

Lecania croatica

Document authored by Mark Powell

This species has not (yet) been recorded for GB&I but it is likely to turn up. In fact, I think that I have seen a good candidate for it in 2014 at a nature reserve (Ouse Valley Park) near Milton Keynes but haven't re-examined the specimen yet.

A description was provided by Kukwa *et al.* (2012) extracts of which are given in the Appendix.

Jiri Maliček kindly lent me four Continental specimens of *L. croatica* in October 2018 and this gave me the opportunity to produce the illustrated description presented here. My description of the vegetative parts is derived mainly from observations on specimen Maliček 8326 (on *Acer platanoides* in old growth forest, southern Bohemia, Czech Republic). My description of the apothecia is based on specimen Maliček 9780 (richly fertile material from bark of *Fagus sylvatica*, Southern Bohemia, Czech Republic).

The thallus is very inconspicuous and often almost completely immersed in the bark, producing little more than a pale film-like appearance. When detectable, the thallus consists of tiny warted areoles. Kukwa *et al.* (2012) suggest that the thallus may be well-developed, consisting of scattered or almost contiguous areoles but the specimens that I have examined do not have a well-developed thallus. The soralia burst out of the thallus/bark in a way that gives a somewhat spectacular appearance, like a snapshot caught of efflorescence in progress. The soralia begin as slight swellings of the thallus 60-100 µm in diameter. Even at this stage, before the soredia have been exposed, the little wart-like swellings already have the pastel yellow colour of the soredia within. Kukwa *et al.* give the colour of the soralia as 'shades of green, but sometimes externally pale brown pigmented', but I find that the colour is consistently a pale pastel yellow with only a slight hint of green. On the X11 colour chart: https://en.wikipedia.org/wiki/X11_color_names

Light Chiffon or Pale Goldenrod with just a slightly greater hint of green are good approximations to the colour. Well-developed soralia are typically 250(-350) µm in diameter, they are discrete, steep-sided and of even colour. In some places the soralia may become almost completely confluent but even in these places individual soralia can usually be distinguished. At first glance the soralia may appear convex but are mainly flat-topped. The soralia often have a brownish outer edge which adds to their distinctive and attractive appearance (providing a darker frame to the bulk of the pale yellowish soredia). Microscopically the brown colour is found to be due to an orange-brown pigment or substance surrounding the outer cells of the soredia at the edge of the soralia.



Fig. 1. *L. croatica* with immersed thallus and discrete pale yellowish soralia.



Fig. 2. *L. croatica* (this image shows the soralia slightly greener than in real life).

The individual soredia are typically 25 μm in diameter. Under the compound microscope there is nothing particularly distinctive about the structure of them; the only things I noted were that there is a contrast between the mainly short outer hyphal cells with more elongated cells within soredia, and that there are often individual cells jutting out like blunt pegs.

