

Tarzetta pusilla n. sp. and T. spurcata (Pers.) n.comb. from Finland

Harri Harmaja

Botanical Museum, University of Helsinki, SF-00170 Helsinki, Finland

HARMAJA, H. 1974: *Tarzetta pusilla* n. sp. and *T. spurcata* (Pers.) n. comb. from Finland. — *Karstenia* 14: 116—120.

The author describes the new species *Tarzetta pusilla* Harmaja (*Pezizales*) and makes the new combination *Tarzetta spurcata* (Pers.) Harmaja as he considers *Peziza spurcata* Pers. distinct from *T. catinus* (Pers.) Korf & Rogers. The apparently only existing original specimen of *P. spurcata* is nominated as the neotype. The two *Tarzetta* species treated in the paper differ from the rest of the species of the genus through their entangled paraphyses, which possess branches and proliferations, especially at the tips which are mostly enlarged and profusely notched with branchlets, often to such a degree that they are in fact deformed. *T. pusilla*, *T. spurcata* and *T. catinus* differ from each other on the basis of characters of the apothecium, spores, paraphyses and anatomy. Differences between these three species may also lie in the habitat ecology and distribution. *T. spurcata* is reported from Finland for the first time, and the seven specimens representing this species among the Finnish *Tarzetta* material are listed, all the collecting localities lying in the southernmost part of the country.

I. *Tarzetta pusilla* n. sp.

Tarzetta pusilla Harmaja, n. sp. — *A. T. spurcata* (Pers.) Harmaja *apotheciis minoribus et sessilibus, sporis ellipsoideis et latioribus et paraphysibus crassioribus, a T. catino* (Pers.) Korf & Rogers *apotheciis minoribus, sporis latioribus et apicibus paraphysium valde ramosis differt.* — *Type:* Finland, prov. Kuusamo, par. Kuusamo, Oulanka National Park, the ravine of the brook Tulilammenpuro, ca. 230 m above sea level, gregarious in moist moss on dolomitic rock and stones near the water, accompanied by a rich flora of different plant groups consisting of many calcicolous and calciphilous species and northern and southern species on the limit of their distribution, such as *Actaea erythrocarpa*, *Asplenium viride*, *Calypto bulbosa*, *Carex digitata*, *Cystopteris montana*, *Diplazium sibiricum* (*Athyrium crenatum*), *Equisetum scirpoides*, *Fragaria vesca*, *Saussurea alpina*, *Saxifraga nivalis*, *Viola selkirkii*, *Woodsia al-*

pina, *Lepiota cristata*, *L. seminuda*, *Marasmius cohaerens*, *Helvella acetabulum* coll., *H. atra*, *H. elastica*, *Leotia gelatinosa*, 1971-08-20, Harri Harmaja (H).

Apothecia ca. 5 mm in diameter, cupulate, sessile, with thin flesh, whitish with a brownish tint on both sides; sterile surface, or exterior, very finely pustulate; margin dentate.

Excipulum composed of those three layers which are described as typical of the genus by HARMAJA (1974b). Ental layer is of *textura intricata* of hyaline, moderately thin-walled hyphae which are 3—6, towards the next layer outwards up to 10, μm in diameter; occasional strongly cyanophilic septal collars present (cf. HARMAJA 1974b). The following layer outwards is composed of *t. angularis*, being narrow, ca. 35—50 μm , as it only consists of 2—4 rows of angular, isodiametric to oblong cells, ca. 5—30 \times 5—20 μm in

size; the intercellular spaces in this layer are filled with strongly cyanophilic matter. The outermost layer is interrupted and is composed of *t. globulosa* arranged in obtuse to \pm conical warts (the pustules of the external surface of the apothecium), about 50—100 μm broad and 30—80 μm high, its cells being ca. 5—20 μm in diameter. Hyaline, septate, moderately thin-walled »hairs«, up to ca. 100 μm long and 3—6 μm broad, present in the surface, mostly emerging from the exterior cells of the *t. angularis* layer (where the layer of *t. globulosa* is interrupted) but also from the more or less globose cells of the warts, in other words, from the cells of the *t. globulosa* layer.

Paraphyses very abundant, septate, 2.5—4.0 μm in diameter for the most of their length, gradually enlarged upwards, with short proliferations, branches and even anastomoses along whole their length which makes them very entangled, the branching being most abundant in the tips most of which are deformed in many different ways, mostly also being abruptly swollen, reaching a diameter of 12 μm , the minority of the tips being simple and clavate; some of both the deformed and simple ones are more or less curved (Fig. 2: upper row).

