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# NOTES AND BRIEF ARTICLES

## MORTIERELLA TURFICOLA LING YONG

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(With one Text-figure)

Several species of *Mortierella* described until 1930 are today unknown since living cultures are unavailable. The diagnoses of most of these species have been reproduced by Linnemann (in Zycha & Siepmann, 1970). but it is difficult to assess the justification of their retention. Recently Kuhlman & Hodges (1972) rediscovered *M. rostafinskii* Bref. and *M. strangulata* Tiegh., two similar but distinct species. This contribution concerns the rediscovery of another so far problematic species.

During the study of the fungal flora of the Heseper Moor near Meppen, Niedersachsen, F. R. G., *Mortierella turficola* Ling Yong (1930) was found to be the predominating *Mortierella* species. A stand of *Sphagnum recurvum* P. Beauv. with some *Eriophorum vaginatum* L. (pH *c.* 4.8) was sampled on 28 June 1976 during a very hot period. Warcup's soil plates were poured from various zones of decaying *Sphagnum* plants. *Mortierella turficola* appeared on 75% of the plates from the yellow zone at the foot of the living plants, on 85–100% of the plates from the underlaying brown zone and on 0–25% of the plates from the next, yellow zone at 8–10 cm below the surface of the living plants. *Mortierella exigua* Linnem. was once found in addition to *M. turficola.*

MORTIERELLA TURFICOLA Ling Yong
*in* Revue gén. Bot. **42**: 743. 1930.—Fig. 1

Colonies on 2% MEA (pH 7) growing moderately fast, reaching 6–6.5 cm diam. in 6 days, with scanty aerial mycelium mostly present; odour weak but typical of the genus. Sporangiophores numerous, arising mostly from aerial hyphae, generally unbranched, rarely producing one basitonous lateral branch, 100–250 μm tall, at the base 6–10(–17) μm wide, tapering to 2–4 μm at the tip; some dichotomous rhizoids commonly produced near the base of the sporangiophores; tips imperceptibly widening below the sporangium. Sporangia mostly 20–32 μm in diameter, many-spored, leaving a more or less prominent, 2–5 μm high columella on dehiscence. Spores regularly globose, smoot-hwalled, 2.5–3.0(–4.5) μm in diameter. Chlamydospores absent.

Scanty immature zygospores were obtained after mutual combinations of 12 isolates on various media in only two combinations on cherry decoction agar after 6 days at 15–17.5 °C but not above; suspensors developing without initial entangling, of unequal size and shape; zygospores smooth- and thin-walled, 22–30 μm in diameter, but not developing any wall differentiation of mature zygospores.

COLONIES PRESERVED.—CBS 430.76, 431.76, 432.76, 433.76; ex decaying *Sphagnum recurvum*, Heseper Moor, Niedersachsen, F. R. G., *H. Hooghiemstra*, 28 June 1976. CBS 432.76 is compatible with 431.76 and 433.76 and is designated as neotype strain of the species.

*Mortierella turficola* was described by Ling Yong (1930, spelt Ling Young in the journal, Ling Yong in the reprint) as occurring in peaty soil. Wolf (1954) studying *Mortierella* species in south German peatbogs did not mention this species nor did she describe any similar species. Turner & Pugh (1961) tentatively identified some