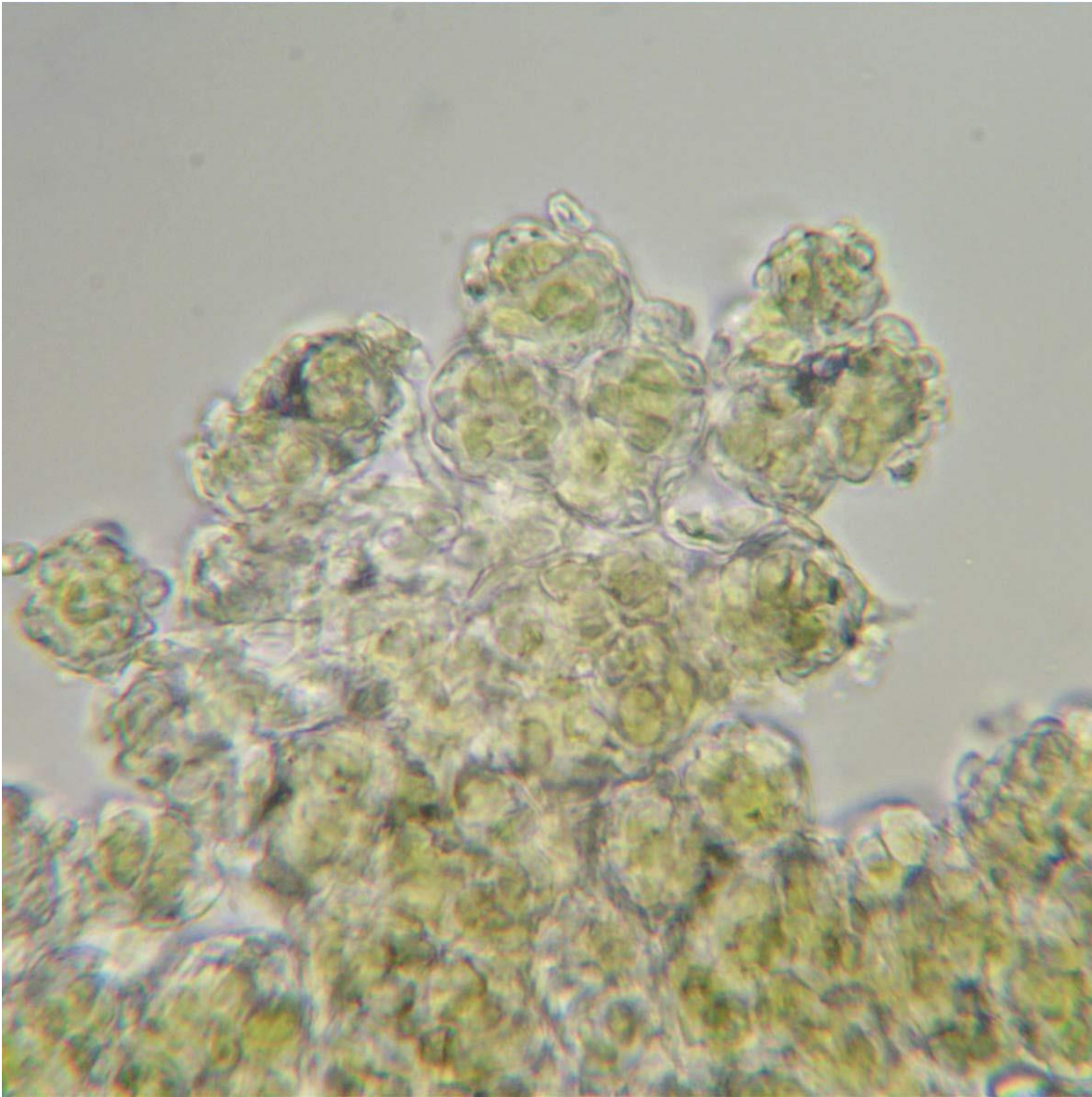


Fig. 3. Soredia mounted in water.

