

Glossary of Common Lichen Terms

Apothecium (plural apothecia): One type of fruiting structure produced by the fungal component of the lichen. An apothecium is cup- or disc-shaped (compare with perithecium) and contains the spores, which allow for sexual reproduction. Figure 1.

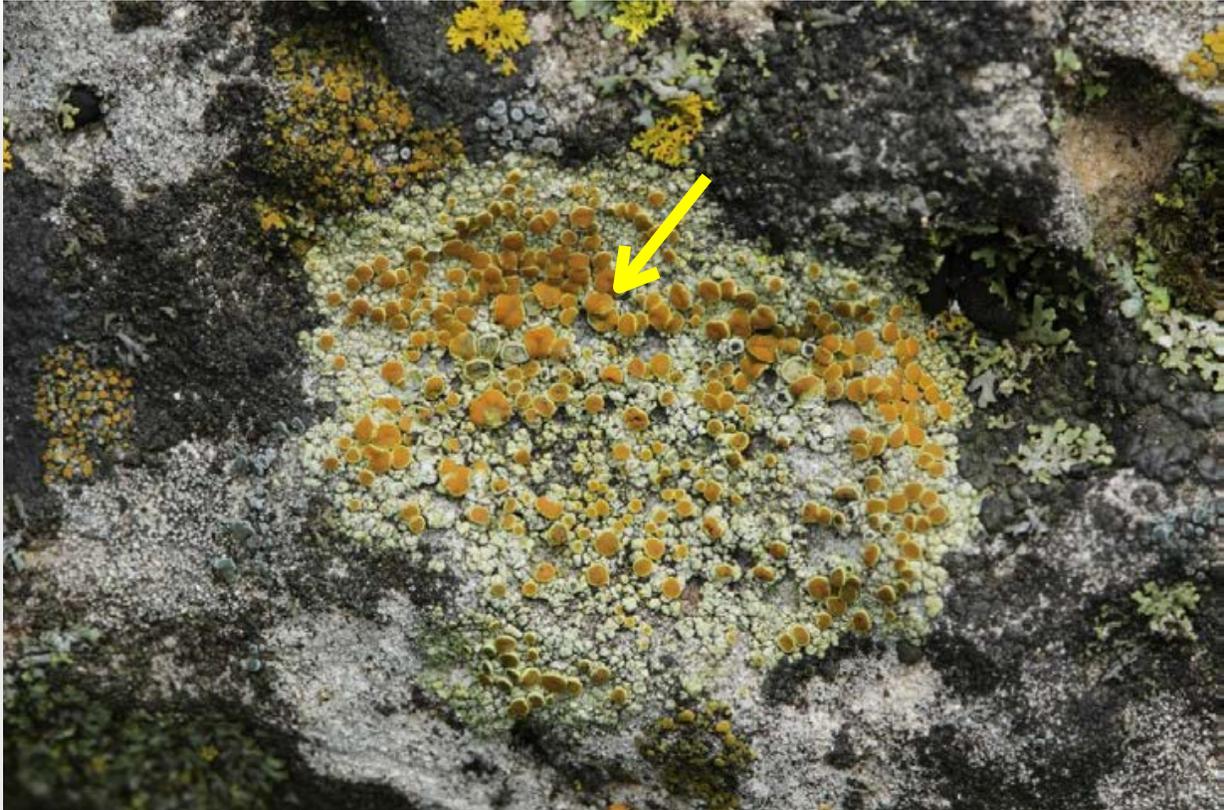


Figure 1. The apothecia are the orange disc-shaped structures scattered across the upper surface of the thallus of this crustose lichen, sulphur-firedot lichen (*Caloplaca flavovirescens*). Photo by Jim Bennett.

Cilia: Linear or thread-like appendages projecting from the thallus or apothecia margins, not to be confused with rhizines. Figure 2.



Figure 2. Cilia are the black, hair-like appendages pictured here along the margins of powder-edged ruffle lichen (*Parmotrema stuppeum*) thallus. Photo by Jim Bennett.

