

PSILOCYBE AURANTIACA

and a case of mistaken identity

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The beautiful bright orange-capped toadstools usually identified under the name *Psilocybe aurantiaca* (or formerly *Stropharia aurantiaca*) (*Flora Agaricina Neerlandica* 4: 94 (1999)) have become a familiar sight on flowerbeds and shrubberies mulched with bark (*Mycologist* 7(2): 94). The species seems to be getting more common every year as the wood-chip habit spreads to supermarket chains and municipal gardens (see fig. 1.) In view of the complaints by beleaguered field mycologists about nomenclatural changes it seems almost a pity to report that this increasingly commonplace species cannot be correctly known by its familiar name - not, at least, without lots of action by the International Commission for Botanical Nomenclature. Is it better to 'let sleeping dogs lie' or adhere to the rules of nomenclatural priority that generally serve the science rather well?

The situation became clear to me in 1998 when I collected three species on the same day in October in the beech woods around Henley-on-Thames, Oxfordshire. First, there was a cluster of *P. aurantiaca*, growing in deep leaf litter, well away from its more usual artificial habitat, and apparently quite at home. Second, there were scattered, elegant fruitbodies of *P. squamosa* on the more open forest floor. This species grows singly rather than clustered, but often in small troops, and is readily distinguished in the field from *P. aurantiaca* by the yellowish cap carrying characteristic squamules, as well as its slender habit, and the dark ring which often seems to occur about three-quarters of the way up the stipe, below which there is a 'snakeskin' pattern. While not exactly common, it is a 'regular' in beech woods on the Chalk around Henley, and a welcome sight to a foray leader because it has a suite of distinctive characters that can be demon-

strated to beginners. More unusual was a third agaric, *P. thrausta*. This is often referred to as no more than a variety of *P. squamosa*, which it resembles in every detail but one: its cap is an attractive, rich red colour. In this it resembles some examples of young and unfaded *P. aurantiaca*, but it has the elegance, squamules, ring and stipe of *P. squamosa*, and is surely better regarded as a form of that species, as hybridisation studies seem to indicate (Jahnke 1985). It is, however, very distinctive - and very uncommon. Curiously, I had found the 'red' relative of the 'weeping widow', *Lacrymaria pyrotiricha*, in almost the same site as *P. thrausta* a year or so previously. Could it be some ecological control that intensifies the pigmentation in these distantly related species?

Regardless of such speculations, discovering these three *Psilocybe* species on the same day prompted me to do a little more bibliographic research than the customary 'key them out and quit' approach. On looking up the original illustration of *P. aurantiaca* by M.C. Cooke (1881-91 plate 562) I was surprised to find that it was an excellent figure of *P. thrausta* (see fig. 2), complete with slender habit and squamules! Since *P. thrausta* was introduced by S. Schulzer (1874) in Kalchbrenner (1873-77), a publication which had ceased before Cooke's monograph had even started, it was immediately evident that *P. aurantiaca* should be a junior synonym of *P. thrausta*, whether or not that species was itself a variety of *P. squamosa*. It was also equally clear that the specific name *aurantiaca* could not legitimately be applied to the familiar species found in mulched flowerbeds - which I will have to refer to as *P. 'aurantiaca'* for the rest of this note. What are we to make of this confusion, and is there an available name for the *P. 'aurantiaca'* of the familiar handbooks such

as Phillips, Bon and Courtecuisse?

The first fact to note is that *P. 'aurantiaca'* is evidently widespread. For example, I encountered typical fruitings of the species on the shrub borders at the University of California, Riverside, when I was studying there during the nineties. The climate is a good deal warmer than it is in Britain in this part of California, and the species was growing where eucalyptus bark and trimmings had been used as a top dressing. But its appearance there and elsewhere may be a relatively recent phenomenon. In the first edition (1979) of David Arora's excellent book on North American toadstools, *Mushrooms Demystified*, *P. 'aurantiaca'* is not mentioned, but it is recorded as frequent in the right mulched habitats in the second edition of the same work (1986). There is, of course, something of a problem with herbarium records, since without examining the specimens we cannot be certain whether an '*aurantiaca*' record is not, in fact, *thrausta*. The specimens illustrated by Roger Phillips

(1981) are typical *P. 'aurantiaca'*, but I don't find it in British illustrated works published earlier in the century. Website postings in 2003 show that it is widespread across Europe, and it is assuredly present in New Zealand (see www.hiddenforest.nz) - although one of the Dutch records would seem to be *P. thrausta*. Similarly the nice specimen photographed by Bruno Cetto in *Il Funghi dal vero* as *P. aurantiaca* (Vol. 5, fig. 1742) is without doubt *P. thrausta*.