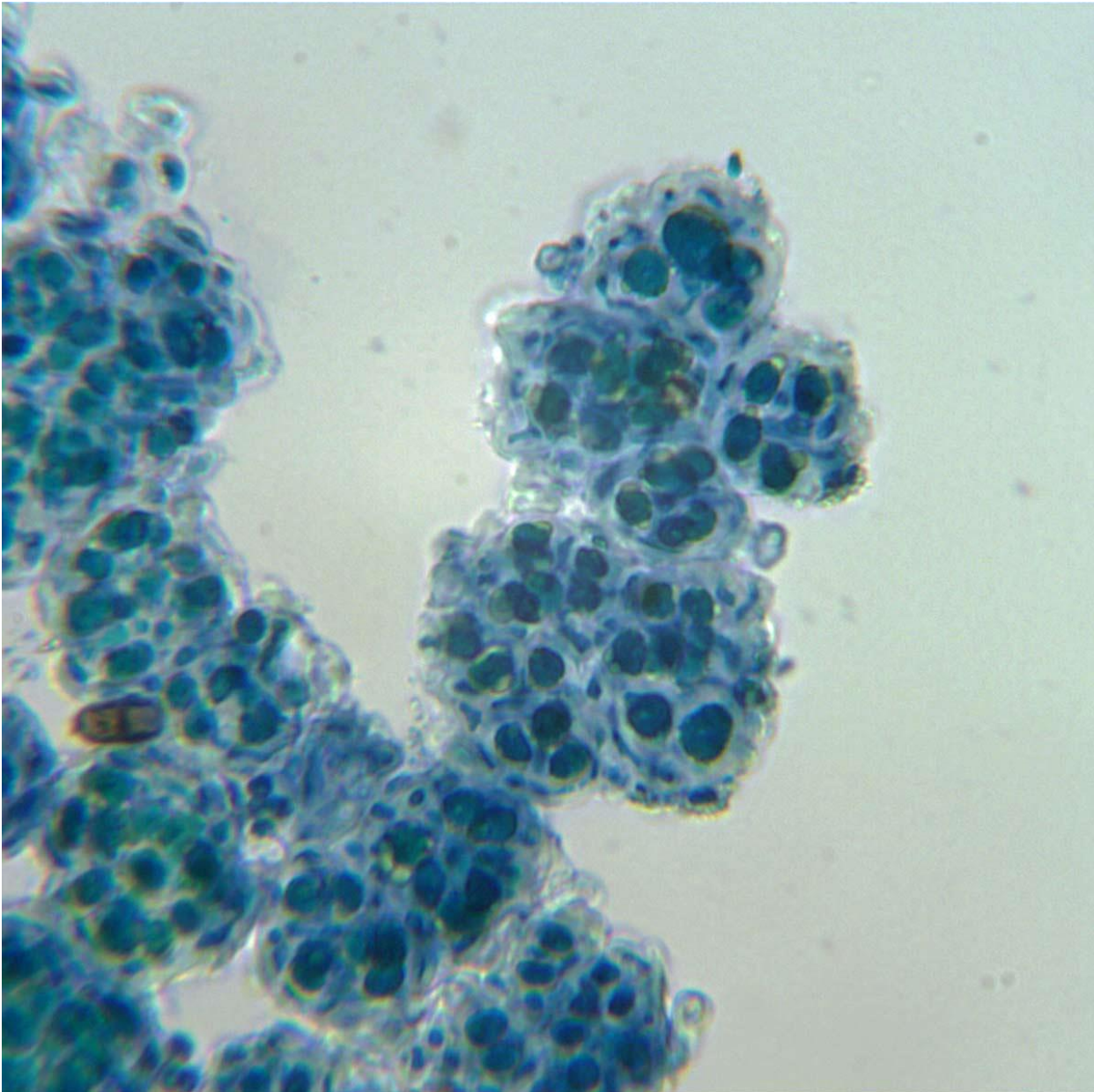


Fig. 4. Soredia (stained).

The description of the fruiting structures given by Kukwa *et al.* is as follows:

“Apothecia are sessile, flat or weakly convex, with pale orange-cream or medium brown discs and paler margins. Anatomically, all structures are colourless except the pale brownish hypothecium. Asci are 8-spored with narrowly fusiform, 0–1-septate ascospores measuring $12\text{--}17 \times 4.5 \mu\text{m}$. Pycnidia were not found in Polish material.”

This fits well with my observations except that my measurements for the ascospores are somewhat smaller ($3.5\text{--}4 \times 7.5\text{--}12.5 \mu\text{m}$). The apothecia have an appearance somewhat in between that of *L. cyrtella* and *L. naegelii*. The variation of colours (medium to dark brown, or orange brown) is like that of *L. cyrtella*. The rather conspicuous pale margins recall those of *L. naegelii*. The production of soralia appears to be considerably suppressed in fertile thalli. The exciple doesn't contain algal cells (like the situation in *L. naegelii*), it is composed of radiating, branched and anastomosing hyphae, most of which have quite broad lumina but there are often some contrasting thinner hyphae mixed in. The pigmentation of the apothecium is pale brown, concentrated mainly in the lower hymenium and upper hypothecium. It does not appear to change colour in K or N.



