Lepiota coloratipes – an agaric new to Britain

Richard Fortey[1]

On 19 October 2019 I collected a number of small, whitish mushrooms in the grounds of Gillott's School, a large comprehensive secondary school on the outskirts of Henley-on-Thames in South Oxfordshire (SU 748813). The grounds of the school are fronted by a small stretch of open parkland, with *Pinus* and *Tilia* quite closely planted, the soil beneath the trees being regularly mowed and never fertilized. The fungi made a small troop in the short sward. The general proportions and lamellae were that of a small *Lepiota*, like *L. cristata*, although the pileus colour was more subdued than is usual in that species, and the annulus was very evanescent, only evident on the immature examples, with a somewhat pruinose appearance below it. Another distinctive feature was a red coloration towards the base of the stipe. Although a modest mushroom, it seemed worthy of further investigation.

Microscopic examination of the pileal surface revealed a hymeniderm cuticle (like other species with this structure it had a tendency to crack) and that eliminated the vast majority of British *Lepiota* species, although not *L. cristata*. However, the spores were unusually small for any *Lepiota* I had seen before, broadly elliptical 3–4 x 2.5–3 µm, and nothing like the larger 'bullet-shaped' spurred spores of *L cristata* and its allies. Cheilocystidia were of the usual clavate type for the genus. As the fruitbodies began to dry a little, the red colour on the stipe became browner, and more mature specimens showed pink-brownish spotting on the rather ventricose gill surface.

After thumbing through the keys in my well-used copy of *Funga Nordica* Vol. 1 (C. Lange in Knudsen and Vesterholt 2012) the puzzling agaric was identifiable without much trouble as *Lepiota rufipes* Morgan. This species was also treated by Vellinga (2001) in the fifth part of *Flora Agaricina Neerlandica* where it was described as rare, and it was suggested that it was a southerly European species at the limit of its range in the Netherlands. That idea may have offered support to the exclusion of *L. rufipes* as authentically British in the first version of CBIB by Legon and Henrici (2005). By now, it was clear that a voucher should be prepared from my collection - which I did immediately - and sent

Fig. 1. *Lepiota coloratipes* (= *L. rufipes* ss auct. non orig.). An Italian collection from 21 Nov. 2012, in a public park in Rome. Photograph © Luigi Perrone and Tomaso Lezzi.

with some other puzzling samples to the Jodrell Laboratory, Kew. There was a distinct lack of good colour illustrations of this species, and I later regretted not photographing my collection at its best. A collection attributed to *Lepiota rufipes* was described with a good photograph in Cetto (1989) from Italy; Courtecuisse and Duhem (1995) illustrated a species under the same name with what they described as a "membraneous ring". A good description was given by Ludwig (2012, p.426-7, pl. 111.13) in the third part of his *Pilzkompendium*, accompanied by fine water-colour drawings and microscopy. One of Ludwig's collections is recorded as having slightly larger spores, but his other collection is consistent with earlier accounts. Descriptions of the smell vary from minimal to unpleasant, cristata-like, but it does seem possible that the latter might actually be *L. cristata*.

None of the foregoing explains the different species name that appears in the title of this article. The original description of *L. rufipes* was a species from North America (Morgan 1906). Examination of the type material—now in bad condition—indicated that it might actually be a specimen of *Cystolepiota seminuda*, and had nothing to do with the European species recorded as *Lepiota rufipes*. Vizzini *et al*. (2014) analysed molecular sequence data from appropriate European collections and on this basis recognized a distinct clade within *Lepiota* for what had been incorrectly termed "rufipes" in Europe. For this clade, the new species *Lepiota coloratipes* Vizzini *et al*. was proposed (Figs 1 & 2). The descrption of this new species emphasizes the relatively small size, lack of a persistent annulus, tiny spores for the genus, and the red colours on the stipe of young specimens. It was reported as occupying a rather isolated position within *Lepiota*, which given its microscopic characters is perhaps not surprising.

Fig. 2. Slightly older specimens of *L. coloratipes* showing the reddening of the stem. A Finnish collection. Photograph © Jukka Vauras.

When the diminution of Covid allowed normal service to be resumed, a second attempt succeeded at ITS sequencing my collection from Gillott's School made in 2019. It proved to be 99.5% similar to the type material of *L. coloratipes* in Vizzini *et al*. (2014) leaving no reason to doubt that this species is present in Britain, although not under the name by which it was first determined. My collection is curated in Kew as K-M 000263500. It remains to be seen whether this small fungus will be more widely recorded as climate change progresses. This note may encourage a closer look at '*Lepiota cristata*' collections that look somewhat anomalous.

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1 Richard Fortey, 48 St Andrew's Road, Henley on Thames RG9 1JD

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