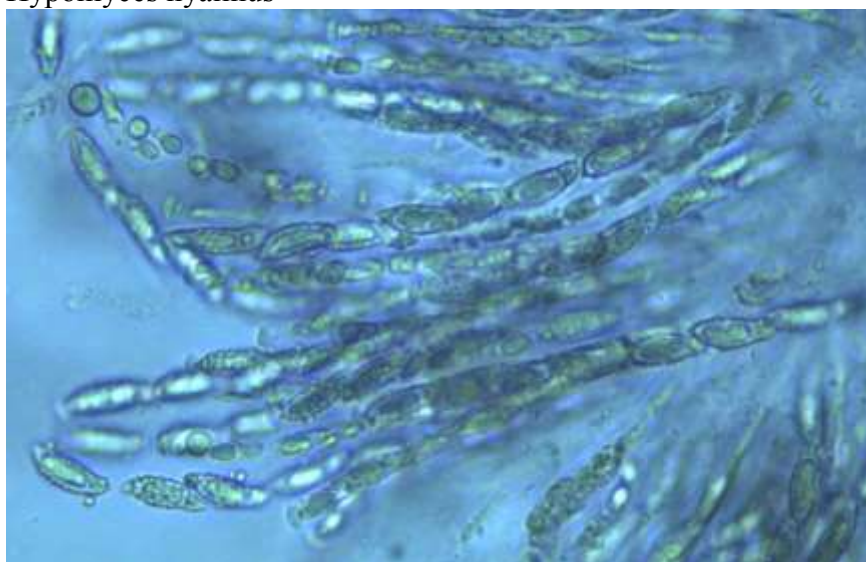
(10b1.) Growing on Amanita and typically covering the entire amanita typically not allowing the cap to expand and deforming them. It is whitish turning buff then pinkish but with age can develop yellow or brown tones.

..... **Hypomyces hyalinus** It is solid and firm much more so than the host. Species infected include Amanita rubescens the perhaps most common host but also Amanita amerimuscaria nom. prov, and other amanitas. The Asci 105-130 X 4-6um. Ascospores are 13-22 X 4.5-6.5 um. There is no known anamorph.





Hypomyces hyalinus





(10b2.) Growing on/in Amanita not deforming as above but turning its flesh yellowish and sometimes discoloring the gills

.....**Amanita Yellowing Syndrome**

Species affected include Amanita subulnaria and other members of the Lepidella. The Yellowing Syndrome is yet to be named. Note there is also an **Amanita Reddening Syndrome** of amanitas where parts turn pinkish to reddish. It is unknown if it has an anamorph. It is not certain if the syndromes are fungal or bacteria or exactly what is the cause or causes.

Unknown on Amanita farinosa



(10b3.) Growing on Amanita appearing as yellowish but ageing grayish colored hairs covering at least the cap of the host..... **Syzygites megalocarpus**
 It can also grow on Lactarius, russula, puffballs and boletes as well as many other species over 50 plus. Common name troll doll fungi. They have zygosporangia that are round to roundish in the center with resembling a cattle horn coming out at 2 opposite ends, 5-35um.



(10c.) Growing on Amanita and typically covering the entire
amanita and allowing the cap to at least expand some. The cap is
not very firm as in Hypomyces hyalinus. It is pinkish
colored.....

.....**Mycogone rosea**

It's conidia that are 8-30 X 3-6.5um. It grows on different
mushrooms but I most commonly see it on Amanita but also grows
on Inocybe and Tricholoma, etc. I saw a Tricholoma
atrosquamosum that was collapsed and covered by it.





(10d1.) Growing on Armillaria or at least attacking it.....**Entoloma abortivum**

In the top photo the Aborted Entoloma is in the middle. The Armillaria on the left and Entoloma on the right. The Aborted ones are on the bottom in the bottom photo.



(10d2.) Growing on the Honey Mushroom Armillaria
sp.....

.....**Mortierella armillariicola**

Its spores are 18-28X8-14um.



Note: A similar fungi **Mortierella bainieri** is reported from soil and other places and sometimes growing on Amanita species.

(10d3.) Growing on Armillaria
mellea.....

.....**Endomyces decipiens** and its anamorph is **Dipodascus armillariae**

(10e1.) Growing on *Clitocybe* sp especially *Clitocybe nebularis*, typically deforming the host some, has gills and a large sack at the base of the stalk..... ***Volvariella surrecta***

Its cap is 1-3 inches wide. The gills are whitish turning pinkish as the spores mature. Its smooth spores 5-7.5 X 3-6.5um. It has been also been reported on *Tricholoma*.



(10e2.) Growing on *Clitocybe odora* stems.....
.....***Nyctalis vopisca***

Note this is a very old record and should be further researched.

(10f.) Growing on Coprinus
comatus.....

Psathyrella epimyces

When the Shaggy Mane gets attack it typically is deformed.
The Parasitic Psathyrella has spores that are 7-9.5 X 4-5um. Its cap
is ½ to 2 ¼ inches wide. It spore print has a lot of black.



(10g.) Growing on Crepidotus

.....**Hypomyces tremellicola**
= Nectriopsis tremellicola. This make the host turn whitish and its whitish. Its pimples are tannish to orangish brown. Sometimes we can not determine the host it is so deformed. Asci 60-75 X 4-5um. Ascispores 7-14 X 3-4um. The white colored and cotton like anamorph is **Verticillium sp. or like**. Conidia 5-9 X 2-3um.



(10h). Growing on *Gymnopus dryophila* or *Gymnopus butyracea* was *Collybia* appearing like a jellylike mass on the mushrooms.....**See 10h1-10h4 Below**

Note of the 3 Confirmed Species, in box below, that occur in North America, they can not be told apart with out a microscope. Note this Genus was called *Christansena* in many field guides.

(10h1.) Growing on either the cap or also stalk lacks clamp connections (only one in key), also only one in key with 2 tips at the top of the basidium that hold the basidiospores the rest have 4 tips.....***Syzygospora effibulata***

Its basidiospores are 5.5-10 X 1.5-2.5um.
Basidia 30-55 X 5-7

(10h2.) Growing on either the cap or also stalk has clamp connections and has the narrowest wide basidiospores of the ones in this key that have the clamp connections. The basidiospores are only 1.5-2um wide. Other species here that have the clamp, basidiospores are at least 3um wide.....***Syzygospora mycetophila***

Its basidiospores are 6-8 X 1.5-2um.
Basidia 45-80 X 6-8

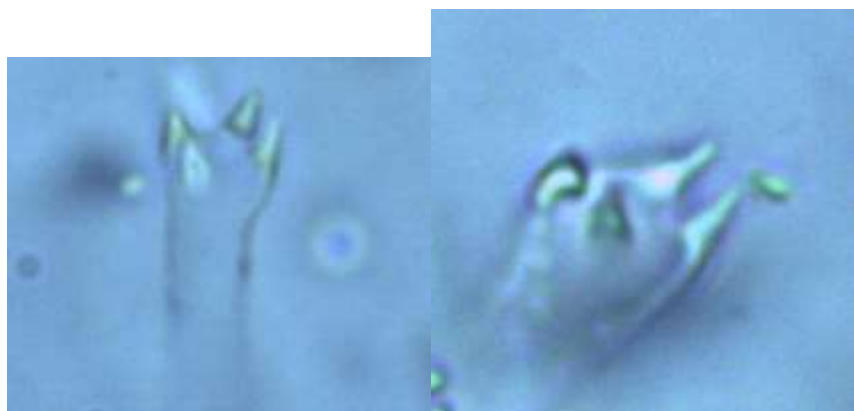
(10h3.) Growing on either the cap or also stalk has clamp connections, basidiospores 3-4.5um wide..... ***Syzygospora tumefaciens***

Its basidiospores are 6-8.5 X 3-4.5um.
Basidia 40-80 X 7-18





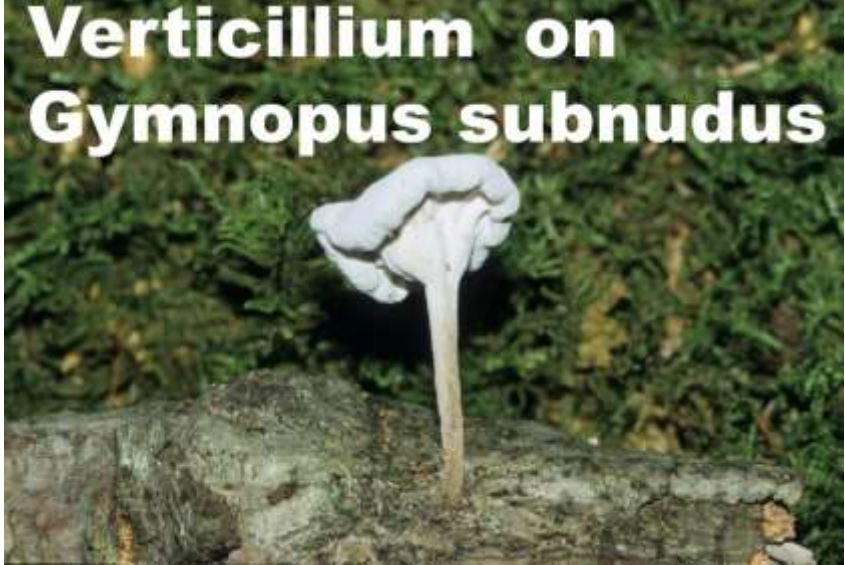
(10h4.) Growing only in the gills and yet to be reported from North America unlike the other 3 species in this key. Also the basidia are much longer than any others listed here and are 36-54 X 14-17. Basidiospores are 9-13.5 X 4-6um, has clamp connections..... **Syzygospora norvegica**



(10h5.) Growing on *Gymnopus*

subnudus.....***Hypocrea avellanea***

It can grow on the cap, gills and stem. It is brownish and has pimples-the perithecia. Asci 55-90 X 3-5um. Has 16 Distal part-ascospores 2-4 X 2-3.5um, proximal part-ascospores 2.5-5 X 2-3.5um. Conidia 3-9 X 1.5-5 um. At first it has a white colored Verticillium stage