Fig. 5. Fertile thallus.



Fig. 6. Fertile thallus.

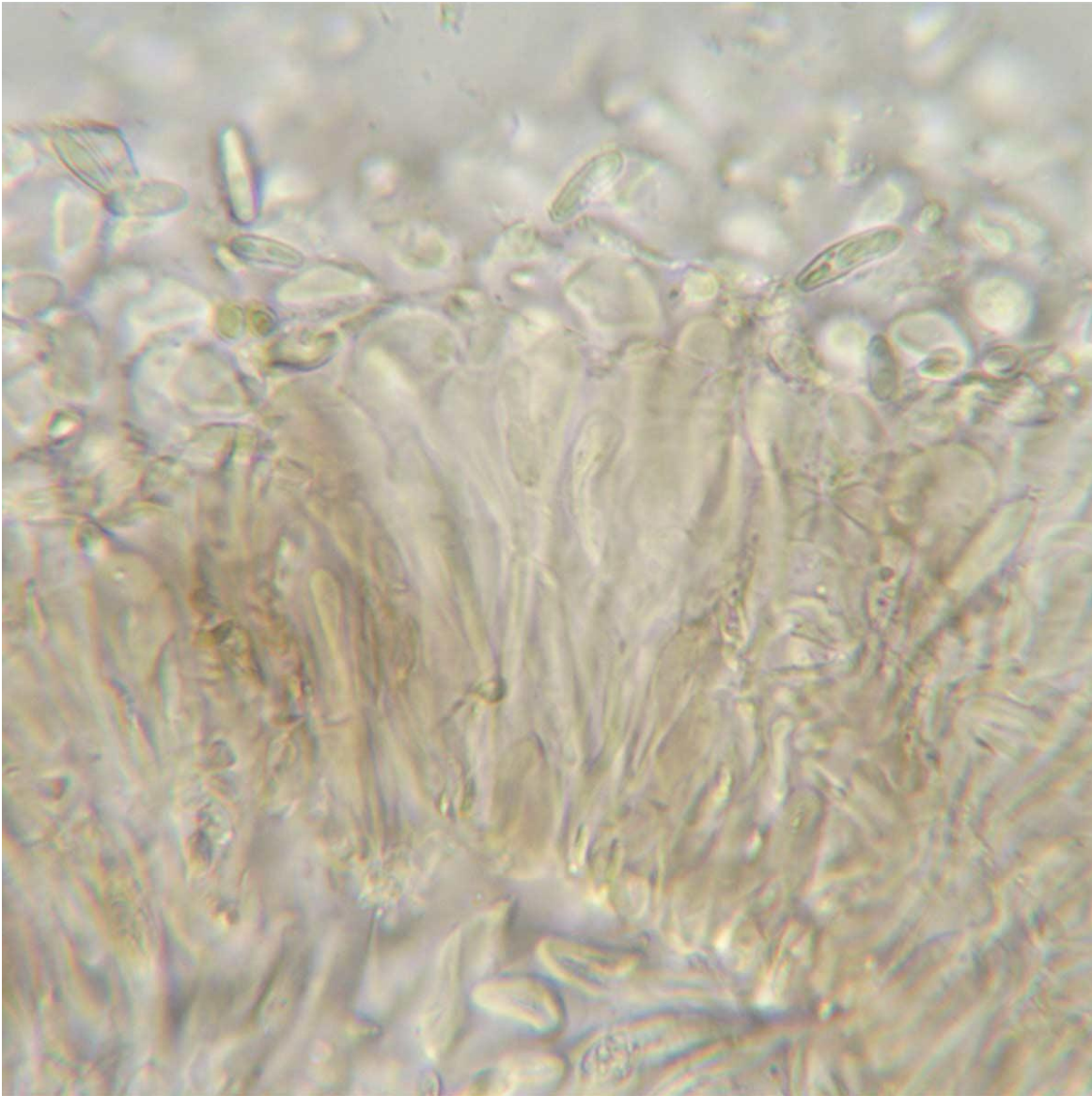


Fig. 7. Section through hymenium, with some loose ascospore sitting on the hymenium.