Asci 200—260 \times 13—17 μm , maturing at different times within a single apothecium,

cylindrical, eight-spored, with a thick, inamyloid wall.

Spores 20—23 \times 11.5—13.0 μm , very uniform in size and shape, regularly ellipsoid, very slightly inequilateral; wall ca. 0.4 μm thick, hyaline, a persistent cyanophilic, thin, completely smooth and tightly appressed perispore develops towards maturity (the spores thus belong to the *Peziza* spore type in the classification of HARMAJA 1974a); two large oil drops present in half-mature and mature spores, easily merging to one oblong and usually constricted one in fully mature spores, especially after heating in cotton blue; de Bary bubbles absent in all spores (e.g. in heated cotton blue and Melzer's reagent) (Fig. 1a).

This new species most closely resembles *Peziza spurcata* Pers., transferred to the genus *Tarzetta* below, while all the other species of *Tarzetta* differ distinctly in their simple paraphyses. Occasional paraphyses of *T. catinus* may, however, possess one or two short proliferations towards their tips, the great majority of them being simple and not branched, sometimes slightly swollen just below the very apex (the three first paraphyses from the left in Fig. 2: lower row, representing those of *T. spurcata*, at the same time illustrate typical *T. catinus* paraphyses, which in a certain proportion are present also in the

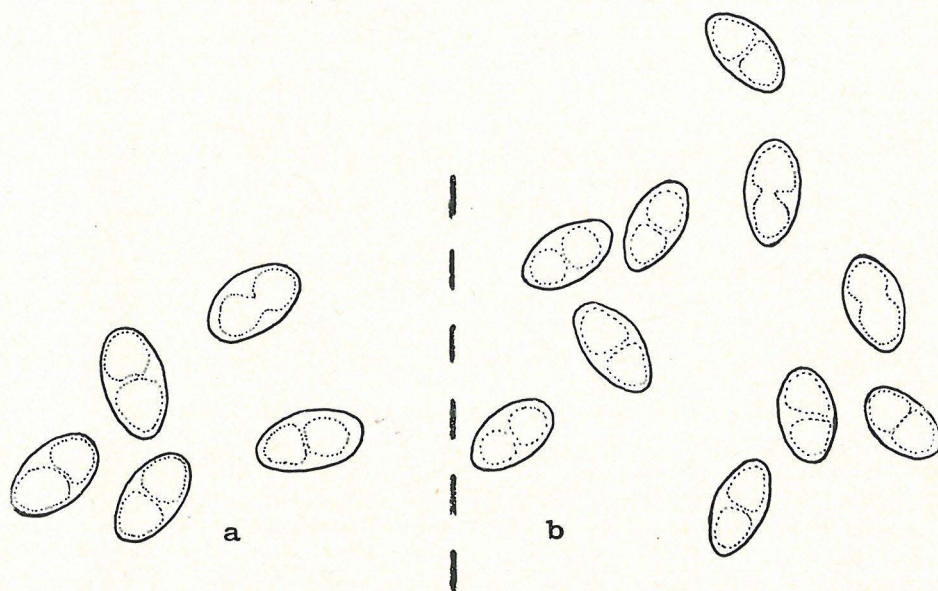


Fig. 1. Spores in Melzer's reagent. Magnification ca. 600 \times . — a) *Tarzetta pusilla* Harmaja (type). — b) *T. spurcata* (Pers.) Harmaja (Finland, Uusimaa, Helsinki, 1970-08-04, H. Harmaja; H).