(10i.) Growing on Lactarius

.....See 10i1-10i6

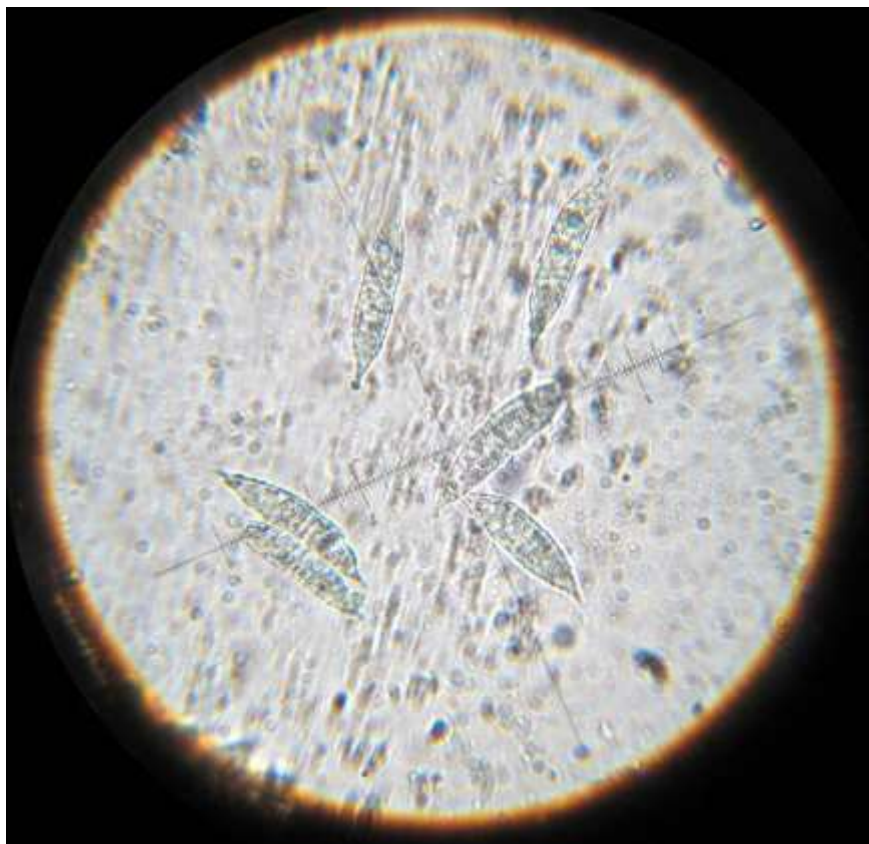
Below

(10i1.) Typically found in an orange to reddish colored stage, and typically covering entire host. Under the loop it looks pimpled.....**Hypomyces**

lactifluorum

The Lobster Mushroom can start off whitish but is seldom found in this color. Typically it is found orangish colored but age's reddish and can then get purplish tones. For a more accurate macroscopic ID look for the orange stage, since several look-alikes share the white stage but do not turn orange or red. Asci 200-260 X 6-10um. The Ascospores are 35-48 X 4.5-8um. Also Grows on Russula. It is unknown if it has an anamorph. KOH makes the pimple purple. Edible and Choice

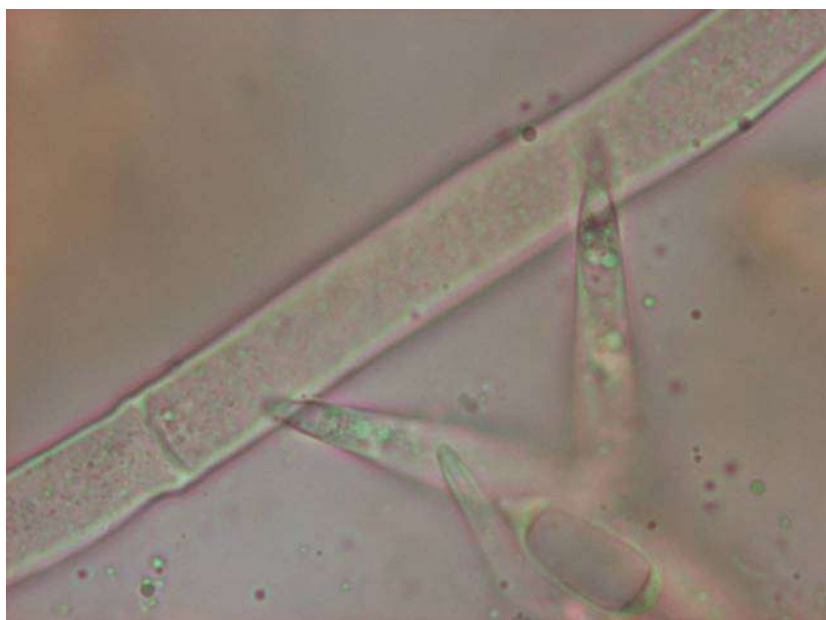




Hypomyces lactiflorum

Cladobortyum anamorph





(10i2.) White to whitish occasionally buff covering the gills and at least some of the stalk but often not the entire host stalk. Basically a white lobster mushroom that stays white.....**Hypomyces macrosporus**

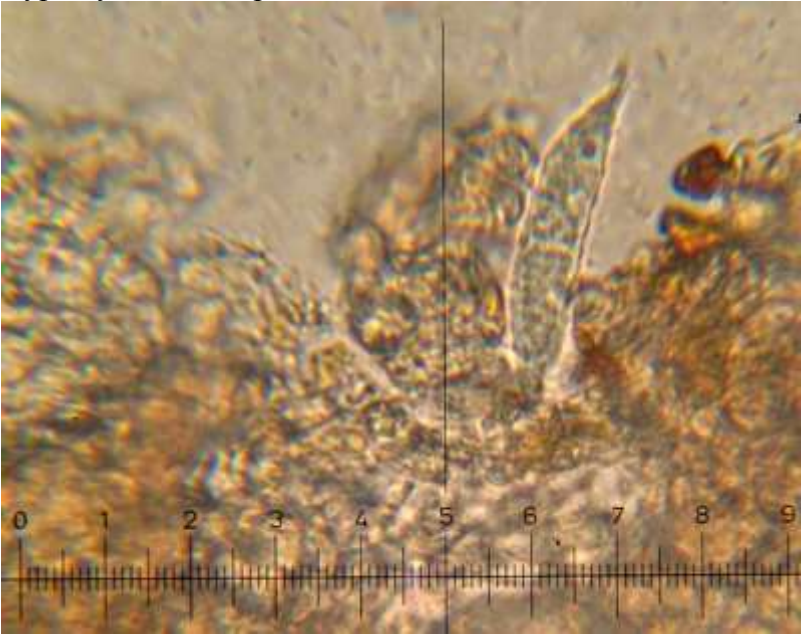
A drop of KOH will not make it turn red or purple. This species is a good edible. Asci 200-270 X 7.5-10um. The ascospores are 32-42 X 5-7um. It is not known if it has an anamorph.



This mushroom can not typically be told apart from *Hypomyces banningiae* macroscopically but *Hypomyces macrosporus* ascospores differ by having a line through the center of them like a pill.



Hypomyces macrosporus



Spore

(1013.) Typically white to whitish colored but turning yellowish colored then buff with age and drying. Growing on the underside of the caps covering the gills. The gills become fused together forming a solid mass. Typically the caps and lower stalks are not affected. Affected mushrooms seem much harder than their unaffected

counterparts.....**Hypomyces lateritius**

=Byssonectria lateritia, = Peckiella lateritia. It may = H deformans. Asci 90-155 X 4-8um. Its Ascospores are 16-28 X 3.5-6um. Hosts include Lactarius uvidus, Lactarius camphoratus and other Lactarius. The perithecia pimples turn yellowish with KOH. The suspected anamorph is **Acremonium tulasnei** but it can be found before the pimples are formed. It also differs by being cottony and the mushroom is less firm then. Conidia 5-7 X 4.5-6.5um.



Compare to Hypomyces lithuanicus = H. terminosus that can have a more cinnamony color and its pimples turn reddish with KOH.







(10i4.) Growing on *Lactarius torminosus*. The attacker is cream to yellowish, becoming orangish with the pimples being a darker orangish but also brown to reddish brown.....

Hypomyces torminosus

Also called *Hypomyces lithuanicus*. Once the host is infected it becomes harder and less brittle when fresh. Its Asci are 100-150 X 5-6um. The Ascospores are 15-24 X 3.5-5.5um. Conidia 13-20 X 4-5.5um. Its Anamorph is ***Cladobotryum arnoldii***.



(10i5.) Typically irregularly spider web like to cottony covering the gills. Whitish colored.....

Hypomyces ochraceus or the Anamorph see more below to tell the 2 apart

=*H. armeniacus*. Hosts can include both *Russula* and *Lactarius* and *Clitocybe clavipes*. The teleomorph *Hypomyces ochraceus* that is vary rarely found and his the pimple look, it is typically when found fallen on soil or debris after the mushroom disappears or has almost gone, but where the remains would be, it is beige with white sometimes orangish pimples. Asci 170-180 X 6-8um. Ascospores are 32-40 X 5-8um. Conidia 10-25 X 6-14 um. The anamorph is the more common of them and is ***Cladobotrum verticillatum*** is what we typically find on the host mushrooms.



Hypomyces ochraceus = *H. armeniacus*

Hypomyces armeniacus
anamorphic



on *Clitocybe clavipes*





(10i6.) Typically a solid whitish or white to buff covering over the hosts gills. Make sure to compare with *Hypomyces macrosporus* but this is different microscopically. It is not cobweb like.....

.....**Hypomyces bannigiae**

Grows in the East. Asci 210-320 X 6-9um. The ascospores are 30-42 X 5-7um. A drop of KOH will not make it turn red or purple. There is no known anamorph. One of the reported hosts in *Lactarius piperatus*. This mushroom is uncommon to rare.



Hypomyces bannigiae This mushroom can not typically be told apart from *H. macrosporus* but *Hypomyces macrosporus* ascospores differ by having a line through the center of them like a pill.

(10i7.) Growing on Lactarius

camphoratus.....**Hypomyces camphorati**

The name needs to be checked to see if is valid.



(10j) Growing on Lactarius and many other
fungi.....

.....**Hypomyces odoratus**

Note Its anamorph is *Cladobotryum mycophilum*

I also heard one report on polypore

(10k.) Growing on older *Lepista nuda* = *Clitocybe nuda* the
Blewit.....**Harziella capitata, current name is**

Lepisticola capitata

A thin whitish soft moldy covering on gills or at least
places on the gills. Perhaps others grow on the Blewit but this is
the only thing I could find. In the US and France and Germany.

(101.) Growing on Leptonia, Entoloma, & Pouzarella.....**Hypomyces porphyreus**

Can cover the entire host. The perithecia pimples when they develop are reddish brown. Asci 120-190 X 4-5um. Ascospores 20-30 X 3.5-5.0um. Most commonly reported on Leptonia strigoissima.





Growing on entoloma gills or - unknown





Peter told me that “

Tremella species are not known to parasitize agarics (possibly because the fruitbodies are too short-lived). I thought, therefore, that you might have found a Syzygospora species - relatives of Tremella - many of which do form gelatinous galls on agarics. However, their hosts are typically Gymnopus species (Collybia s.l.) and I am pretty sure none has been found on an Entoloma sp.

I suspect, therefore, that the gelatinous galls on the gills may be teratological (ie, caused by abnormal development of the fungus), in which case microscopic examination would just show Entoloma tissue, or alternatively something caused by a hyphomycete”

(10m.) Growing on *Marasmius pallidocephalus*, it is jelly like and covers the entire cap of the host deforming it and making it unrecognizable. Stalk not affected. There are 3 species that can not be told apart without a microscope since they all look the same.....See 10m1-10m3 Below

(10m1.) Has 2 tips at the top of the basidium that hold the basidiospores, does not have clamp connections, basidiospores 6-8 X 3-4um..... ***Syzygospora marasmoidea***

(10m2.) Has 4 tips at the top of the basidium that hold the basidiospores, has clamp connections, basidiospores 5.5-7.5 X 3.5-4.5um..... ***Syzygospora solida***

(10m3.) Has 4 tips at the top of the basidium that hold the basidiospores, does not have clamp connections, basidiospores 6-8 X 3-4um...***Syzygospora subsolida***



(10n.) Growing on small Marasmioid looking gilled fungi. It can be yellowish in color and grow on both the cap and stalk.....**Neobarya agaricicola**

Asci 140-350 X 3.5-6um. Conidia 6-9 X 3-4.5um.