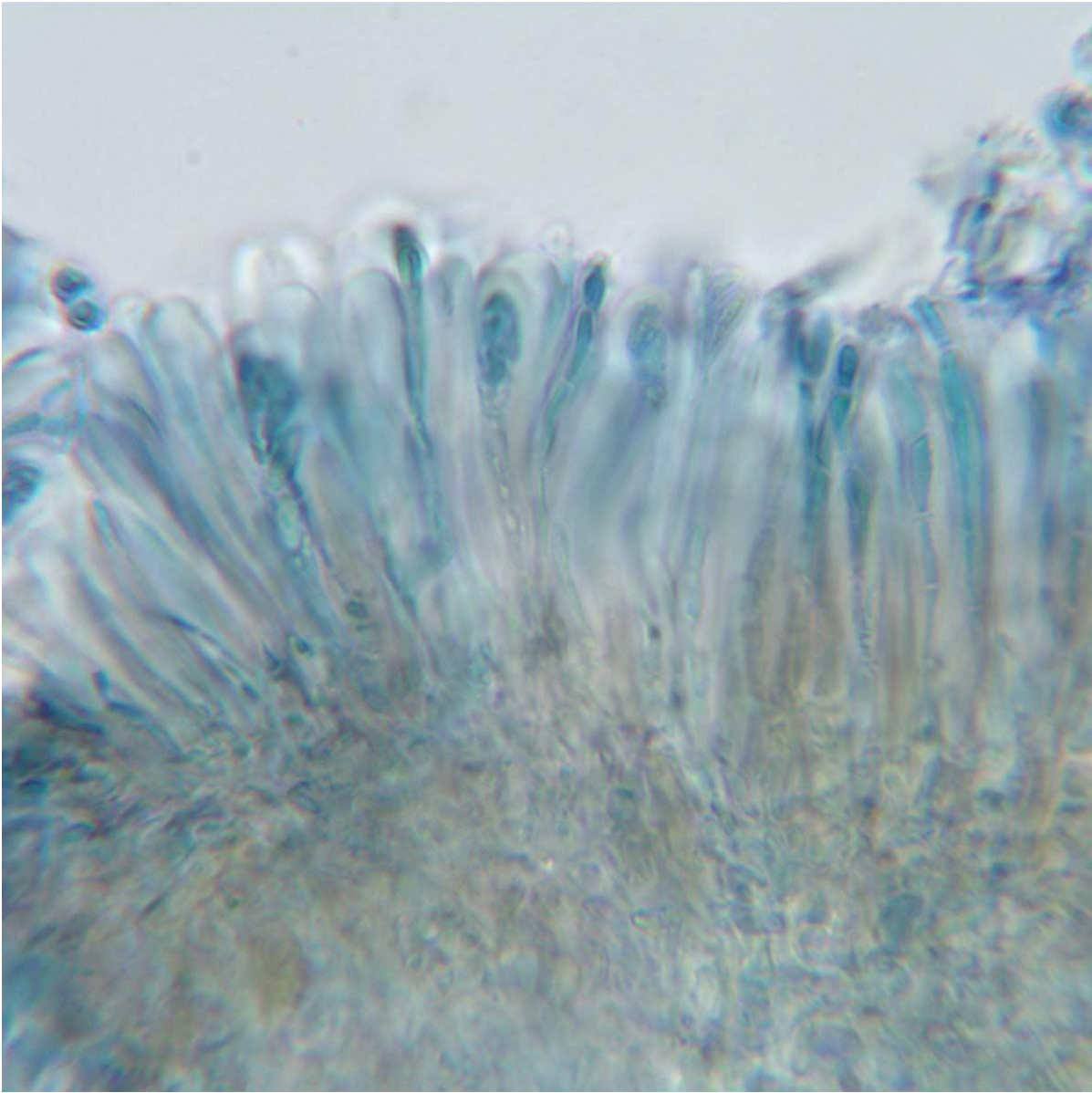


Fig. 8. Hymenium and upper hypothecium (stained).