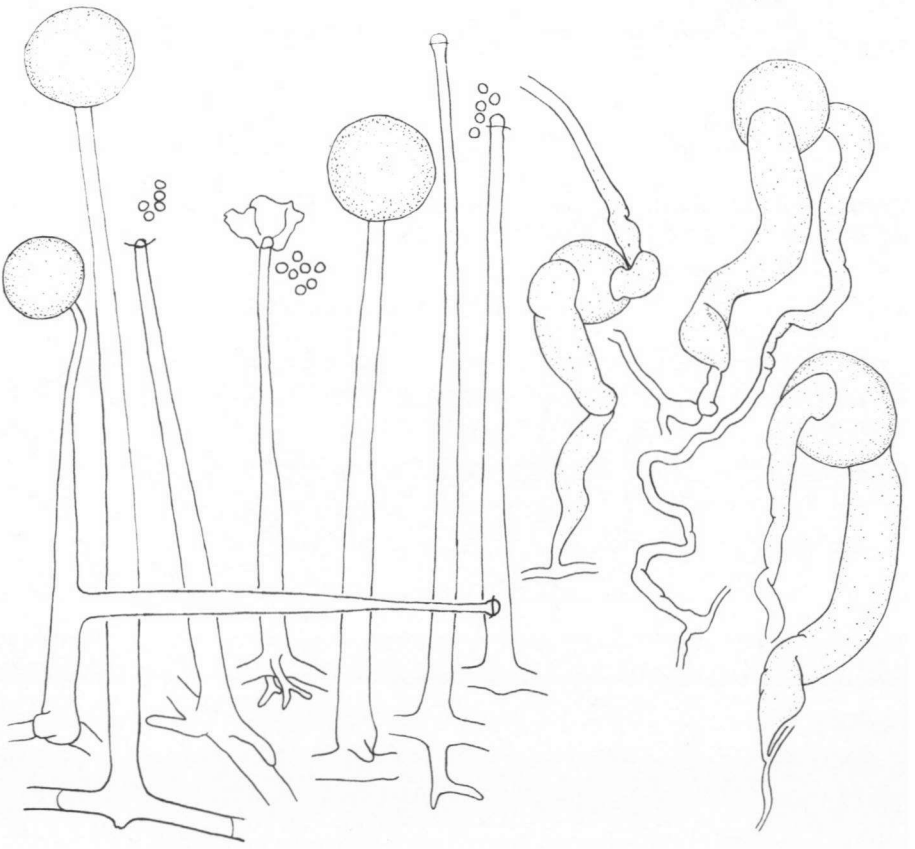

Fig. 1. *Mortierella turficola*, Sporangiophores with spores and development of zygospores ×500.

salt marsh isolates as *M. turficola*; one of their strains (CBS 898.68) bears less resemblance to *M. turficola* than the present isolates; the sporangiophores are mesotonously branched, have no columella and the spores are subglobose, up to 6 μm diam. Dickinson & Maggs (1974) mention the frequent isolation of *M. turficola* from washed leaves of *Sphagnum magellanicum* at an ombrophilous peat mire in Fozy Moss, Northumberland, G. B., down to a depth of 4 cm, but do not give further information on the fungus.

Our strains agree very well with Ling Yong's observations in the basitonous branching, length of sporangiophores, presence of a columella and the tiny globose spores. Ling Yong illustrated two branches of the sporangiophore, a number we never observed. His measurements of sporangia (10–15 μm) and spores (1.8–2.0 μm) are smaller than ours, but seem somewhat unrealistic. We therefore do not doubt that the identification is correct.

The species keys out in section *Hygrophila* according to Gams (1970) because of the basitonous ramification. The strongly developed columella is unusual in this section. It can be expected that this species has been described under other species with unbranched sporangiophores, since ramification is scarce, and a classification in section *Simplex* W. Gams would be particularly tempting. In Linnemann's keys *M. pulchella* Linnem. best fits this fungus, but the rarely observed (in our observations on SEA cultures not infrequent) acrotonous ramifications exclude a possible identity. The description of *M. pusilla* Oudem. sensu Linnemann (*in* Zycha & Siepmann, 1970) also suggests this fungus, but its original isolation from a pine-oak forest soil at Spanderswoud, Netherlands (Oudemans & Koning, 1902) makes this identity very unlikely. Samples of this soil studied recently by the senior author yielded amongst others *M. pulchella* Linnem. Several authors interpreted *M. pusilla* in the sense of *M. isabellina* Oudem., but this is contradictory to the original description of unpigmented rosette growth. This species might have been a relative of *M. alpina* Peyr., but is best left in the status of a doubtful species. *Mortierella turficola* does not have much affinity with *M. alpina*. The sporangiophores are longer and do not show the characteristic awl-shaped habit with a swollen 'basal foot' and the zygospores develop in the agar. Therefore we prefer to retain it in the section *Hygrophila* in which, to date, it is unique by its small, globose spores and the presence of a columella.

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