(10o.) Growing on Mycena appearing as hairs at least covering the cap.....**Spinellus sp.**

This mushroom has the common name of Bad Hair Day Fungus. It typically is encountered on the Bleeding Mycena - Mycena haematopus but also other Mycena species and even some other gilled species. See below for additional microscopic Key. Macroscopically we can not continue. Only 3 Species from North America. See box below for NA.



- (10o1) (**Spinellus fusiger**) with spindle shaped spores 30-60um long.
- (10o2) (**Spinellus chalybeus**) with ovoid spores 20-30um long.
- (10o3) (**Spinellus macrosporus**) with limnoform (lemon

Other Species include

- (10o4) **Spinellus sphaerosporus** spores globe shaped approx. 10um
- (10o5) **Spinellus gigasporus** 12-15 X 50-60um.

(10o6) **Spinellus arvernensis** 18-39 X 60-80um



(10p.) Growing on Paxillus (Tapinella) the photo below is of Paxillus involutus. This mushroom is the same as attacks Boletes so use the bolete part of the key to get the ID.



(10q.) Growing on Pholiota, brownish in color.....

Hypomyces succineus

Its perithecia pimples are buff to brownish but the area around them is whitish to light buff. Asci 100-135 X 5-6um. Ascospores 14-20 X 3.5-5um. The anamorph is **Verticillium succineum**. It is white to cream. Conidia 6.5-15 X 3-4.5um.



,

(10r.) Growing on *Pleurotus ostreatus*, the Oyster Mushroom - a yellowish colored slime mold.....

Physarum polycephalum

It can also grow on other mushrooms such as *Polyporus badius* and also non mushroom areas. Its spores are globe like and 9-11um.



(10s.) Growing on

Russula.....See 10s1-10s2
Below

(10s1.) Typically found in an orange to reddish colored stage, and typically covering entire host. Under the loop it looks pimpled.....

Hypomyces lactifluorum

The Lobster Mushroom can start off whitish but is seldom found in this color. Typically it is found orangish colored but age's reddish and can then get purplish tones. For a more accurate macroscopic ID look for the orange stage, since several look-alikes share the white stage but do not turn orange or red. The Asci 200-260 X 6-10um. Ascospores are 35-48 X 4.5-8um. Also Grows on Lactarius. Common hosts include Russula brevipes. It is unknown if it has an anamorph. KOH makes the pimple purple. Edible and Choice



(10s2.) Typically found in the greenish form covering the gills and upper stalk on Russula. It starts off white then turns yellow but vary rarely encountered in these 2 color forms, then finally greenish when mature and as typically

encountered.....**Hypomyces luteovirens**

The Yellow Green Hypomyces typically grow on Russula sp but vary rarely can be found on Lactarius. =Byssonectria luteovirens and =Hypomyces viridis. Asci 160-200 X 5-8um. The Ascospores are 28-36 X 4.5-6um. It is unknown if it has an anamorph







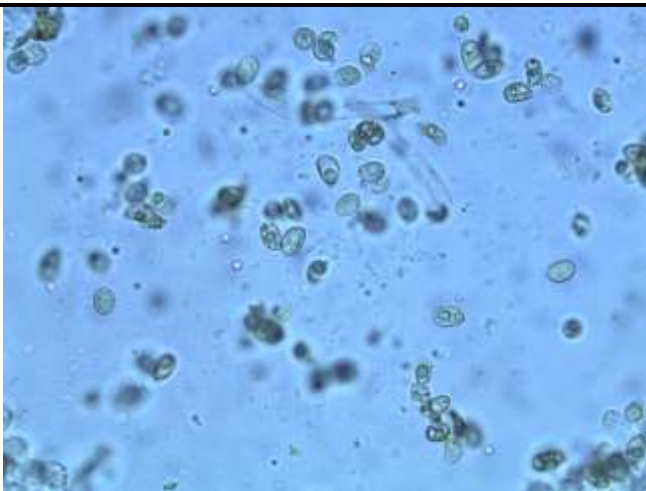
(10t.) Growing on the gills of *Tubaria furfuraceae* and distorting them, other parts are not affected. A whitish colored mold.....

.....***Nectriopsis tubariicola***

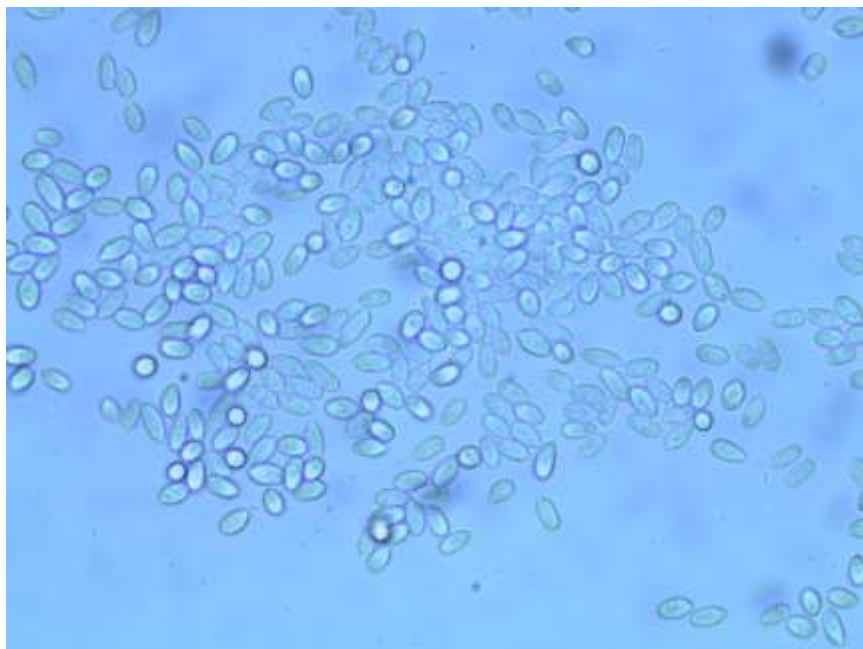
The Ascospores are 12-16 X 3-4um. The anamorph may be *Verticillium*. The *Tubaria furfuraceae* spores are 6-9X4-7um.



And the *Verticillium* anamorph



Tubaria spores



conidia Anamorphic state of *Nectriopsis tubariicola*



conidiophores Anamorphic state of *Nectriopsis tubariicola*

(10u.) Growing on various gilled fungi such as Cortinarius, Russula, Lactarius and some non-gilled fungi such as Hypoxylon fragiforme but also others. It is buff colored. Typically seen on the surface of older fungi or decaying fungi.....

..... **Calcarisporium arbuscula**

Conidia 4.5-7 X 3.5-3um.



(10v1.) Although not technically growing on a gilled mushroom this fungi often attacks inoculated Shiitake (*Lentinula edodes*) logs but can also grow on fallen rotting logs or bark. It is reddish brown to brownish when mature.....

.....**Hypocrea pachybasioides**

Its asci are 70-100 X 4-6.5um. Distal part ascospores 3-4.5 X 2.5-4.5 um. Proximal part ascospores 3.5-5.5 X 2.5-3.5um
Conidia 2-4 X 1-3um. Its anamorph is **Trichoderma polysporum**.



(10v2.) Although not technically growing on a gilled mushroom this fungi often attacks inoculated Shiitake (*Lentinula edodes*) logs that have or had Shiitake on them. They can also grow on *Hypoxyton truncatum* and *Hypoxyton rubiginosum* in other locations without the Shiitake. The attackers are black colored.....**Nitschkia confertula**
Asci 32-40 X 5-7um. Ascospores 7-9 X 3.5-5um.

(11.) Growing on Slime Molds (Myxomycetes)

.....See 11a-11i Below

(11a.) Resembling tiny stalks with roundish heads that are whitish in color. They grow on slimemolds. It appears that it could be possible that it only grows on certain species of slime molds while its lookalike may only grow on other different species of slime molds.....**Polycephalomyces tomentosus**

The species it attacks appear to include *Hemitrichia serpula*, *Trichia*, *Metatrichia*, and perhaps others. It is the Anamorph. The Telemorph is ***Byssostilbe stilbigera*** =. *Stilbella ovalispora*. Asci 100-200 X 5-9um. 8 spored. Ascospores 100-225 X 1.5-2.5um. Cuboidal part spores 1-2 X 2-2.5um. Conidia can have several shapes and sizes.





(11b.) Resembling above but Growing on different myxo hosts.....**Stibella byssiseda**

Some of the literature mentions that the base of the stalk of *Stibella byssiseda* is not covered with warted cells but *Polycephalomyces tomentosus* has them. Siefert mentions *Polycephalomyces* on Trichiaceae while this *Stibella* grows on *Cribraria* sp., *Didymium farinaceum*, *Fuligo septica* and *Lindbladia effuse*. It is white to whitish colored. Its conidia are 4-6 X 1.5-2.5um. In both NA and Europe as well as other places.



(11c.) **Verticillium fungicola** on Stemonitis. Common on Cultivated Agaricus - Called Dry Bubble Disease. It is whitish to creamy colored sometimes with some yellowish tones. Conidia 4-10 X 1-3um. The teleomorph is unknown. Causes brown spots on cultivated Agaricus.



(11d.) Growing on *Fuligo septica* the Scrambled Egg Slime also called the Dog Vomit Slime only. It is a dull violet to violet colored and is very easily overlooked

.....

..... ***Nectriopsis violacea***

The perithecia pimples are violet to purplish, and they have hairs growing around the perithecia pores. It is whitish to purplish around them. Asci 50-60 X 3-5 μ m. Ascospores are 7-8 X 2.5-3 μ m. The whitish colored anamorph is ***Acremonium fungicola***. Conidia 7-10 X 2-3 μ m.



(11e.) Growing on *Fuligo septica* the Scrambled Egg Slime and others, some *Arcyria*, *Cribraria*, *Diachea*, *Diderma*, *Didymium*, *Fuligo*, *Lycogala*, *Mucilago*, *Physarum*, *Stemonitis*, and *Trichia*. It is whitish with whitish mycelium.....

Nectriopsis candicans

Asci 40-57 X 3-5um. Ascospores are 5.5-7 X 2-3um. They are 8 spored. Conidia 7-10 X 3-4um. They have colored fuzzy hairs growing around the perithecia pores The Anamorph is *Acremonium* sp.