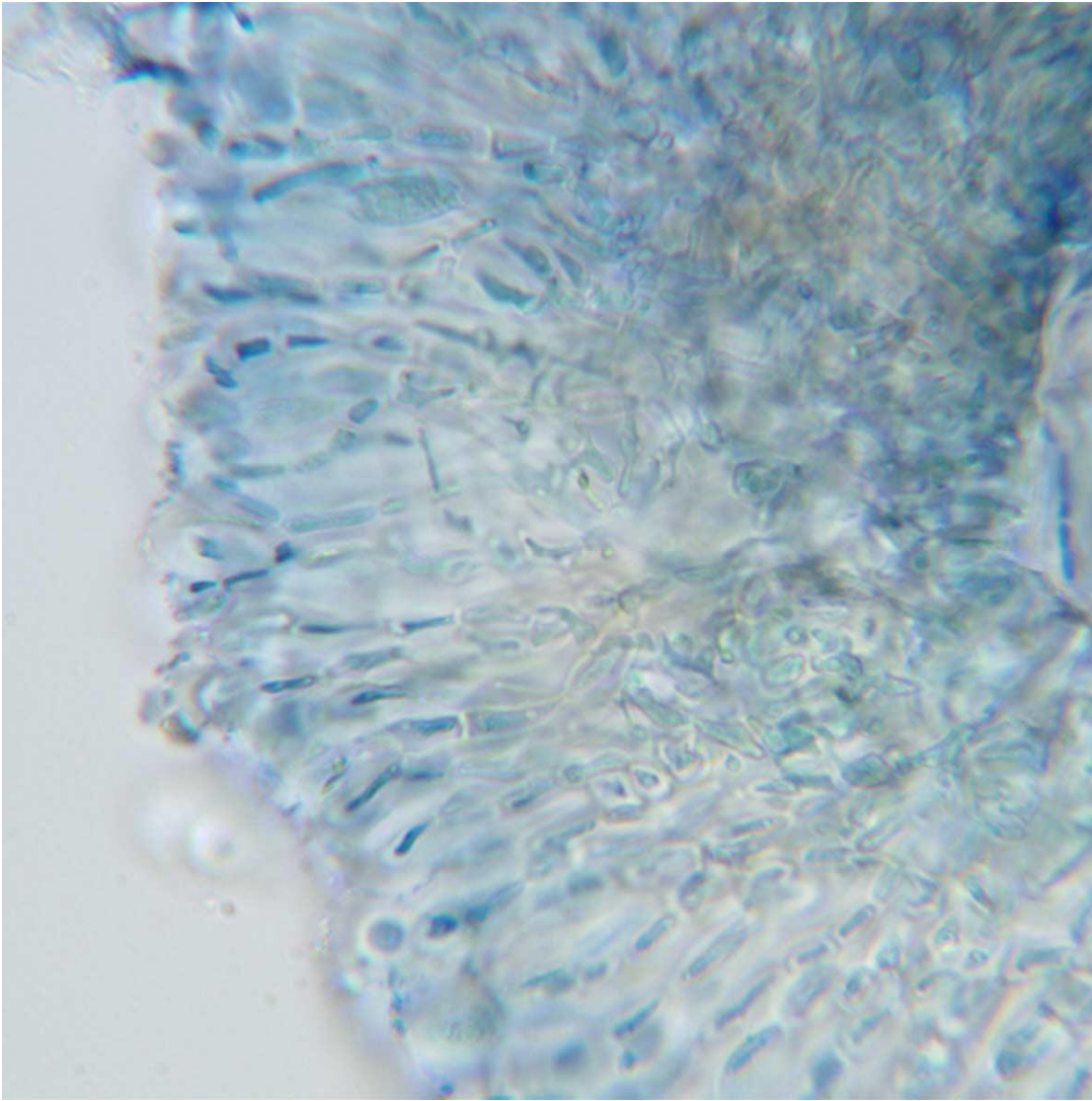


Fig. 9. Section through exciple.