Is it possible, then, that *P. 'aurantiaca'* is another introduction, joining such distinctive antipodeans as *Anthurus archeri* and *Lysurus australis*? It seems very unlikely that such a striking fungus would have escaped the attentions of the nineteenth and early twentieth century European monographers. My woodland specimens would then have spread from their artificial habitats into the "wild" rather than vice versa. Perhaps its status as an interloper has been concealed by the customary, and evidently mistaken, use of Cooke's epithet to identify it. To an extent this



Fig. 1. *Psilocybe aurantiaca*. Part of a mass fruiting on woodchips in Kew Gardens, March 2004. The fine, whitish veil remnants on the cap margins are clearly visible. Photograph © Geoffrey Kibby.

answers the quibble “what’s in a name?” because in this case nomenclatural confusion might have served to conceal some rather important facts. That Californian common occurrence of *P. ‘aurantiaca’* in *Eucalyptus* mulch might be suggestive in this regard. Could the species have arrived in Europe (and America) from Australia alongside its more distinctive phalloid stowaways? If so, when? Well, certainly before Roger Phillips took his photograph, and presumably before the earliest European voucher specimen that can be identified with confidence. The earliest European illustration of our familiar *P. ‘aurantiaca’* that I can find was made by Derek Reid (1966) taken from a specimen collected in 1957 from Richmond Palace gardens, on 18 November. Reid (1966, p. 30) reported that the same species was found in Holland (not Holland Park!) in 1965. Reid remarks that “this robust fungus is quite distinct from *S. squamosa* and is unlikely to be confused with it in the field”. Indeed. So it seems possible that *P. ‘aurantiaca’* arrived



Fig. 2. The original Cooke plate of *Stropharia squamosa* variety *aurantiacea* which is clearly what is now referred to as *S. thrausta*.



Fig. 3. *Stropharia thrausta* drawn from life, growing on fallen twigs. Epping Forest, October 1992. Pencil drawing © Geoffrey Kibby. [This is the drawing reproduced in the masthead on the front cover of each issue of Field Mycology].

some time in the middle of the last century.

If *P. ‘aurantiaca’* came from Australia (and if the *Eucalyptus* guess is right it should be Australia rather than New Zealand) then perhaps we can find the right name to apply to *P. ‘aurantiaca’* in the Australian mycota. There does seem to be a candidate. Cooke and Massee (in Cooke, 1887) described *Agaricus ceres* from South Australia, and almost everything in Australia is not far from a eucalypt! Its description in

nineteenth century sources is rather perfunctory, but so far as it goes it seems to match *Psilocybe 'aurantiaca'* quite well. The type specimen resides in Kew, and is not in very good condition, but David Pegler's redescription of it (1965:327-8) shows that it agrees with *P. aurantiaca* in spore size and in having pleurocystidia with refringent inclusions. The most recent account of *S. Australian* fungi by Grgurinovic (1997) uses the name *Stropharia aurantiaca* - but places *ceres* into its synonymy. As we have seen, it is now likely that we will have to reverse this option. Although more work is necessary, the best bet at the moment is that our familiar garden species is an Australian interloper, for which *ceres* is the correct species name.

If we wish to 'save' the name *aurantiaca* in the way it is currently used it will require a decision by the International Commission for Botanical Nomenclature to set aside Cooke's original type specimen and concept, and, presumably, select another specimen as a neotype which would conserve what we all have got used to calling *P. aurantiaca*. Alternatively, we may have to apply the Rules of Botanical Nomenclature and get accustomed to calling it *P. cerea* (if that species really is the same thing). Or we can just ignore the whole matter and go on with our current practice.

The third option might be popular with the conservatives among us, but it would probably be a mistake. Simply to consider the possibility that *P. 'aurantiaca'* is adventive, requires us also to grasp the nomenclatural nettle. The other options seem preferable, although both require work. Personally, as one who learned mushroom names from F.B. Hora I have gradually accustomed myself to calling *Hypholoma hydrophilum* *Psathyrella piluliformis*, and have even accepted that *Nolanea staurospora* is really *Entoloma conferendum*. I do not believe that one more piece of nomenclatural gymnastics is beyond my capacity. And it would undoubtedly be interesting to unravel the earlier history of what is now a familiar species to amateur mycologists in Britain.

One last joker in the pack: Kalchbrenner (1873-77) is a difficult work to find, but I eventually got around to looking at the copy

in the Natural History Museum library, where it is locked away from the common herd among the rare books. There is a very nice illustration of *Agaricus thraustus* on plate XV, fig. 2. The only problem is that it is a nice yellow specimen - not a red one - looking to these eyes far more like *Stropharia squamosa* itself. However, Alick Henrici informs me that the colour reproduction in this early work is not very consistent, and the Kew copy is apparently somewhat darker. Alick also tells me that the generic assignment of all the species under consideration here is still in a rather fluid state, pending the molecular phylogeny which is currently the holy grail of mushroom systematics. So it is unlikely that we have heard the last of nomenclatural changes in this group of species, which just shows that it is sometimes easier to identify a mushroom than to name it.

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