(11f.) Growing on *Fuligo septica* the Scrambled Egg Slime and others, the perithecia pimples are white to yellowish and its mycelium is white.....**Nectriopsis exigua**

Asci 40-50 X 2.5-6um. It has 8 spores. The Ascospores are 4.5-6 X 2-3um. Also grows on *Arcyria cinera*, *Arcyria nutans*, *Stemonitis* sp. Including *Stemonitis fusca* The Anamorph is **Verticillium rexianum**. Conidia 5-8 X 2-3um.

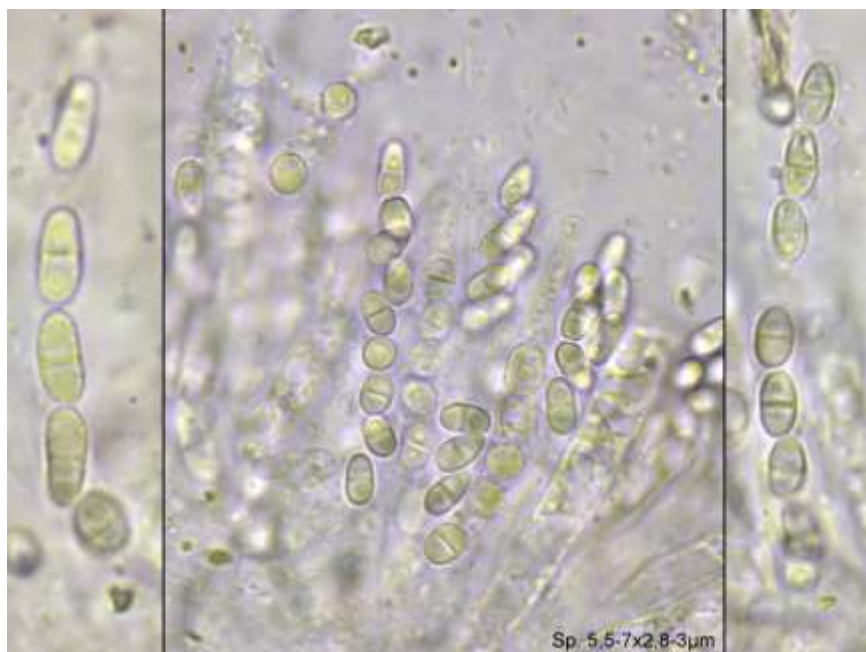
(11g.) When all else fails **Melanospora zamiae** that is typically reported on rotting plant material can grow on a Myxo and other types of fungi and has been found on the Scrambled Egg Slime - *Fuligo septica*. Perithecia yellowish to yellowish brown. Asci are 8 spored. Ascospores brown colored and lemon shaped 15.5-25 X 11-19um.

(11h.) Growing on slimemolds.....

.....**Nectriopsis oropenoides=Nectria oropenoides**

Also more commonly on bark and stereum. Ambercolored dots surrounded by whitish. Asci 44-58 X 4.5-6um.

Ascospores 5-7 X 2.5-3.5um. Conidia 2.5-3.5 X 1.5-3 um.



(11i.) Other non illustrated or keyed – growing on slime mold species

(11i1.) Acrodontium myxomyceticola

(11i2.) Aphanocladium album

(11i3.) Blistum ovalisporum has ellipsoid conidia on on trichiales – *slimemolds similar looking to the less common Blistum* (polycephalomyces) tomentosus *that has round conidia this species is not yet in the index*

(11i4.) Clonostachys rosea = Gliocladium roseum

(11i5.) Dendryphiella infuscans

(11i6.) Gliocladium album

(11i7.) Hansfordia sp

(11i8.) Hormiactis alba

(11i9.) Hyalodendron sp

(11i10.) Mariannaea elegans

(11i11.) Nectriopsis hirsuta

(11i12.) Nectriopsis sporangiicola

(11i13.) Olpitrichum macrosporum

(11i14.) Paecilomyces penicillatus

(11i15.) Pleurothecium recurvatum

(11i16.) Rhynchonectria longispora

(11i17.) Sarocladium bacillisporum =Acremonium bacillisporum

(11i18.) Sesquicillium microsporum

(11i19.) Simplicillium lamellicola = Verticillium lamellicola

(11i20.) Sporothrix pallida = Calcarisporium pallidum

(11i21.) Stilbella byssiseda = Stilbella orbicularis

(11i22.) Verticillium chlamydosporium var. catenulatum = Verticillium catenulatum

(11i23.) Verticillium insectorum

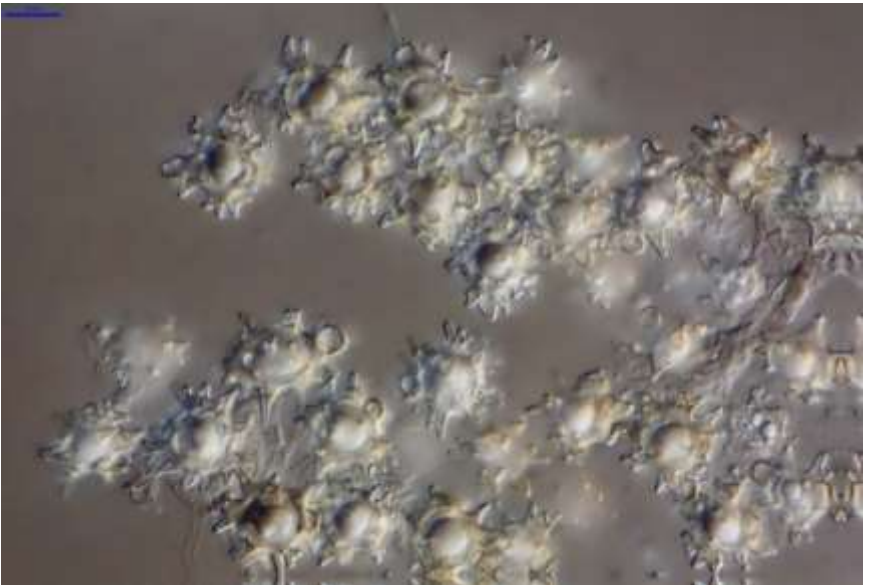
(11i24.) Verticillium lindauianum

12. Growing on rotting fungi that are often unidentifiable since they are rotting or rotted and decayed and often blackened from the decay.....See A-I Below

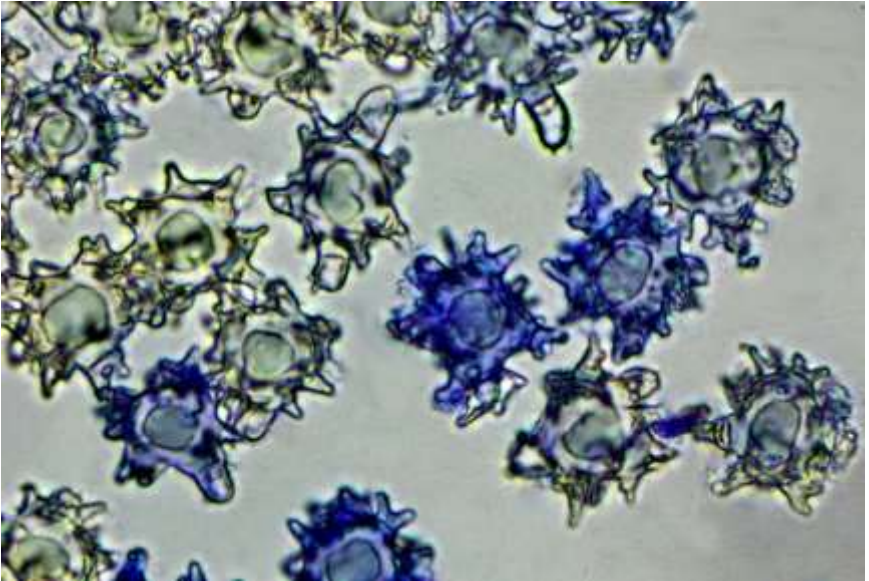
(12a.) Growing on rotting fungi, cap covered with brownish powder, 3/8 to 7/8 inch wide when mature. Its gills are whitish colored.....

.....**Asterophora lycoperdoides**
=Nyctalis asterophora. No tubers. Only one in group with a powder covered cap. Common name is Powder Cap. Growing on both Russula and Lactarius especially likes Russula nigricans. Basidiospores 3-6 X 2-4 um. Also has Chlamydospores 12-21 X 10-21um.





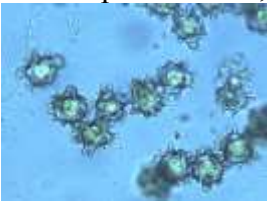
Asterophora lycoperdoides Spores 1000x with DIC illumination and image stacking



Spores 1000x, stained with crystal violet, focus stacked



Notes Spores 1000x, 4 images stacked with CombineZP



(12b.) Growing on rotting fungi, cap not powder covered and $\frac{1}{4}$ to $\frac{5}{8}$ inch wide, it is grayish brown colored and has gills and a stalk.....

Asterophora parasitica

=*Nyctalis parasitica*. No tubers. Growing on both *Russula* and *Lactarius*. *Russula foetens*, *R. nigrescens*, and *R. densifolia* are a few of the more common hosts. Basidiospores 5-6 X 3-4um. Chlamydospores 12-18 X 9-10um.





Asterophora parasitica chlamydospores 1000x

(12c.) Growing on rotted fungi, cap 3/8 or less wide. No hidden tubers dig in rotting mushroom to check for a lack of them.....**Collybia cirrhata**

Often the rotten fungi are Russula but can be others.

Spores 5-6 X 2-3um. Its spore print is white.



(12d.) Growing on rotted fungi, cap 3/8 or less wide. Has yellowish to light orangish colored hidden tubers that are roundish in shape, dig in rotting mushroom to check for them.....

..... **Collybia cookie**

Often the mushrooms are Russula but also other types of rotten fungi including Ganoderma carnosum. It has attached gills and a stalk. Its spore print is white. Spores 4.5-6 X 3-3.5um.



(12e.) Growing on rotted fungi, cap 3/8 or less wide. Has reddish brown colored hidden tubers that are somewhat oval to apple seed like in shape, dig in rotting mushroom to check for them.....

Collybia tuberosa

It has attached gills and a stalk. Its spore print is white. It can grow on rotted Russula but maybe others like lactarius. Spores 4-6 X 3-3.5um. The Cheilocystidia are 18-32um in length.



(12f.) Growing occasionally on rotting mushrooms but also often not and on other things like moss and leaves etc. This does not key out well but is noted

here.....**Tephrocye tylicolor**
=Lyophyllum tricolor.

Its cap is ¼ to ¾ inches wide and often can have brown tones. It also has gills and a stalk. Spores 5.5-8 X 4.5-6um.

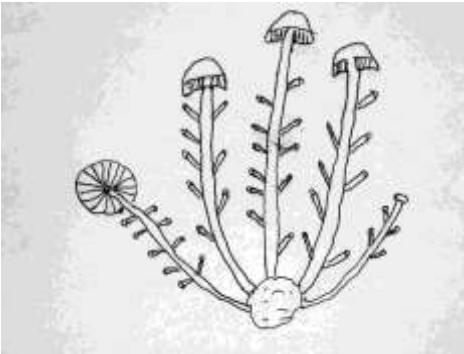
(12g.) Also growing on rotted fungi, cap 3/16 to 1 inch wide. Its gills are whitish then developing grayish tones then becoming brownish. It has a stalk. It does not have any sclerotinum..... **Rhodocybe olympiana**=
Collybia olympiana.