Cortex: The protective outer wall of the thallus, composed entirely of fungal tissue. Lichens may have two cortices (upper and lower), a single cortex or no cortex at all, depending on growth form. Below the cortex is the photobiont.

Crustose: A lichen growth form distinguished by the thallus being tightly adhered to the substrate at all points. Crustose lichens do not have a lower cortex, exposing the hyphae to the substrate. It is impossible to remove a crustose lichen from its substrate without impacting the substrate in some way. Figure 3.



Figure 3. Two crustose lichens, frosted comma lichen (*Arthonia caesia*; upper) and sulphur-firedot lichen (*Caloplaca flavovirescens*; lower). Notice how only one surface of the thallus is exposed to the environment. It would be virtually impossible to remove the lichen without damaging the substrate in some way. Photos by Andrew Khitsun (upper) and Jim Bennett (lower).

Cyphella (plural cyphellae): Small depressions or pits in the thallus cortex that are lined with cells (compare with pseudocyphella). Stricta species are the only lichens in the US that have cyphellae.

Foliose: A lichen growth form distinguished by a relatively flat, leaf-like thallus. Foliose lichens have an upper and lower cortex, making it easy to identify an upper and lower thallus surface. Figure 4.



Figure 4. Lungwort (*Lobaria pulmonaria*) is an example of a foliosa lichen. The thallus is two-dimensional and has a clear upper and lower surface. Also note the dot-like soredia in the thallus margins. Photo by Jim Bennett.

Fruticose: A lichen growth form distinguished by a tufted, hanging or stalked thallus. Fruticose lichens have a single, continuous cortex that wraps around the thallus branches, making it difficult to discern an upper and lower surface. Figure 5.



Figure 5. British soldiers (*Cladonia cristatella*) is an example of a fruticose lichen. It is three dimensional in cross section, consisting of many surfaces. Note the red apothecia, which look like red hats atop the thallus. Photo by Jim Bennett.

Hyphae: Fungal filaments loosely distributed below the photobiont on the interior of the thallus.

Isidium (plural isidia): A structure that projects from the thallus and contains both fungal and algal components. An isidia can detach from thallus and therefore serves in vegetative reproduction. Compare with soredia. Figure 6.



Figure 6. The isidia of peppered pelt (*Peltigera evansiana*) visible here as dark gray bumps or outgrowths from the thallus surface. Photo by Jim Bennett.

Perithecium (plural perithecia): One type of fruiting structure produced by the fungal component of the lichen. A perithecium is flask-shaped (compare with apothecium) and often embedded the thallus, making it somewhat inconspicuous. A small hole at the top of the perithecium releases spores, which allow for sexual reproduction.

Photobiont: The photosynthetic component of a lichen, either green algae or cyanobacteria, located beneath the cortex.

Pseudocyphella (plural pseudocyphellae): Small depressions or pits in the thallus associated with cracks in the cortex. The cracks in the cortex are not lined with cells, distinguishing these features from cyphellae. Figure 7.