Appendix

MYCOTAXON

Volume 120, pp. 105–118 April–June 2012

Seven lichen species new to Poland

Kukwa, M., Łubek, A., Szymczyk, R. & Zalewska, A.

Accessed online here:

http://www.academia.edu/4860946/Seven_lichen_species_new_to_Poland

Catillaria croatica Zahlbr., Ann. Mycol. 4: 487. 1906.

Lecania croatica (Zahlbr.). Kotlov, Novosti Sist. Nizsh. Rast. 37: 251. 2004.

As the only modern description of *C. croatica* (by Harris & Lendemer 2010) is based mainly on North American specimens, a more detailed description is provided below. The thallus of this corticolous lichen is light green-grey, superficial, well or poorly developed to immersed, consisting of scattered or almost contiguous areoles. Soralia are numerous, rounded, flat, convex or weakly capitate, discrete or patchily coalescing to form a leprose crust. Soredia are in shades of green, but sometimes externally pale brown pigmented. Apothecia are sessile, flat or weakly convex, with pale orange-cream or medium brown discs and paler margins. Anatomically, all structures are colourless except the pale brownish hypothecium. Asci are 8-spored with narrowly fusiform, 0–1-septate ascospores measuring

12–17 × 4.5 µm. Pycnidia were not found in Polish material. The species does not produce lichen substances detectable by TLC.

Ecology and distribution — Rarely reported from Europe: Austria, Belgium, Croatia, France, Luxembourg, Romania, Slovakia, Slovenia and Ukraine (Printzen 1995, Mrak et al. 2004, Hafellner et al. 2005, Eichler et al. 2010, Vondrák et al. 2010), and also known from North America (Harris & Lendemer 2010). The species grows in forests, usually on bark of broad-leaved trees, rarely also shrubs (e.g. *Sambucus* sp.). In Poland, *C. croatica* has been found in only one locality, a well-preserved, humid deciduous forest not seriously influenced by forest management, growing in association with *Anisomeridium polypori* (Ellis & Everh.) M.E. Barr, *Biatora ocelliformis*, *Lepraria lobificans* Nyl., *L. vouauxii* (Hue) R.C. Harris, *Opegrapha rufescens* Pers., *Pertusaria pertusa* (L.) Tuck., and *Bacidia* sp.

Catillaria croatica

is an inconspicuous, easily overlooked, corticolous lichen with a sorediate thallus lacking lichen metabolites, with small pale apothecia and 0–1-septate ascospores. The species is morphologically very similar to *Mycobilimbia epixanthoides*: both are sorediate, lack lichen substances, and produce pale biatorine apothecia. When fertile, the material is much easier to determine as both species differ in the type of spores: *C. croatica* produces 0–1-septate ascospores, whereas *M. epixanthoides* has 3-septate ascospores. In the sterile state they may be separated based on substrate preference: *Catillaria croatica* grows exclusively on the bark of trees, and *M. epixanthoides* prefers bryophytes and is rarely corticolous (Hafellner et al. 2005, Harris & Lendemer 2010). The corticolous material of the latter, according to the cited sources, could be distinguished by irregular young soralia forming larger irregular patches, while soralia of *C. croatica* remain discrete and round, even when they become crowded with age. From our experience, this might not be true in all cases and some sterile samples may remain undetermined. Several other sorediate species, which are morphologically similar to *C. croatica* (e.g. *Biatora efflorescens* or *B. chrysantha*), can be confused with this lichen, but they are all readily distinguished by their secondary metabolites (e.g., Printzen 1995).

Catillaria croatica has been recently transferred to *Lecania* A. Massal. by Kotlov (2004), but molecular studies have shown that it nests in *Bilimbia* De Not. s. l. and is not phylogenetically related to *Lecania* s. str. (Reese Næsborg et al. 2007). Therefore, we prefer to keep the species in the admittedly heterogeneous genus *Catillaria* A. Massal.