Its spores are 6-7 X 4.5-5um.

(12h.) Growing on rotted fungi, stem getting tiny branches on it, only one listed here that gets the branches.....

Dendrocollybia racemosa

Another gilled mushroom, with the hidden tubers-sclerotium that should be searched for in the rotted host mushrooms remains, Western = *Collybia racemosa*. What we call the branches is the asexual state or anamorph that is sometimes called *Tilachlidiopsis racemosa*. Spores 4-5.5 X 2-2.5um. This mushroom was described from Western North America and so far the only proven western host is *Russula crassotunicata*. Its blackish colored sclerotia form inbetween the *Russula* gills. It appears that there is an additional eastern species species of this mushroom that has been reported probably growing on *Lactarius deceptivus* in Marlborough New Hampshire. Hopefully soon it will be worked on or described and details will become available. It appears that the eastern species has a much wider stalk and wider branches.





(12i.) Growing on rotted fungi that typically can not be identified because they have already become decomposed

.....

.....**Hypomyces rosellus**

It is rose pink or red colored. A drop of KOH makes it turn purple. Asci 140-160 X 5-7um. The ascospores 20-35 x 3.5-7um. Its anamorph is Cladobotryum dendroides. Conidia 18-34 X 7-11um.

Note there is also an undescribed species that looks very similar.



(13.) Growing on Chanterelles (*Cantharellus* sp.)

(13a.) Growing on the top of the cap of *Cantharellus* species and occasionally on *C. lateritius* and *C. cibarius* complex. The fungi is not being attacked by another fungi but rather the spore producing area can sometimes also be found in small spots on top of the cap. This can be fairly common.



(13b.) Growing on *Cantharellus subalbidus*, *C. cibarius*, has a cap and a stalk that is off centered with the stalk being closest to the host fungi. Its whitish gills turn pinkish with age and it has a pinkish spore print.....**Claudopus parasiticus** =

Entoloma parasiticum- Current name

It Europe it has been reported on *Polyporus squamosus*. Also reported from *Trametes versicolor* and *Coltricia*. Spores 9.5-13.5 X 8-11um. **NOTE** Its cap is reportedly white and it also differs from 12B below in that this mushroom does not have cheilocystidia.

(13c.) if different than 13A and not the same species.....

Entoloma pseudoparasiticum

Growing on *Cantharellus cibarius* and *Craterellus lutescens*
NOTE Its cap is brownish and it is reported to have Cheilocystidia.



(13d.) A third species growing on Chanterelles but on variety roseocanus in Eastern Canada that has a white cap and has Cheilocystidia.....
 **Entoloma subdepluens nom prov. =**
 Claudopus subdepluens nom prov.

(13e) Brown in color growing up onto Chanterelle stalks and sometimes the fertile surface.....

.....Tomentella

Tomentella is typically found on wood. Occasionally it will grow up onto chanterelles. It can grow on *Cantharellus lutescens* in Europe and several species of tomentella can grow on Chanterelles including *T. lapida* in Europe.





Centipedes and Millipedes consume its spores



The spores have spines and knobs. This species has clamp connections.

(14.) Growing on Coral Fungi

(14a.) Growing on Coral Mushrooms. I have only found it on 2 species *Clavulina cristata* and *Clavulina cinerea*.....

Helminthosphaeria clavariarum

It is grayish turning darker to black. Typically it starts at the base of the coral mushroom and the parasite works up and can eventually cover the entire host. Its ascospores are 11-16 X 5-7.5um. Its old name was *Spadicioides clavariae*. The anamorph is **Diplococcium clavariarum**. Conidia 13-28 X 6-9um.



(14b.) Growing on
Ramaria.....
Mycogone calospora

(15.) Growing on Puffballs or Growing on Scleroderma (False Puffballs or Earth Balls)

(15a.) Growing on Puffballs but resembling hairs or fuzz
..... **Syzygites megalocarpus**

Note see image and description of it in the growing on Amanita section growing on an alternative host

(15b.) Growing on Puffballs and many other things including non fungal such as being a plant pathogen. It is often orangish brown

..... **Epicoccum nigrum = E. purpurascens**
Its conidia are 15-25um in diameter.



(15c.) Growing on Scleroderma, attackers cap is ¾ to 3 inches wide. Its pores are yellowish developing olive tones then becoming more brown.....

Pseudoboletus parasiticus

=Boletus parasiticus. A Bolete with pores. Most often seen on Scleroderma citrinum. Spores 12-19 X 3.5-5.5um.



Boletus parasiticus = Pseudoboletus parasiticus
on



**Scleroderma
citrinum**

(16.) Growing on False Truffles –
Elaphomyces..... See 16a-16q Below

(16a.) Head about twice as tall as
wide.....
..... **Elaphocordyceps ophioglossoides**

=Cordyceps ophioglossoides the Gold Thread Cordyceps.
The head starts off brown sometimes with a little olive tones but
soon becomes black. One or more can be attached to the false
truffle. Asci 280-450 X 5-7 has 8 spores. Ascospores becoming
part spores 2-4.5 X 1.5-2um.



(16b.) Head twice as tall as wide, It is grayish green with yellowish tones.....

.....**Elaphocordyceps japonica**

Asci 250-400 X 7-12 um. Ascospores becoming part spores that are 10-18.5 X 2.5-4um Occurring in the United States, Japan, Australia and Austria.

(16c.) Head twice as tall as wide, it is elongated.....

.....**Elaphocordyceps jazoensis**

Asci are 450-500 X 13-19.5um. Ascospores becoming partspores that are 16-50 X 3-4.5um. From Japan.

(16d.) Head not twice as tall as wide, it is roundish and height and width of head similar in size, head not shiny but this shiny feature may not be accurate.....

Elaphocordyceps

capitata

=*Cordyceps capitata*, = *C. canadens*. One or more can be attached to the false truffle. For spore differences see C below. *E. capitata* has Asci 350-540 X 10-12um. its ascospores separate at the joints and become part spores. Host fungi include *Elaphomyces granulatus* and *Elaphomyces cervinus*. Occuring in North America and Europe.

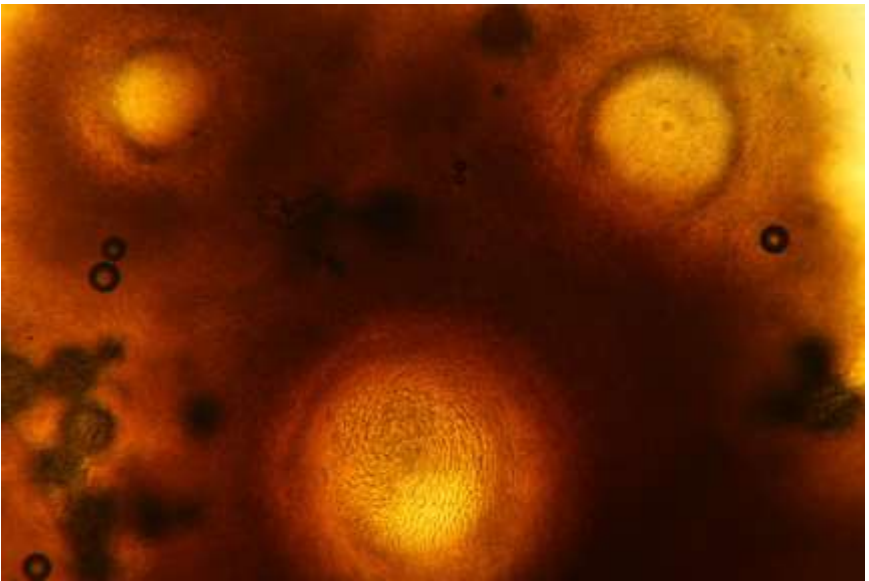


Elaphocordyceps capitata
Ascospores becoming part spores 14-30 X 2.5-3.5um





Elaphocordyceps capitata spores



Asci in the perithecia, 100x

(16e.) Head not twice as tall as wide, it is roundish and height and width of head similar in size, head shiny but this shiny feature may not be accurate.....

..... **Elaphocordyceps longisegmentis**
=Cordyceps longisegmentis. Its head is brownish sometimes with olive tones becoming darker brown with age. Its stalk is yellowish. Its asci no more that 440um in length and are 10-15um in width.



Elaphocordyceps
longisegmentis
Ascospores becoming
partspores 30-64 X 3-
5um

(16f.) Head small and ovalish and not twice as tall as wide. It is brownish and up to 3 ½ inches tall.....

.....**Elaphocordyceps delicatistipitata**

Ascospores becoming partspores that are 17.5-28 X 3-5µm. Occuring in Japan.

(16g.) Head not twice as tall as wide. Its roundish head is blackish but can have purplish tones. Its stalk is yellowish green.....

.....**Elaphocordyceps fracta**

Asci 300-475 X 5-6µm. Ascospores becoming partspores 2-5 X 1.5-2µm. The type is From Tennessee USA.

(16h.) Head not twice as tall as wide. Its roundish is 1/8 to ¼ and is brownish to blackish in color.....

.....**Elaphocordyceps intermedia**

Ascospores 3-8 X 2-3µm and becoming part spores. From Japan.

(16i.) Head not twice as tall as wide, head roundish. From Japan.....

Elaphocordyceps minazukiensis

Ascospores becoming partspores 16-18 X 2.9-3.1um.

Needs more work see below

(16j.) Head roundish and brownish often with grayish tones. Stalk yellowish with darker streaks. One or sometimes more on false truffle.....

Elaphocordyceps miomotena

Asci 400 X 4um. Ascospores becoming part spores 8-11.5 X 1.5-2um. From Japan.

(16k.) **Elaphocordyceps ramosa** – from China.

(16l.) Its head is blackish brown sometimes with grayish tones. Single to several per host. **Elaphocordyceps rouxii** – from Europe and Japan. Asci 250-320 X 7-10um. Ascospores becoming part spores.

(16m.) From China. One or more per false truffle. **Elaphocordyceps szemaoensis**. One or more per false truffle. Asci 90-250 X 7-8um. Ascospores becoming partspores 3-3.5 X 2-2.5um.

(16n.) Type from PA. Its stalk is yellowish brown. **Elaphocordyceps tenuispora**. Asci 425-600 X 250-300. Ascispores becoming partspores 6-8 X 1-1.5um.

(16o.) Found in the United States and Canada. Its stalk is brownish colored. **Elaphocordyceps valliformis**. Asci 230-460 X 200-350um. Ascospores becoming partspores 3-8 X 2um.

(16p.) Head twice as tall as wide. From Japan. **Elaphocordyceps valvatostipitata**. Asci 400-600 X 10-12um. Ascispores becoming partspores 7-16 X 2.5-3um.

