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Notes on British species of *Tazzetta* (*Pezizales*)

Yi-Jian YAO[1,2] and Brian M. SPOONER[2]

[1] *Institute of Microbiology, Chinese Academy of Sciences, Beijing 100080, People's Republic of China.*
[2] *Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AE, UK.*
E-mail: yaoyi@sun.im.ac.cn

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Notes on the nomenclature and taxonomy of British species recorded in the genus *Tazzetta*, and in its synonym *Pustularia*, are presented. The new combination *T. scotica* is proposed, with a neotype designated. Four species are recognised as British, and a key for their identification provided.

INTRODUCTION

Six British species were listed by Cannon, Hawksworth & Sherwood-Pike (1985) under *Tazzetta* (Cooke) Lambotte 1888 (as '*Tarzetta*') and its synonym *Pustularia* Fuckel 1870 (non Bonord. 1851). Investigation of these species names, carried out for the 'Ascomycetes of Great Britain and Ireland' project, shows that, based on characters of the apothecium, ascospores and paraphyses, four species can be recognised in the genus currently circumscribed. Notes on these species, with a new combination, and on two other excluded names are presented below. For the spelling of the generic name, we follow Dennis (1986), the originally published spelling '*Tarzetta*' being an orthographic error. Synonyms cited include only those which have appeared in British literature.

TAXONOMY

Pustularia patavina (Cooke & Sacc.) Boud., *Icones Mycologicae, Liste Prélim.*: 3 without pagination (1904).

Peziza patavina Cooke & Sacc., *in* Saccardo, *Michelia* **1**: 70 (1877).

Neottiella patavina (Cooke & Sacc.) Sacc., *Syll. Fung.* **8**: 193 (1889).

Humaria patavina (Cooke & Sacc.) Rehm, *Rabenh. Krypt. -Fl.* **1(3)**: 957 (1895).

Leucoscypha patavina (Cooke & Sacc.) D. C. Pant & V. P. Tewari, *Trans. Br. mycol. Soc.* **68**: 441 (1977).

This species was recorded from Britain by Rea (1913) and mentioned by Dennis (1960; see also Ramsbottom & Balfour-Browne 1951, Cannon *et al.* 1985). However, Rea's collection cannot be located in K, and only an unpublished coloured illustration by Rea under this name has been preserved. It is not possible to make a positive determination of this illustration, although it could be referable to this species. There appears to be no further records and the occurrence of *Pustularia patavina* in Britain, therefore, requires confirmation.

According to Gola (1930), there are four specimens under the name *Peziza patavina* in Saccardo's herbarium (PAD). However, there are two authentic specimens for this species are preserved in K. Both of the specimens in K are scanty. One comprises a single apothecium stuck onto a note by Saccardo dated '5. I. 77'. We presume this represents a part of the holotype, which was collected in December 1876. The other collection in K is evidently earlier, being dated as '76 aut.' It is apparently the collection from which the plate of this species was prepared by Cooke (1878), and it is authentic material but not the type. From one of the specimens in PAD, which he considered as the type, Svrček (1974) reported the spores as 25–28 × 11.5–12.5 µm. The spore size range given by Pant & Tewari (1977), based on another specimen in PAD (1777), is greater 18–32 × 8–13 µm. Both specimens in K exhibit spores in the range 25–28(–30) × 11–12.5 (–13) µm.

This name was combined into *Leucoscypha* Boud. 1885 by both Svrček (1974) and Pant & Tewari (1977). Although Svrček's combination is usually accepted as validly published, e.g. *Index of Fungi* and Korf (1985), he did not, in fact, correctly cite the publication of the basionym. Saccardo (1877) and Cooke (1878) cited

each other's work as reference to the first publication. However, Saccardo's *Michelia* was published earlier than Cooke's *Mycographia*. The failure of Svrček to cite Saccardo (1877) for the basionym of the new combination should not be regarded as 'an error to be corrected' as per Art. 33.6(a) of the *Code*, but should be considered as invalid as in the Ex. 11 under Art. 33.6. We therefore accept *Leucoscypha patavina* (Cooke & Sacc.) D. C. Pant & V. P. Tewari (Pant & Tewari 1977) as the valid combination for this species. However, we note the generic position of this species requires further investigation; as pointed out by Yao & Spooner (1996), it may be congeneric with *Leucoscypha semiimmersa* (P. Karst.) Svrček 1974 (syn. *Sepultaria semiimersa* (P. Karst.) Massee 1895).

Tazzetta catinus (Holmsk.: Fr.) Korf & J. K. Rogers, in Korf, *Phytologia* **21**: 206 (1971).
Peziza catinus Holmsk., *Beata Ruris* **2**: 22 (1799): Fr., *Syst. mycol.* **2**: 61 (1822).
Pustularia catinus (Holmsk.) Fuckel, *Jahrb. Nass. Verein. Naturkunde* **23–24**: 328 (1870).
Pustulina catinus (Holmsk.) Eckblad, *Nytt Mag. Bot.* **15**: 84 (1968).
Peziza tazzetta Cooke, *Mycographia* **1**: 166 (1877).