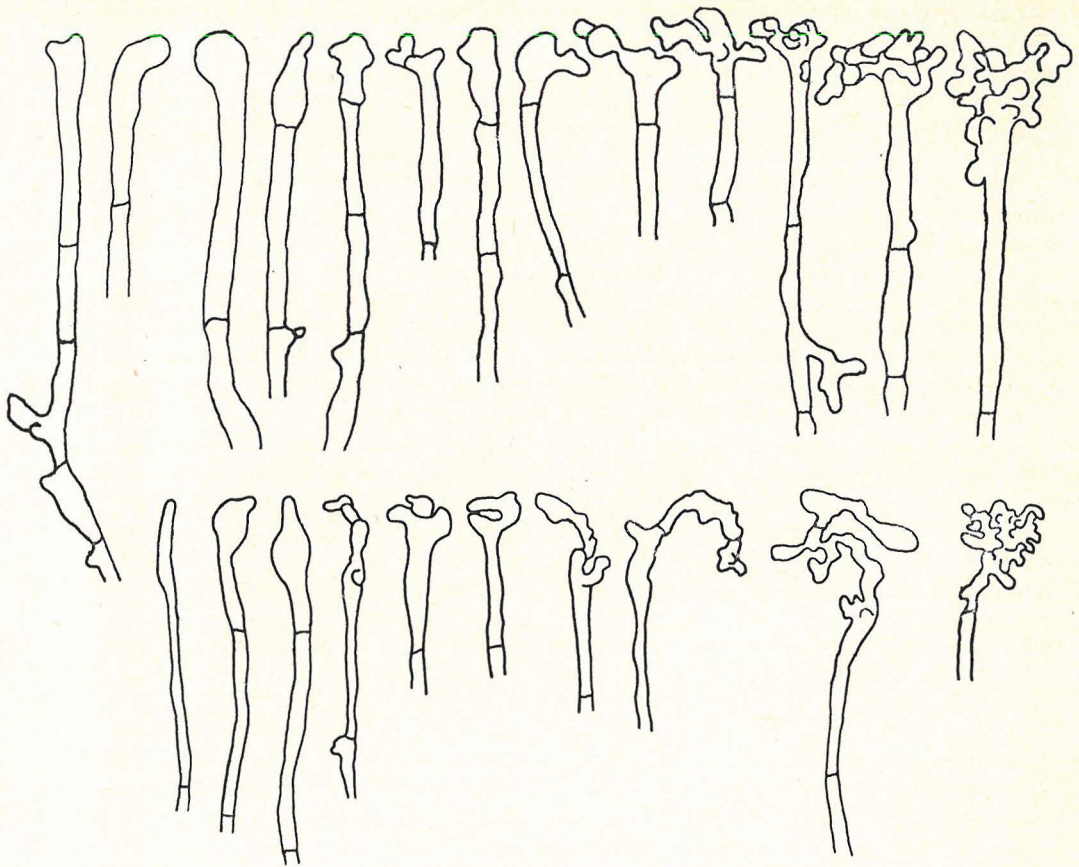


Fig. 2. Tips of paraphyses in heated cotton blue. Magnification ca. 1000 x. — Upper row: *T. pusilla* (type). — Lower row: *T. spurcata* (as in Fig. 1).

hymenium of *T. spurcata*). *T. pusilla* differs from *T. spurcata* in possessing practically sessile, thin, very small apothecia which only measure ca. 0.5 cm in diameter, the narrow zone of *t. angularis* of the excipulum, only being ca. 35–50 μm broad, the very regularly ellipsoid spores, which are 11.5–13.0 μm broad (Fig. 1a), and the paraphyses which are 2.5–4.0 μm (to 12 μm apically) in diameter (Fig. 2: upper row); it was found growing in moist moss on a calcareous rock face. *T. spurcata* has larger apothecia, which at least reach a diameter of 4.5 cm, thicker context, a more distinct stipe ca. 2–7 mm in length, ca. 70–100 μm broad zone of *t. angularis*, on the average slightly thinner, 10.0–12.0 μm broad spores, which generally have slightly narrower ends, a part of them thus not being exactly ellipsoid but tending to be subfusiform (Fig. 1b), and slightly thinner paraphyses which for the greater part only

have a diameter of 2.0–3.0 μm (to 9.5 μm apically) (Fig. 2: lower row); it occurs in habitats characterized by distinct human influence and even in man-made sites such as gardens and lawns. However, the supposed ecological differences between the species are based on the scanty material available for the moment; even more this scantiness of observations must be emphasized when trying to find possible differences in their distribution. Anyway, so far *T. pusilla* was only collected in northern Finland (in the northern boreal zone of АНТИ & al. 1968) while all the specimens of *T. spurcata* have been collected in the southernmost part of the country (within the hemiboreal zone of АНТИ & al.).

From *T. catinus* the new species can be distinguished, apart from the abundant branching of the paraphyses, through the smaller apothecia with thinner flesh, the spores which are generally slightly shorter and

broader and more uniform in size and shape, the slightly broader stem of the paraphyses, and the narrower *t. angularis* zone of the excipulum (this zone in *T. catinus* is almost as broad as in *T. spurcata*; see above).

One year after having collected the specimen of *T. pusilla* in Kuusamo by a brook in moist moss carpet on dolomitic rock, I found rather small *Tarzetta* apothecia in a strikingly similar habitat in the same district, in moist moss on dolomitic rock face near a little pond in the famous gorge Jäkälävuo- ma, 12 km to the south of the locality of *T.*

pusilla. I first thought they, too, belong to this new species. However, when examining the fungus microscopically, I found it to represent a typical *T. catinus* in all respects but the rather small size of the apothecia, which, however, were somewhat larger and fleshier than those of *T. pusilla*. This observation is very interesting since it confirms the fact that *T. pusilla* is not a mere modification of, say, *T. catinus* (which, indeed, appears to have the widest ecological amplitude of our *Tarzetta* species) in an unusual habitat.