(16q.) Head roundish and blackish colored. From Japan. **Elaphocordyceps virens**. Ascispores becoming partspores 6 X 1.5um.

(17.) Growing on or in Jelly Fungi

(17a.) Growing on Jelly fungi and covering them almost entirely too entirely. Found on the Black Jelly Roll *Exidia glandulosa* and other *Exidia* sp.

.....***Hypocrea sulphurea***

Its host *Exidia* grows on wood. It is yellowish and sheet like. When fresh it raised and irregular in appearance, it is much thinner when dried out. Find it typically on fallen logs where the host grows. Also on *Exidia nucleata*. Its pimples can become more orange with age. Asci 90-120 X 5-7um. Distal part-ascospores 5-9 X 4.5-7um, Proximal part-ascospores 5-7 X 4-5um. Occuring in Europe and North America. The anamorph is *Trichoderma* sp.





(17b.) Growing on Jelly fungi, found on the Black Jelly Roll
Exidia glandulosa. It looks and like little raised whitish and
roundish jelly like dots on the Exidia's exterior surfaces. There
can be just a few on an Exidia or over 30 on one of them. They get
up to 3 mm
wide.....

.....**Heteromycophaga glandulosae**

Known from England. Its conidia are 8-10 X 2.5-3.5um.



(17c.) Growing in a Jelly fungi, found in Tremella
brasiliensis.....**Heteromycophaga tremellicola**
Conidia 9.5-22 X 4-8um. Found in South America.



(17d.) Growing on Tremella colpomaticola in Denmark----
Colpoma quercinum

(17e.) Growing in
Dacrymyces.....**Tremella obscura**

It cannot be spotted macroscopically. Its spores are 3-4 X 2.5-3um, they are hyaline. Photo is on D. variisporus but it also occurs on other species of Dacrymyces. Conidiophores 7.5-12 X 3-4um. Basidiospores are ellipsoid and 5-7 X 3-5um.



(17f.) Growing in Dacrymyces

.....**Tremella penetrans**

It cannot be spotted macroscopically. Conidiophores 7-10.5 X 3-4.5 μm . Basidiospores 8-15 X 5.5-12 μm . Dacrymyces minor and Dacrymyces stillatus are hosts.



(17g.) Growing inside Dacrymyces

.....**Tremella giraffa**

It cannot be spotted macroscopically. Its basidia are 2 spores and can have very long stalks they are 2-17.5 X 1.5-4 μm . Its basidiospores are ellipsoid and 6.5-8.5 X 6-7 μm . Dacrymyces stillatus are hosts. Occurring in Europe.



(17h.) Growing in Calocera cornea in Denmark---- **Tremella caloceraticola**



(17i.) Growing on Dacrymyces in Taiwan---- **Tremella occultifuroidea**

(17j.) Can grow on
Tremella.....
Acremonium psammosporum

(17k.) Has been found with **Pseudohydnum gelatinosum**.....
.....**Dactylaria lanosa**

(17l.) growing on **Dacrymyces** but this is not a common thing
it occurs
on.....
.....**the yeast Itersonilia perplexans**

(17m.) Growing on the Jelly fungi called the Snow Mushroom – Tremella fuciformis. Resembling little black colored sometimes with dark brownish tones and has pointed hairs growing out of it.....**Ophiostoma epigloeum**
=Ceratocystis epigloeum



Far away



Close up



It can often be found on rehydrated store products

(17n.) Growing in Dacrymyces in England.....
.....**Occultifur internus**



(17o.) Growing on Jelly fungi – Auricularia and others, typically found when orange colored, has perithecia pimpled looking, turns reddish purple to purplish with a drop of KOH. Other hosts include Stereum and Trametes versicolor.....
..... **Hypomyces aurantius**
It can cover the entire host mushroom. Asci 100-160 X 6-7 um. Ascospores 20-25um x 4-6um. The white colored anamorph is **Cladobotryum varium**. Conidia 10-20 X 6-8um.

(17p.) Growing on Auricularia (a jelly fungi) as well as on numerous other fungi as well as wood with no fungi.....**Hypomyces semitranslucens**
Its anamorph is **Cladobotryum fungicola**

(17q.) growing on jelly fungi such as *Myxarium nucleatum* -----
Zyggloea gemellipara
Mycotaxon 52(1): 243 (1994)



(18.) Growing on a mushroom that can not be seen, all we can see is a

Squamanita.....
.....See A-I Below

(18A.) Cap orangish brown to orangish buff especially the scaly areas, the cap is 1 – 2 1/4 inches wide. Its gills are whitish.

Eastern.....
.....**Squamanita umbonata**

Often called the Knobbed Amanita. Spores 6-9 X 3.5-5.5um. The host is an unseen Inocybe oblectabilis. Occurs in eastern North America.



(18B.) Cap 3/8 to 1 3/4 inches wide and purplish, at base of stalk it is very swollen and bulb like but really a buff colored tuber at the base, Only one in this key that smells like grapes, Mushroom Occurs in Western NA and Europe.....

.....**Squamanita odorata**

Spores 6.5-9 X 4-6um. The host is Hebeloma mesophaeum.

(18C.) Cap purplish does not have a very swollen distinctive looking bulb like at base of stalk, Gills white but turning purplish when mature, only one in this key that has spores that are over 9um in length-some others get up to 9 but this one are 9-10.5um long.

.....

.....**Squamanita paradoxa**

Spores 9-10.5 X 4.5-6um. The host that it is growing from is an unseen Cystoderma often Cystoderma amianthinum. Found in western NA and Europe.



(18D.) Cap purplish and scaly looking, base of stalk swollen but not tuber looking or appearing roundish, no grape odor, spores 9um or smaller in length and not roundish. Mushroom Western NA.....

..... **Squamanita pearsonii**

Spores 7-9.5 X 4-5.5um. The host is thought to be fungi. Its gills are whitish colored.

(18E.) Cap with grayish and purplish tones, the base of stalk is only slightly swollen, spores are almost round and the only one in the key that appear this way 5-7 X 5-6.5um. Mushroom Western NA.....

..... **Squamanita contortipes**

Spores 5-7.5 X 5-7 round or roundish, the host is an unseen Galerina. Its spore print is whitish colored. This mushroom is small and does not reach 1 cm in height.

(18F.) Cap 3/8 to 3/4 inches wide. It is grayish with purplish tones. The host fungi is Kuehneromyces mutabilis.....

..... **Squamanita fimbriata**

Spores 5.5-7 X 4-5um.

(18G.) The host fungi is Phaeolepiota aurea. The mushroom has scales that are buff colored. The cap is colored like a brick or can have brown tones.

..... **Squamanita phaelepiotica**

Known from Japan

(18H.) The host fungi is

Amanita.....

Squamanita schreieri

It has yellowish colored scales. Spores 5-7 X 4-5um. Found in Europe. So far the thinking is it may grow on 2 species of amanita.

(18I.) Its cap is scally. The host fungi is unknown. Occuring in

New

Zealand.....

Squamanita squarrulosa

(18J.) The host fungi is not yet known. From Maylasia.

.....

Squamanita tropica

(18K.) Cap 5/8 to almost 2 inches wide. It is whitish becoming reddish brown with age. Look in conifer woods. Growing on Agarics that can not be

IDed.....

Rhodocybe stangliana

Note Rhodocybe has pinkish spores – Was Squamanita. Spores 5-7 X 3.5-5um. It has pinkish in its spore print.

(19a.) Growing on the Splash cup *Cyathus striatus* forming a whitish becoming beige colored thick ring around it.....

Hypocrea latizonata

The pimples are orangish. There is no known anamorph. Distal part Ascospores 3.5-4 X 3-3.5um. Proximal part ascospores 3.5-4.5 X 2-3um. It is eastern North America in range.



(19b.) Unknown Growing on *Crucibulum* leaf



(20a.) Growing on *Aleurodiscus amorphus*, jelly like and creamy white in color, sometimes with pinkish tones to orangish tones, the tree the host fungi grows on is spruce or balsam

fir.....**Tremella simplex**

There are other species of *Tremella* that grow on other species of *Aleurodiscus*. Basidiospores are oval or globose 7-9 diam. Conidia are ovoid 3.5-7 X 2.5-5um. Its hyphae does not have clamp connections.

Note: It may also grow on *A. thujae*. The Parasite grows in North America and Europe.

(20b.) Growing on the crust *Acanthophysellum lividocoeruleum*=
Corticium lividocoeruleum = *Aleurodiscus*

lividocoeruleus.....**Tremella subencephala**

Spores 6 X 4um. It is also reported on *Aleurodiscus lividocoeruleus*.

(20c.) Growing on *Aleurodiscus*

grantii.....**Tremella mycetophiloides**

It is often cushion shaped. It grows up to 2mm in diameter, It is yellowish to orangish often with brown or reddish tones. Note : It may also grow on *A. simplex*. Its hyphae has clamp connections

(20d.) Growing in the *Aleurodiscus norvegicus*. Growing in England and Scotland.....

.....**Tremella callunicola**

Found there on small branches of Heather. Not macroscopically seen. A microscope must be used but occasionally a hand lens works. The attackers basidiospores are ellipsoid, 7-9 X 5-6um. While the host basidiospores are 9.5 -12 X 5-7um.



(20e.) Growing on *Aleurodiscus lividicoeruleus* in Canada -----
-----**Tremella simplex**

(21a.) Growing on the *Xylobolus frustulatus* common name Ceramic Parchment and *Xylobolus subpileatus*.....

.....**Hypomyces xyloboli**

Its perithecia pimples are brownish colored but the beak seems to be metallic green, KOH has no reaction on them. Asci 110-126 X 5-6um. Ascospores 15-18 X 3.5-4.5um, they are hyaline. It has green conidia. Do not confuse with the typically orange colored *Hypomyces aurantius* which has been reported on *Xylobolus subpileatus*. Anamorph **Cladobotryum sp.** is gray-green colored. Conidia 8-14 X 5-6um.

(21b.) Growing on *Xylobolus cf illudens* from Thailand. It is grayish to orangish often with brown.....

.....**Hypomyces thailandicus**

Asci 100-135 X 6.5-8um. Ascispores 16-20 X 5-6um. The anamorph is *Cladobotryum sp.* Conidia 10.5-15 X 5.5-6.5um.

(22a.) Growing on older and often decaying Earthstars in the genus *Astraeus* such as *Astraeus hygrometricus*. It is very tiny and grayish becoming orangish colored. It is somewhat disc shaped. Can be growing by the 100 on a single earthstars ray and be on multiple

rays.....
.....**Gelatinipulvinella astraeicola**

It is 8 spored and its ascospores are 9-14 X 4-6.5um. Its asci are 60-80 X 10-14um. Known so far from Japan. Was called *Xerocomus astraeicola*

22b. Growing on older and often decaying Earthstars in the genus *Astraeus* such as *Astraeus hygrometricus*. From China.

