

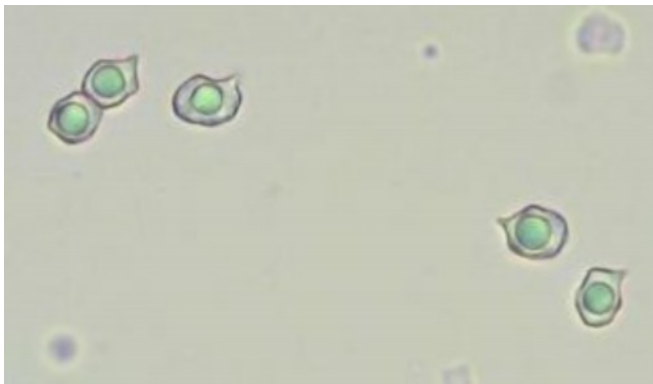
Fungal Microscopy

Paul F. Hamlyn

This article is only meant to be a brief introduction to fungal microscopy for use as a handout at our workshop on microscopy for beginners run by the North West Fungus Group.

Spores and spore size

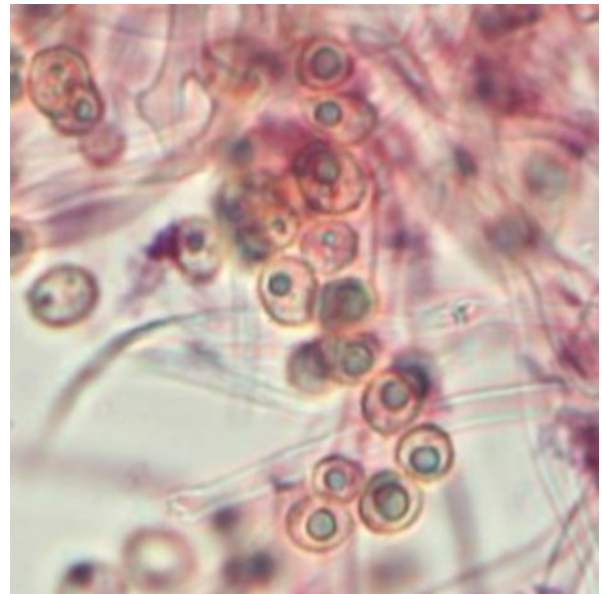
The shape and appearance of fungal spores can be of fundamental importance when trying to identify an unknown species. An easy method is to squash a tiny piece of the gill on a microscope slide with a drop of water or stain. *Entoloma* is a very large genus of variable species that are sometimes difficult to identify in the field. However, the spores are very characteristic being angular in outline (see below).



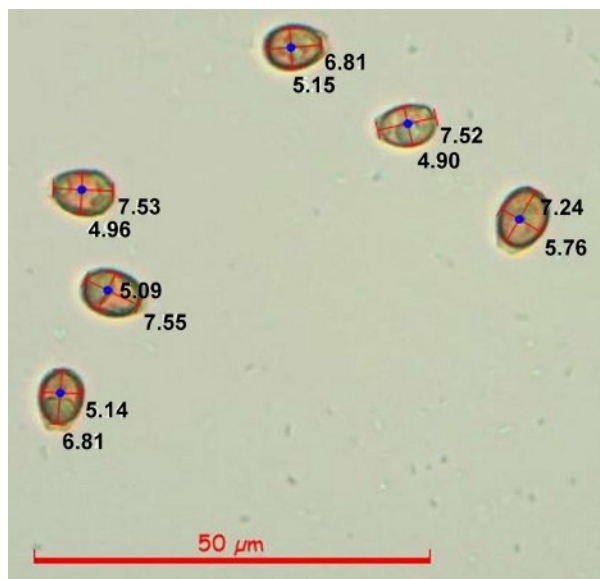
There are several small species of *Crepidotus* that all look very similar, however one of them *Crepidotus cesatii* is easily identified based on the shape of its spores that are sub-globose and minutely spiny. Hence its common name the Round-spored Oysterling.



Crepidotus cesatii (above)
Crepidotus cesatii spores (right)



Spore size measurements are often used to distinguish between similar species. For accurate measure of spore size, the gill squash method should not be used since the slide will contain a lot of immature spores that are smaller in size than fully matured spores. Either a spore print can be prepared on a sheet of paper / card or a spore print can be made directly on a microscope slide. For example, *Ganoderma applanatum* (Artist's Bracket or Artist's Conk) is similar in appearance to *Ganoderma australe* (Southern Bracket) but there is a significant difference in spore size. Measuring spores using a graticule in an eyepiece is tedious at the best of times but there are free software programs such as Piximètre that can help providing that you are able to take a digital photograph of the magnified spores.