II. *Tarzetta spurcata* (Pers.) n. comb.

Tarzetta spurcata (Pers.) Harmaja, n. comb. (*Peziza spurcata* Persoon, Mycologia Europaea 1: 226. 1822). — *Neotype* (nominated here) examined: »*Peziza spurcata*/Mycol. Europ.» (apparently in Persoon's handwriting) (Herb. C. H. Persoon, L, no. 910.261—573). Only the largest and middle of the three apothecia on the sheet has been examined microscopically. I prefer to call this apparently only original specimen of *Peziza spurcata* a neotype rather than a lectotype since we have no evidence that it was collected prior to the publication of the first part of »Mycologia Europaea».

Unlike, for example, NANNFELDT (1938), I believe that this is a valid species distinct from *T. catinus*. The younger *Peziza ochracea* Boud. in Cooke is almost surely a synonym; moreover, it is a later homonym of *Peziza ochracea* Grev. 1823—1828, *P. ochracea* Schwein. 1834 and *P.o.* (Fr.) Karst. 1869! As already mentioned, *T. spurcata* differs from the very closely related *T. catinus* (the paraphyses of this species have been described in the discussion under *T. pusilla*) and all the other species of the genus except for *T. pusilla* in the abundant branching and anastomosing of the very numerous, intimately entangled paraphyses, the tips of which are mostly deformed in most different ways, being very similar to those of *Otidea indivisa* Vel. and *T. pusilla* (cf. the description of the latter above) (Fig. 2: lower row). The ratio deformed paraphyses/simple paraphyses somewhat varies with specimen. Secondly, the spores of

T. spurcata have on the average slightly narrower ends than those of *T. catinus*, a proportion of them thus tending to be subfusiform in shape (Fig. 1b). Thirdly, its spores also appear to be on the average slightly shorter than those of *T. catinus*. The stipe seems to be somewhat more developed and slightly eccentric in *T. spurcata*. Lastly, it may differ in its habitat ecology possibly occurring only in habitats created by human activities or characterized by distinct human influence such as gardens and lawns, while *T. catinus* thrives in a rather wide variety of habitats, mostly growing in grass-herb forest and only infrequently in gardens (as in the Porvoo Gäddrag locality listed below, i.e. in exactly the same place as *T. spurcata*, which shows that the latter is not merely a modification of *T. catinus* created by different environment).

For the delimitation of *T. spurcata* against *T. pusilla*, see under the latter.

This species occurs in Finland; I have determined as *T. spurcata* the following seven specimens, all collected in the southernmost part of the country and deposited in H:

prov. Uusimaa: Helsinki, Kaisaniemi, Botanical Garden of University, on lawn in mull, 1954-09-22, N. Malmström; Helsinki, Pakila, Osuuskunnantie 111, in a garden on lawn on ± bare fertilized soil, 1970-07-29, Sylvi Manninen; d:o, 1970-08-04, H. Harmaja; d:o, 1972-08-10, Sylvi Manninen; rural district of Porvoo, Tirmo, 1928-07-10, W. Ny-

berg; rural district of Porvoo, Gäddrag, Vibotten, in a garden under apple trees in bare mull among low mosses, 1960-09-09, N. Malmström; d:o, 1962-08-30, N. Malmström.

Acknowledgements. — My thanks are due to Dr. C. Bas, Leyden (L), for arranging the loan of the specimen of *Peziza spurcata* from the Persoon Herbarium, and to Mrs. Sylvi Manninen, Helsinki, who brought me a specimen of *T. spurcata* for naming, and thus gave me the impulse for working on this neglected fungus.

REFERENCES

- AHTI, T., HÄMET-AHTI, L. & JALAS, J. 1968: Vegetation zones and their sections in north-western Europe. — *Ann. Bot. Fennici* 5: 169—211.
- HARMAJA, H. 1974a: Observations on the presence of a cyanophilic perispore in the spores of the Pezizales. — *Karstenia* 14: 123—125.
- 1974b: The generic limit between *Otidea* and *Tarsetta* (*Pustularia* auct.). — *Karstenia* 14: 138—142.
- NANNFELDT, J. A. 1938: Contributions to the mycoflora of Sweden. 5. On *Peziza Catinus* Holmskj. ex Fr. and *P. radiculata* Sow. ex Fr. with a discussion of the genera *Pustularia* Fuck. emend. Boud. and *Sowerbyella* Nannf. n. gen. — *Svensk Bot. Tidskr.* 32: 108—120.