.....**Xerocomus astraeicolopsis**

23. Other mushrooms that grow on other mushrooms that are not included in the sections above are: Just as other choice

(1.) **Neobarya byssicola** – Growing on the fungi – that grow on some of the dung fungi –The type was found on Guinea pig dung which had several different species of fungi growing on the dung that this fungi grew on one of them. Asci 250-450 X 2-3um. Ascospores 250-450 X 1.0 or less um.

(2.) **Neobaria danica**- Growing on the fungi –corticoid basidiomycetes - but also other things such as misc lichens. Asci 130-140 X 4.5-5.5um. Ascospores 80-95 X 1-2um. Its anamorph is **Lecanicillum sp.**

(3) *Tilachlidium brachiatum*



It can grow on gilled stalked fungi also and look like thorns growing from the old part deteriorated cap and stalks. Whitish at first becoming creamy yellowish with age. Its other state is *Pseudonectria tilachlidii*. *Pseudonectria tilachlidii* is

It has been reported on several fungi including polypores including *Tyromyces* typically in the pore area, *galerina*, coral fungi but they seem to always be in a state of decay. Its ascospores are 6-9 X 1.5-1.9 μ m and conidia in its other state are 3-4.5 μ m long.



(4.) **Achroomyces arrhytidae** = *Platyglöea* – A mycoparasite

(5.) **Achroomyces fungicola var interna** = *Platyglöea* – A mycoparasite

(6.) **Achroomyces peniforae** – A mycoparasite

(7.) **Cystobasidium lasioboli** on *Lasiobolus* but also on dung etc.

(8.) **Gonatobotryum fuscum** on *Ceratocystis*

(9.) **Geotrichopsis mycoparasitica** on over 20 different fungi

(10.) Growing onto other fungi sometimes but other times with out fungi and growing only on wood. This mushroom is only European not North American. It is up to 2mm wide. It has raised bumps on it. It is yellowish to yellowish green but can develop orange to brown

tones.....

.....**Hypocrea gelatinosa**

Asci 75-120 X 4.5-6um. Ascospores green. Distal part ascospores 3.5-5 X 3-4.5um. Proximal part ascospores 3.5-6.5 X 2.5-4um. Its anamorph is **Trichoderma gelatinosum**. Conidia 3.5-6 X 3-3.5um.

(11.) Sometimes with other fungi.....

.....**Hypocrea sinuosa**



(12.) **Tetragoniomyces uliginosus** on *Rhizoctonia solani*

(13.) **Tubeufia cerea** on *Diatrype stigma* and *Hypoxylon* etc.

(14.) **Dispira simplex** on *Chaetomium* sp.

(15.) **Dispira parvispora** on *Chaetomium* sp.

(15.) **Heterogastridium pycnidioideum** reported on fungi. Such as *Russula brevipes* or *Hypomyces lactiflorum* but also other fungi that can not be listed here now. It may also grow on plants but uncertain of this. There are also other species of *Heterogastridium* that grow on fungi that need added to this key

(16.) **Parasitella parasitica** on *Absidia glauca*

(17.) **Sphaerostibella berkeleyana** was *Hypomyces berkeleyanus* on Polypores and *Stereum*. It looks whitish to yellow in color and covers part of the polypores often a goof part.

- (18.) **Sphaerostibella lutea** and its anamorph *Gliocladium aurifilum* on aphylliphorales
- (19.) **Sphaerostibella novae-zelandiae** on polypores
- (20.) **Sporidesmium sclerotivorum** on *Sclerotinia minor*
- (21.) **Tympanosporium parasiticum** on *Tubercularia vulgaris*. It is whitish and can cover the host fungi. Its conidiophores are 12-17µm in length.
Reference: Antonie von Leeuwenhoek 49 1974 471-479
- (22.) **Phaeofabraea lachnoides** Ascospores 7-9.5 X 4-5µm
From south America
- (23.) **Phaeofabraea miconiae** Ascospores 11-15 X 6-8µm
From South America
- (24.) *Pythium ultimum* oospores by *Fusarium merismoides* article in mycologia

This Key covers the following 382 states of fungi

1. **Achroomyces arrhytidae**
2. **Achroomyces bispora**
3. **Achroomyces henricii**
4. **Achroomyces fungicola var interna**
5. **Achroomyces peniforae**
6. **Acremonium berkeleyanum**
7. **Acremonium fungicola**
8. **Acremonium psammosporum**
9. **Acremonium tulasnei**
10. **Acrodontium myxomyceticola**
11. **Amanita Reddening Syndrome**
12. **Amanita Yellowing Syndrome**
13. **Aphanocladium album**
14. **Ascocodinaea polyporicola**
15. **Ascocodinaea stercicola**
16. **Asterophora lycoperdoides**
17. **Asterophora parasitica**
18. **Bionectria compactiuscula**
19. **Bionectria ochroleuca**
20. **Byssostilbe stilbigera**
21. **Calcarisporium sp.**
22. **Calcarisporium arbuscula**
23. **Calloriopsis gelatinosa**
24. **Capronia nigerrima**
25. **Catenulifera rhodogena**
26. **Cladobotryum arnoldii**
27. **Cladobotryum clavisporum**
28. **Cladobotryum dendroides**
29. **Cladobotryum fungicola**
30. **Cladobotryum hughesii**
31. **Cladobotryum mycophilum**
32. **Cladobotryum orthosporum**
33. **Cladobotryum polypori**
34. **Cladobotryum uniseptatum**
35. **Cladobotryum varium**
36. **Cladobotryum verticillatum**
37. **Cladobotryum viridigriseum**
38. **Claudopus parasiticus**

39. *Clitocybe sclerotoidea*
40. *Clitopilus daamsii*
41. *Clitopilus passeckerianus*
42. *Clonostachys compactiuscula*
43. *Clonostachys rosea* = *Gliocladium roseum*
44. *Colacogloea peniophorae*
45. *Collybia cirrhata*
46. *Collybia cookei*
47. *Collybia tuberosa*
48. *Colpoma quercinum*
49. *Coryne albida*
50. *Cosmospora diminuta*
51. *Cosmospora episphaeria*
52. *Cosmospora magnusiana*
53. *Cosmospora papilionacearum*
54. *Cosmospora purtonii*
55. *Cosmospora vilior*
56. *Cryptococcus* sp
57. *Cystobasidium lasioboli*
58. *Dactylaria lanosa*
59. *Dendrocollybia racemosa*
60. *Diplococcium clavariarum*
61. *Dendryphiella infuscans*
62. *Dipodascus armillariae*
63. *Dispira parvispora*
64. *Dispira simplex*
65. *Elaphocordyceps capitata*
66. *Elaphocordyceps delicatistipitata*
67. *Elaphocordyceps fracta*
68. *Elaphocordyceps intermedia*
69. *Elaphocordyceps japonica*
70. *Elaphocordyceps jazoensis*
71. *Elaphocordyceps longisegmentis*

72. *Elaphocordyceps minazukiensis*
73. *Elaphocordyceps miomotena*
74. *Elaphocordyceps ophioglossoides*
75. *Elaphocordyceps ramosa*
76. *Elaphocordyceps rouxii*
77. *Elaphocordyceps szemaoensis*
78. *Elaphocordyceps tenuispora*
79. *Elaphocordyceps valliformis*
80. *Elaphocordyceps valvatostipitata*
81. *Elaphocordyceps virens*
82. *Endomyces polyporicola*
83. *Endomyces polyporicola*
84. *Entoloma abortivum*
85. *Entoloma pseudoparasiticum*
86. *Entoloma subdepluens* nom prov.
87. *Epicoccum nigrum*
88. *Filobasidiella lutea*
89. *Fusarium* sp.
90. *Fusarium aquaeductuum* var.
 aquaeductuum
91. *Fusarium aquaeductuum* var. *medium*
92. *Fusarium epistoromum*
93. *Gelatinopsis geoglossi*
94. *Gelatinopsis septata*
95. *Gelatinipulvinella astraeicola*
96. *Geotrichopsis mycoparasitica*
97. *Gliocladium album*
98. *Gliocladium aurifilum*
99. *Gliocladium penicillioides*
100. *Gloeoporus pannocinctus*
101. *Gonatobotryum fuscum*
102. *Hansfordia* sp
103. *Hadsfordia pulvinata*

104. **Harziella capitata**
105. **Helicogonium fuisporum**
106. **Helicogonium hyaloscypharum**
107. **Helicogonium orbiliarum**
108. **Helicogonium trabinelloides**
109. **Helminthosphaeria clavariarum**
110. **Helminthosphaeria corticiorum**
111. **Helminthosphaeria hyphodermiae**
112. **Helminthosphaeria odontiae**
113. **Heterogastridium pycnidioideum**
114. **Heteromycophaga glandulosae**
115. **Heteromycophaga tremellicola**
116. **Hormiactis alba**
117. **Hormomyces peniophorae**
118. **Hyalodendron sp.**
119. **Hydropisphaera fungicola**
120. **Hydropisphaera peziza**
121. **Hyphodiscus hymeniophilus**
122. **Hypocrea americana**
123. **Hypocrea avellanea**
124. **Hypocrea ceramic**
125. **Hypocrea chromosperma**
126. **Hypocrea cinereoflava**
127. **Hypocrea estonica**
128. **Hypocrea fomiticola**
129. **Hypocrea gelatinosa**
130. **Hypocrea latizonata**
131. **Hypocrea lixii**
132. **Hypocrea pachybasioides**
133. **Hypocrea pallida**
134. **Hypocrea parestonica**
135. **Hypocrea protopulvinata**
136. **Hypocrea pulvinata**

137. **Hypocrea scutellaeformis**
138. **Hypocrea sinuosa**
139. **Hypocrea sp. 14**
140. **Hypocrea strictipilosa**
141. **Hypocrea sulphurea**
142. **Hypocrea thelephoricola**
143. **Hypocreopsis lichenoides**
144. **Hypocreopsis rhododendri**
145. **Hypomyces aurantius**
146. **Hypomyces banningiae**
147. **Hypomyces boletiphagus**
148. **Hypomyces camphorati**
149. **Hypomyces cervinigeus**
150. **Hypomyces cervinigeus**
 undescribed A
151. **Hypomyces cervinigeus**
 undescribed B
152. **Hypomyces chlorinigenus**
153. **Hypomyces chrysospermus**
154. **Hypomyces chrysospermus**
 undescribed A
155. **Hypomyces completes**
156. **Hypomyces favoli**
157. **Hypomyces hyalinus**
158. **Hypomyces lactifluorum**
159. **Hypomyces lactifluorum**
 Cladobortyum anamorph
160. **Hypomyces lateritius**
161. **Hypomyces leotiicola**
162. **Hypomyces luteovirens**
163. **Hypomyces macrosporus**
164. **Hypomyces melanocarpus**
165. **Hypomyces microspermus**