This species is characterised by large apothecia (>20 mm diam), a generally simple apex to the paraphyses, and ellipsoid spores. However, it has at times been confused with *T. cupularis* (e.g. Breitenbach & Kränzlin 1984). The fully developed apothecia of *T. catinus* commonly reach 40–50 mm diam or more, and are finely pustulate on the flanks of the receptacle. In contrast, *T. cupularis* has comparatively small apothecia less than 20 mm diam, with the receptacle coarsely pustulate, especially towards the margin. *Tazzetta catinus* is widely recorded in the British Isles and throughout much of Europe and North America.

The type material of *T. catinus* cited in the protologue is 'Terra, muscis vestita, et e lignis putrefactis nata, rarissimam hanc speciem autumno progignit. Holmskjoldius eam anno 1765 circa Aarhusiam indagavit.' According to Stafleu & Cowan (1979), the existence of the type material of Holmskjold is uncertain. A neotype may need to be selected, ideally among material collected near Aarhus in Denmark.

Tazzetta cupularis (L.: Fr.) Lambotte, *Mém. Soc. R. Sci. Liège* Ser. 2, **14**: 325 [*Fl. Mycol. belge, suppl.* **1**: 325] (1887).
Peziza cupularis L., *Sp. Pl.*: 1181 (1753): Fr., *Syst. mycol.* **2**: 62 (1822).
Pustularia cupularis (L.) Fuckel, *Jahrb. Nass. Verein. Naturkunde* **23–24**: 328 (1870).
Aleuria cupularis (L.) Gillet, *Champ. Fr. Discom.*: 39 (1879).
Geopyxis cupularis (L.) Sacc., *Syll. Fung.* **8**: 72 (1889).
Pustulina cupularis (L.) Eckblad, *Nytt Mag. Bot.* **15**: 85 (1968).

This species has been considered as distinct from *T. catinus*, notably in its broad spores (>13 µm) (Dennis 1978, Breitenbach & Kränzlin 1984), and small apothecia. A neotype of *T. cupularis* was designated by Pant & Tewari (1970), for which the spores were given as 17–22.5 × 12–15 µm. However, examination of part of the neotype (Fuckel, *Fungi Rhenani* no. 1878, K) reveals spores 21–25(–26.5) × 13–14.5 µm. Spores from several British collections with small apothecia (<20 mm diam) agree well with this size range.

Tazzetta cupularis (L.) Svrček (*Ceská Mycol.* **35**: 88, 1981) is a superfluous combination. Although Lambotte (1887) did not cite the basionym, the combination was valid at that time (Art. 33.3). He attributed the name to Persoon rather than to Linnaeus, but this was apparently following the erroneous citation in Cooke (1879: fig. 286, and the 'Index Systematicus'). The correct authority, however, was printed in the text (Cooke 1877) and there is therefore no reason to reject Lambotte's combination.

This species has been recorded from much of Europe, North America and parts of Asia, and seems widely distributed in the British Isles.

Tazzetta gaillardiana (Boud.) Korf & J. K. Rogers, *in* Korf, *Phytologia* **21**: 206 (1971).
Pustularia gaillardiana Boud., *Bull. Soc. mycol. Fr.* **18**: 141 (1902).
Pustulina gaillardiana (Boud.) D. C. Pant & V. P. Tewari, *Mycologia* **62**: 1191 (1971).

This species was described and illustrated as having apothecia 4–8 mm diam with marginal hairs, and spores 25–27 × 13–14 µm (Boudier 1902). However, based on a study of the type, Pant & Tewari (1970) reported apothecia 3–6 mm across, with spores only 13–19 × 6.5–11 µm.

This name was accepted in the British list by Cannon *et al.* (1985) following Clark (1982), who reported the species as new to Britain based on collections by M. B. and J. P. Ellis. The species was also referred to by Dennis (1978), who did not, however, cite any British material. This name was also listed in Ramsbottom & Balfour-Browne (1951) and the first British record was by Rea (1928). No collection from Rea can be located under this name in K, but based on the spore size range he cited (23–26 × 12–15 µm), his collection seems most likely to represent *T. cupularis*. Examination of the Ellis' collections (Suffolk: Dunwich Forest, on bare ground, 3 Oct. 1980, *M. B. Ellis & J. P. Ellis*, IMI 262223; *loc. cit.*, on soil, 2 Oct. 1980, *M. B. Ellis & J. P. Ellis*, IMI 262224) reveals that they are both referable to *Geopora arenicola* (Lév.). Kers 1974. No other British collection which matches the description of *T. gaillardiana* by Pant & Tewari (1970) has been located; thus this name should be excluded from the British list.

Tazzetta rosea (Rea) Dennis, *Br. Ascom.*: 30 (1978).
Pustularia rosea Rea, *Trans. Worcestershire nat. Club* **8**: 20 (1924).