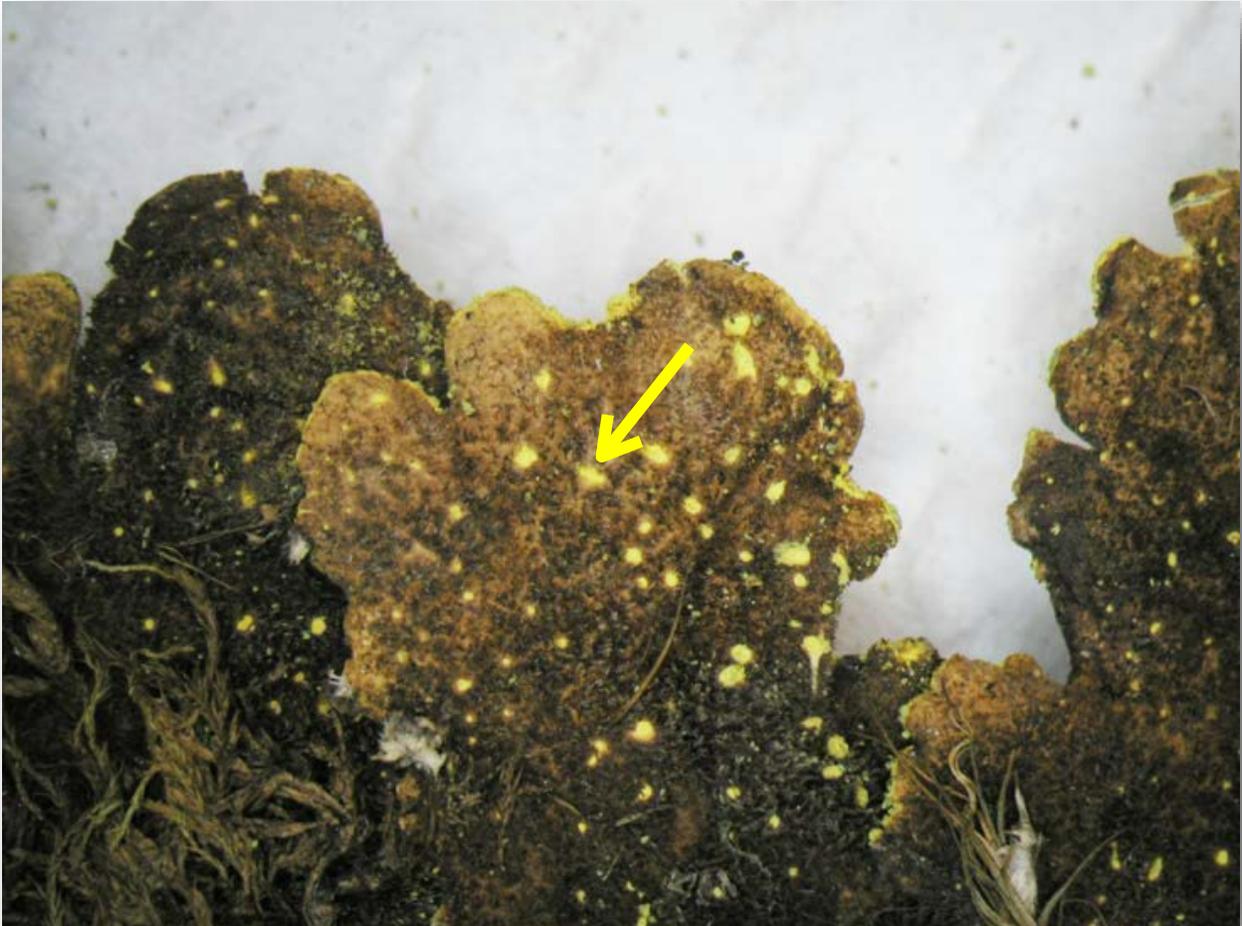


Figure 7: The lower thallus surface of Yellow specklebelly (*Pseudocyphellaria crocata*) with yellow spot-like pseudocyphellae. Photo by Jim Bennett.

Rhizines: Linear or narrow root-like appendages that protrude from the lower thallus surface (compare with cilia) and attach to the substrate. Figure 8.



Figure 8: Rhizines of peppered pelt (*Peltigera evansiana*). Rhizines are filaments that grow out from the bottom surface of the thallus. They can be simple or branched and be different colors. Note that the thallus is up-turned in this picture so the lower surface of the thallus is actually facing upward. Photo by Jim Bennett.

Soralia: An area on the thallus where the cortex has cracked and a group of soredia are produced.

Soredia: A powdery or granular structure released from cracks in the thallus cortex. A soredia is essentially the photobiont (algal component) wrapped in fungal hyphae and therefore serves in vegetative, or asexual, reproduction.

Squamulose: A lichen growth form distinguished by small, overlapping thallus units or scales. Squamulose lichens are not as tightly appressed to the substrate as crustose lichens but are more appressed than foliose lichens. These lichens have an upper cortex but may or may not have a lower cortex. Figure 9.



Figure 9: Bordered scale (*Psora pseudorussellii*) is an example of a squamulose lichen. Each scale is called a squamule. Note the orange-brown apothecia. Photo by Andrew Khitsun.

Thallus: The lichen body, which contains both a fungal and algal (photobiont) component.