166. **Hypomyces microspermus**
Undescribed A
167. **Hypomyces mycophilus**
168. **Hypomyces ochraceus**
169. **Hypomyces odoratus**
170. **Hypomyces orthosporus**
171. **Hypomyces papulasporae** var.
americanus
172. **Hypomyces papulasporae** var.
papulasporae
173. **Hypomyces polyporinus**
174. **Hypomyces porphyreus**
175. **Hypomyces puertoricensis**
176. **Hypomyces rosellus**
177. **Hypomyces semitranslucens**
178. **Hypomyces sibirinae**
179. **Hypomyces stephanomatis**
180. **Hypomyces subiculosus**
181. **Hypomyces succineus**
182. **Hypomyces sympodiophorus**
183. **Hypomyces tegillum**
184. **Hypomyces thailandicus**
185. **Hypomyces torminosus**
186. **Hypomyces tremellicola**
187. **Hypomyces viridigriseus**
188. **Hypomyces xyloboli**
189. **Itersonilia perplexans**
190. **Junghihnia nitida**
191. *Krieglsteinera lasiosphaeriae*
192. **Lecanicillum** sp.
193. **Mariannaea elegans**
194. **Melanospora breviostris**
195. **Melanospora caprina**

196. **Melanospora lagenaria**
197. **Melanospora tulasnei**
198. **Melanospora zamiae**
199. **Microthecium geopora**
200. **Mortierella armillariicola**
201. **Mortierella bainieri**
202. **Mucronella bresadolae**
203. **Mycogone calospora**
204. **Mycogone cervina**
205. **Mycogone perniciosa**
206. **Mycogone rosea**
207. **Nectriopsis candicans**
208. **Nectriopsis exigua**
209. **Nectriopsis hirsuta**
210. **Nectriopsis oropensoides**
211. **Nectriopsis sporangiicola**
212. **Nectriopsis tubariicola**
213. **Nectriopsis violacea**
214. **Nematogonium ferrugineum**
215. **Neobarya byssicola**
216. **Neobaria danica**
217. **Neobarya lutea**
218. **Neobarya agaricicola**
219. **Neobarya parasitica**
220. **Neobarya xylariicola**
221. **Nitschkia brevispina**
222. **Nitschkia collapse**
223. **Nitschkia confertula**
224. **Nitschkia grevillei**
225. **Nitschkia parasitans var.**
mijuskovicii
226. **Nodulisporium sp.**
227. **Nodulisporium cecidiogenes**

228. **Nyctalis vopisca**
229. **Occultifur corticiorum**
230. **Occultifur internus**
231. **Olpitrichum macrosporum**
232. **Ophiostoma epigloeum**
233. *Ophiostoma polyporicola*
234. **Paecilomyces penicillatus**
235. **Papulaspora candida**
236. **Parasitella parasitica**
237. **Parencoelia andina**
238. **Parencoelia biparasitica**
239. **Parencoelia myriostylidis**
240. **Phaeocalicium polyporaem**
241. **Phaeofabraea lachnoides**
242. **Phaeofabraea miconiae**
243. **Platygløea bispøra**
244. **Pleurothecium recurvatum**
245. **Polycephalomyces fõmõsus**
246. **Polycephalomyces ramosus**
247. **Polycephalomyces tomentosus**
248. **Polydesmia pruinosa**
249. **Protocrea farinosa**
250. **Psathyrella epimyces**
251. **Pseudoboletus parasiticus**
252. *Pseudonectria tilachlidii*
253. *Rhinotrichella globulifera*
254. **Rhodocybe olympiana**
255. **Rhodocybe stangliana**
256. **Rhynchonectria longispora**
257. **Sarocladium bacillisporum**
= **Acremonium bacillisporum**
258. **Sepedonium brunneum**
259. **Sepedonium chlorinum**

260. *Sepedonium chrysospermum*
261. *Sepedonium leotiarum*
262. *Sepedonium microspermum*
263. *Sesquicillium microsporum*
264. *Simplicillium lamellicola*
265. *Sistotrema brinkmannii*
266. *Sphaeronaemella fimicola*
267. *Sphaeronaemella helvellae*
268. *Sphaerostibella aureonitens*
269. *Sphaerostibella berkeleyana*
270. *Sphaerostibella lutea*
271. *Sphaerostibella novae-zelandiae*
272. *Spiculogloea minuta*
273. *Spinellus arvernensis*
274. *Spinellus chalybeus*
275. *Spinellus fusiger*
276. *Spinellus gigasporus*
277. *Spinellus macrosporus*
278. *Spinellus sphaerosporus*
279. *Sporidesmium sclerotivorum*
280. *Sporophagomyces chrysostomus*
281. *Sporophagomyces lanceolatus*
282. *Sporothrix pallida* =
Calcarisporium pallidum
283. *Squamanita contortipes*
284. *Squamanita fimbriata*
285. *Squamanita odorata*
286. *Squamanita paradoxa*
287. *Squamanita pearsonii*
288. *Squamanita phaelepioticola*
289. *Squamanita schreieri*
290. *Squamanita squarrulosa*
291. *Squamanita tropica*

- 292. **Squamanita umbonata**
- 293. **Stephanoma strigosum**
- 294. **Stibella byssiseda**
- 295. **Stibella flavipes**
- 296. **Stromatocrea cerebriformis**
- 297. **Sypastospora parasitica**
- 298. **Syzygites megalocarpus**
- 299. **Syzygospora effibbulata**
- 300. **Syzygospora lapponica**
- 301. **Syzygospora marasmoidea**
- 302. **Syzygospora mycetophila**
- 303. **Syzygospora mycophage**
- 304. **Syzygospora norvegica**
- 305. **Syzygospora pallida**
- 306. **Syzygospora solida**
- 307. **Syzygospora sorana**
- 308. **Syzygospora subsolida**
- 309. **Syzygospora tumefaciens**
- 310. **Tephrocybe tylicolor**
- 311. **Tetragoniomyces uliginosus**
- 312. **Thuemenella cubispora**
- 313. **Tilachlidium brachiatum**
- 314. **Tomentella sp.**
- 315. **Tremella anomala**
- 316. **Tremella armeniaca**
- 317. **Tremella aurantia**
- 318. **Tremella aurantialba**
- 319. **Tremella australiensis**
- 320. **Tremella callunicola**
- 321. **Tremella caloceraticola**
- 322. **Tremella dactylobasidia**
- 323. **Tremella diaporthicola**
- 324. **Tremella discicola**

- 325. Tremella encephala
- 326. Tremella exigua
- 327. Tremella flava
- 328. Tremella foliacea
- 329. Tremella fuciformis
- 330. Tremella fungicola
- 331. Tremella giraffa
- 332. Tremella globispora
- 333. Tremella hymenophaga
- 334. Tremella indecorata
- 335. Tremella invasa
- 336. Tremella karstenii
- 337. Tremella lilacea
- 338. Tremella mesenterica
- 339. Tremella microspora
- 340. Tremella moriformis
- 341. Tremella mycetophiloides
- 342. Tremella neofoliacea
- 343. Tremella nigrifacta
- 344. Tremella nivalis
- 345. Tremella obscura
- 346. Tremella occultifuroidea
- 347. Tremella penetrans
- 348. Tremella polyporina
- 349. Tremella resupinata
- 350. Tremella sarniensis
- 351. Tremella simplex
- 352. Tremella steidleri
- 353. Tremella subencephala
- 354. Tremella telleriae
- 355. Tremella translucens
- 356. Tremella tremelloides
- 357. Tremella versicolor

358. **Trichoderma ceramic**
359. **Trichoderma chromospermum**
360. **Trichoderma estonicum**
361. **Trichoderma fomiticola**
362. **Trichoderma gelatinosum**
363. **Trichoderma harzianum**
364. **Trichoderma parestonicum**
365. **Trichoderma polysporum**
366. **Trichoderma strictiple**
367. *Trichosphaerella decipiens*
368. **Tubeufia cerea**
369. **Tulasnella violea**
370. **Tympanosporium parasiticum**
371. **Unguiculariopsis ravenelii**
372. **Valetioniella crucipila**
373. **Verticillium chlamydosporium**
 var. catenulatum
374. **Verticillium fungicola**
375. **Verticillium insectorum**
376. **Verticillium lindauianum**
377. **Verticillium rexianum**
378. **Tremella spicifera**
379. **Verticillium succineum**
380. **Volvariella surrecta**
381. **Xerocomus astraeicolopsis**
382. **Zygomloea gemellipara**

Photo Credits

Tony Ashton - *Ophiostoma epigloeum*

Ellis Becker - *Psathyrella epimyces*

Christine Braaten – *Cladobortyrum* anamorph of
Hypomyces lactiflorum

Tim Cannon - *Neobarya agaricicola*

Jules Cimon – *Neobaria parasitica*, *Hypomyces*
torminosus, *Nematogonum ferrugineum* 2 picts,
Tilachlidium brachiatum

Darvin DeShazer - *Clitocybe sclerotoidea*,
Hyphodiscus hymeniophilus, *Tremella aurantia*,
Tremella encephala

Joshua Hutchins – *Squamanita umbonata*

Gerhard Koller - *Hypocrea sinuosa*, *Tremella*
polyporina 2 picts, *Hypocrea fomiticola*,
Filobasidiella lutea 2 picts,

John Leach - *Melanospora lagenaria*

Renee Lebeuf – *Hypomyces aurantius*,
Hypocreopsis lichenoides, *Melanospora lagenaria* 5
pictures

James Lindsey - *Calcarisporium arbuscula* (2),
Mortierella armillariicola, *Sistotrema brinkmannii*
(2), *Tulasnella violea*

Dan Moltar – *Sypastospora parasitica*

Alan Rockefeller - *Asterophora lycoperdoides*
Spores 3 pics, *Asterophora parasitica* spores,
Elaphocordyceps capitata spores & asci 2 pic,
Hypomyces lactifluorum spores, *Hypomyces*
macrosporus 3 pics, *Tremella foliacea* spores

Christian Schwarz - *Hypomyces rosellus*

Noah Siegel – *Ascocodinaea* like

Walt Sturgeon - *Epicoccum nigrum* = *E.*
purpurascens and *Volvariella surrecta*, and on
Daedaleopsis confragosa, *Zyggloea gemellipara*

Björn Wergen – *Colacogloea peniophorae* 4 photos
and *Hypomyces lateritius* close ups 3 photos,
Hypomyces aurantius 3 photos, *Nectria magnusiana*
3 photos, *Nectria peziza* 2 photos, *Nectriopsis*
oropenoides 2 photos, *Capronia nigerrima* 4
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exigua 5 picts

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Hypomyces papulasporae var. papulasporae 2
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Chris Yeates - Heteromycophaga glandulosae,
Helicogonium trabinelloides, Pirottaea cf. imbricata

Bill Yule - Mycogone rosea

Oluna and Adolf Ceska Protocrea farinosa 2
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Polydesmia pruinosa, Tremella obscura
Endsat 185 in final number

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<http://home.comcast.net/~grifola/fungionfungi.pdf>
CA passout was 137p and 232 mushrooms

Dicranophora fulva or *Dichranophora fulva*



Gomphidius may be parasitic on Suillus there is a big list of different ones on different hosts but not proof

Same with *Chalciporus piperatus* with *A muscaria* suspected

Add these somewhere



On boletus bicolor cap



On Gomphus clavatus ends

This is page 266 7/27/2015

Left off on key renumbering on page 220 jelly fungi
end