Ganoderma applanatum

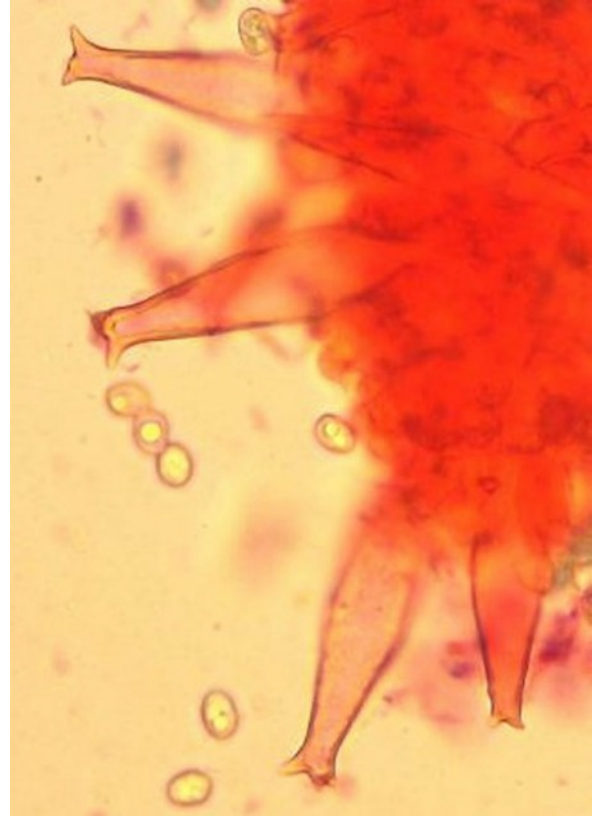
Spore size measurements (Piximètre)

Cheilocystidia examination

Cystidia on the gill edges are also important in identification. There are other types of cystidia so I am only scratching the surface here. One day I came across a rather soggy and partially eaten specimen of *Pluteus cervinus* (see opposite). It appeared to have free and pink gills. A quick look under the microscope revealed the prominent cystidia on the gill edges with horn-like prongs characteristic of this species from which it gets its common name Deer Shield.



Pluteus cervinus (above)

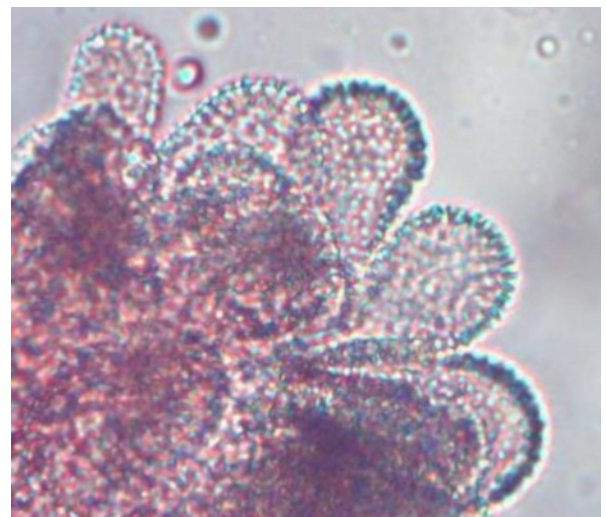


Cheilocystidia (right)

A tiny white powdery Bonnet fungus I found growing on a mossy trunk turned out to be *Mycena corynephora*. This species has cheilocystidia with dense protuberances and almost spherical spores.



Mycena corynephora



Cheilocystidia

I hope that this brief introduction will stimulate beginners to get involved with microscopy. However, it is also important to have access to suitable field guides that have sufficient information about the microscopic details of different species

of fungi. The internet can also be useful but you need to have some idea of what you are trying to identify. Historically, the series of books on Fungi of Switzerland that were published in the 1980-90's were very good in that each species depicted had both a colour photograph of the fruit bodies and very detailed pictures of the critical microscopic elements. However, there were 6 volumes and at the time each one was around £70-80. They appear to be still available on the internet but now cost over £100 each! Due to the age of the books the scientific names of many species will have changed. In addition to general field guides there are also books that focus on a particular genus and these may include much more detailed information on microscopic features.

I would currently recommend in particular the following field guides:

a) *Fungi of Temperate Europe* – There are two volumes by Thomas Laessle and Jens H. Petersen published in 2019. Volume 1 covers the agarics but you have to buy both volumes together (current price around £80 for both). They are quite hefty tomes so I leave mine at home to help in the identification of collected specimens after the foray has been completed.

b) *Mushrooms and Toadstools of Britain & Europe* by Geoffrey Kibby. There are four volumes. Kibby uses paintings that allow him to highlight the more important identification features rather than photographs. This has also allowed him to include key microscopic features not just details of spores but also cystidia and cap cuticle cells.

UK Fungus Day 2022

Mere Sands Wood

Ali McKernan

364 days is a long wait to celebrate fungi without officially being a 'nerd', so it's always nice to go big when the day finally arrives. And this year was no exception. Thanks to Irene's double visit to be ultra-prepared, the NWFG were able to put on a 'reet good spread' for the public visiting Mere Sands Wood this UK Fungus Day. As well as offering workshops and walk sessions for the morning and afternoon (both of which sold out), we had plenty on offer for any drop ins for the unsuspecting nature punter. There were microscopes, grow your own mushroom giveaways, models, games, make your own fantasy mushroom, literature and badges to name but a few (we actually ran out of tables for displaying our wares!). The real star of the show was a fantastic double table display of fungi that the group had managed to contribute towards from their local areas. Fungi from many different genera were represented and highlights for me were Irene's super Tan Ears (*Otidea alutacea*) and Watty's Weeping Slime-cap (*Limacella guttata*).