***Key to British species of* Tazzetta**

1	Apothecia large, usually more than 2 cm diam; surface of receptacle finely pustulate	2
	Apothecia smaller, less than 2 cm diam, surface of receptacle markedly pustulate, especially towards the margin	3
2(1)	Paraphyses often swollen at apex, becoming lobed or irregularly branched, usually extending beyond the asci, entangled or adhering in bunches; ascospores ellipsoid to subfusoid, 21–25(–26.5) × (10)–11–12.5(–13.5) µm.	**spurcata**
	Paraphyses simple and unbranched at apex, nor or only slightly enlarged, not or scarcely extending beyond the asci; ascospores ellipsoid, (19.5–)20–24 × 11–14 µm	**catinus**
3(1)	Ascospores ellipsoid to broadly ellipsoid, 21–25(–26) × (12.5)–13–15 µm	**cupularis**
	Ascospores ellipsoid, (19)–20–23 × (9.5)–10.5–12.5(–13) µm	**scotica**

Rhodotazzetta rosea (Rea) Dissing & Sivertsen, *Mycotaxon* **16**: 456 (1983).

Pustularia bolarioides Ramsb., *in* Bagchee, *Ann. Bot. London* **39**: 217 (1925); nom. inval. (Art. 32.1).

This species is characterised by the small apothecia and pink disc. In other characters, such as sizes of apothecia and spores, it resembles *T. gaillardiana* as described by Pant & Tewari (1970). The spore size of *T. rosea* as cited in the protologue (Rea 1924) is 15–17 × 9 µm, whereas a larger size of 17–20 × 9–11 µm was given by Dennis (1978). The latter measurements are similar to those we obtained from the type material, 16–20 × 7.5–9.5(–11) µm. The designation *Pustularia bolarioides* was not formally published, but was introduced in the title of a paper by Bagchee (1925). It was listed by Ramsbottom & Balfour-Browne (1951) and by Cannon *et al.* (1985) as a synonym of *T. rosea*. We accept this synonymy, although no original specimen is available for study.

This taxon is the type species of the genus *Rhodotarzetta* Dissing & Sivertsen 1983, which was based on the colour and structure of the apothecia. However, the description of the species, and thus the new genus, provided by Dissing & Sivertsen (1983) was based on a study of collections from Norway, Denmark and Holland, but not of the type collection.

Tazzetta scotica (Rea) Y. J. Yao & Spooner, **comb. nov.**
Pustularia scotica Rea, *Trans. Br. mycol. Soc.* **13**: 258 (1928).

No type material can be traced in K and is apparently lost. However, an unpublished coloured illustration of this species by Rea, from the material on which his new species is based (labelled as '*Humaria scotica* Massee, = *Pustularia scotica* (Mass.) Rea, on clay soil, near Perth, County Perth, 9th Oct. 1909') and a specimen from the same locality (labelled as '*Humaria scotica* Massee, Perth wood near, Sept. 09, comm. A. M. Rodger, Perth Museum') are preserved in K. These specimens both agree with the protologue and with Rea's drawing. A note from A. M. Rodger, dated 7 Oct. 1909 and received in K on 8 Oct. 1909, is enclosed in the packet. This note reads '*Humaria scotica* Massee, Coll.: Mr. James Menzies, Locality: Quarry Millden, nr Perth'. It seems that this specimen may be part of the type material. The original collection may have been separated into two parts which were sent to K and Rea at the same time. The date Rea cited for the collection may refer to the date he received the specimen, i.e. one day later than it arrived at Kew. However, this cannot be proved and it is apparent that Rea did not see this specimen when he published the new species. Further, the type Rea used might be a later collection. We, therefore, designate this specimen as the neotype for *Pustularia scotica* (**UK**: *Perthshire*: near Perth, Quarry Millden, *J. Menzies*, K.-***lectotypus hic designatus***). The species is more widespread than realised, due to confusion with *T. cupularis*.

It should be noted that '*Humaria scotica* Massee' is an unpublished name, although some specimens are labelled under it in K.

Tazzetta spurcata (Pers.) Harmaja, *Karstenia* **14**: 119 (1974).

Peziza spurcata Pers., *Mycol. Eur.* **1**: 226 (1822).

Peziza ochracea Boud., *in* Cooke, *Mycographia* **1**: 225, Fig. 227 (1879); non *P. ochracea* Pers. 1801, nec *P. ochracea* Schum. 1803, *P. ochracea* Grev. 1824, *P. ochracea* (Fr.) Karst. 1869.

Pustularia ochracea (Boud.) Boud., *Icon. Mycol.* Liste prélim.: (3) [without pagination] (17 Nov. 1904) [or *Icon. Mycol.* Sér. 1, Livr. 2: 8, no. 38].

Pustularia ochracea was listed as a synonym of *T. catinus* in Cannon *et al.* (1985). The combination and synonymy proposed by Harmaja (1974), was evidently overlooked by those authors. It was, however, accepted by Korf (1986).

The main difference between *P. ochracea* and *T. catinus* concerns the paraphyses which, in the former, are swollen and lobed, or branched, at the tip. Ascospores in British material tend to be subfusoid in form, as indicated and illustrated by Harmaja (1974), and they are slightly longer than those of *T. catinus*. We accept Harmaja's synonymy, although we have not seen Persoon's type of *Peziza spurcata*.

Tazzetta spurcata is evidently widespread in the British Isles.

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Corresponding Editor: D. L. Hawksworth