Fig. 8 *Neohendersonia kickxii* (CBS 112403). **a** Conidioma on *Fagus sylvatica*. **b** Conidiogenous cell in vivo. **c** Conidia in vivo showing the paler basal cell. **d** Conidiogenous cells in vitro (*arrows*). **e** Conidia in vitro. **f** Second kind of conidia growing directly from the hyphae. Scale bars: **b**–**e** = 10 μm, **f** = 5 μm

sylvatica in Belgium. Sutton and Pollack (1974) subsequently combined *Stilbospora kickxii* into *Neohendersonia*, and *N. kickxii* was proposed as the type species, being the older name. After the inclusion of *N. congoensis*, the generic concept was expanded to include species with euseptate conidia (Sutton 1975). Recently, a third species, *N. fagi*, has been described from the same source in Italy (Wijayawardene et al. 2016). Currently, from the three species accepted in the genus, only *N. kickxii* has living type material, and, therefore, we cannot elucidate the monophyly of the genus and the species boundaries. However, the three species can be morphologically distinguished by the presence of euseptate conidia in *N. congoensis* and the size of the distoseptate conidia in *N. fagi* (30–48 × 10–15 μm) and *N. kickxii* (21–45.5 × 12.5–20 μm) (Sutton 1975, 1980; Wijayawardene et al. 2016).

From the material examined here, the culture CPC 24865 was found to be phylogenetically distinct from the other isolates of *N. kickxii* and it could represent a different taxon. However, we prefer to not assign a name to this culture yet, since we did not find sufficient morphological characteristics to propose it as a different species.

Neohendersonia kickxii has been reported as a specific endophyte of beech twigs in Europe (Danti et al. 2002; Sieber 2007) and from beech bark in North American forests (Griesmer-Zakhar 2013), while *N. congoensis* and *N. fagi* have been described on stems of *Aloe* or *Agave* in Congo and branch of *Fagus* in Italy, respectively.

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Spumatoria Massee and E.S. Salmon, Ann. Bot. Lond. 15: 350 (1901).

Classification: Ophiostomataceae, Ophiostomatales, Sordariomycetes.

Current generic circumscription: Saprobic, coprophilous. Ascomata perithecial, single, gregarious, immersed, erumpent, loculus globose with one or seldom two necks per perithecium. Ascomatal neck centrally, terete, apically paler and conspicuously long fimbriate, basally dark brown to black, felty, textura prismatica. Peridium dark brown to black, slightly hard, rough, basally with red brown hyphae, textura angularis. Paraphyses longer than the asci. Asci 8-spored, clavate, apically rounded and with an ocular chamber, pedicel mostly short and not furcate, thick-walled, bitunicate. Ascospores obliquely biseriate, overlapped, 2(−3)-celled, clavate, straight, hyaline, thin-walled, smooth, coarsely guttulate, septa smooth and thin-walled. Asexual morph sporothrix-like (in culture). Conidiophores more or less differentiated, unbranched, cylindrical. Conidiogenous cells polyblastic, sympodial, terminal, denticulate. Conidia solitary, dacrioid, hyaline. Blastoconidia growing directly from undifferentiated hyphae, lateral, globose to subglobose.

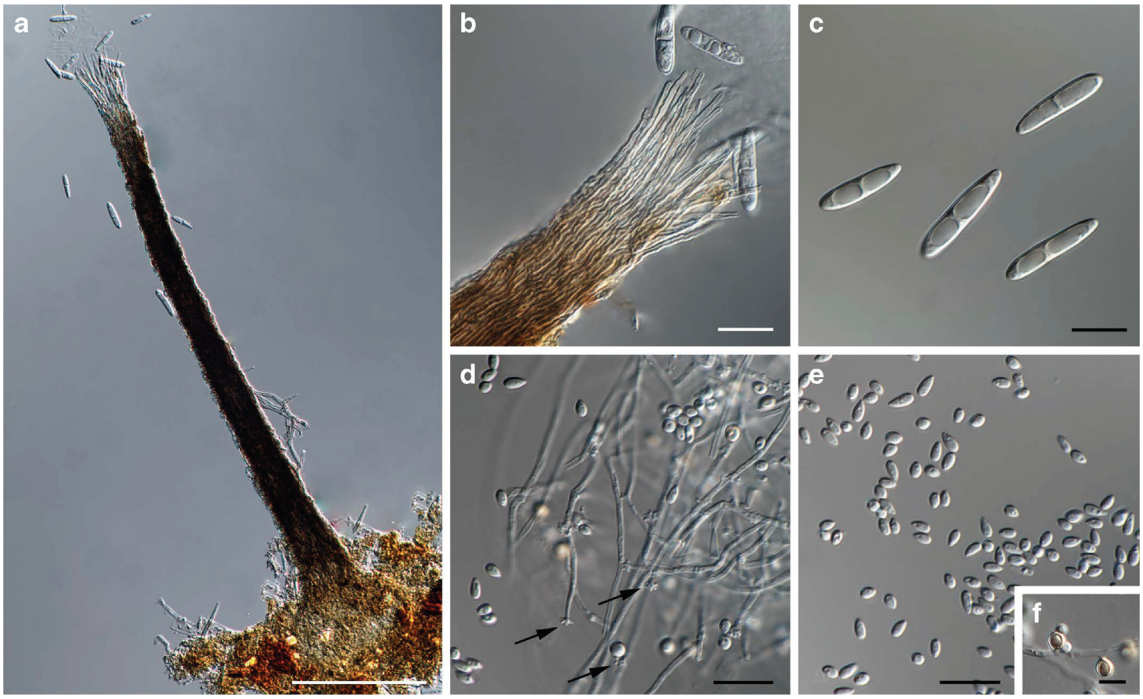

Fig. 9 *Spumatoria longicollis* (CBS 141464). **a** Ascoma. **b** Ostiolar hyphae. **c** Ascospores. **d** Conidiogenous cells (*arrows* denote the denticles). **e** Conidia. **f** Blastoconidia. Scale bars: **a** = 100 μm, all others = 10 μm

Type species: *Spumatoria longicollis* Massee & E.S. Salmon 1901.

Spumatoria longicollis Massee and E.S. Salmon, Ann. Bot. Lond. 15: 351 (1901). Fig. 9

MycoBank: MB 171713

Description: Ascomata single, gregarious, immersed, erumpent, loculus globose with one or seldom two necks per perithecium, up to 500 μm long × 39–60 μm wide. Ascomatal neck central, terete, apically paler and conspicuously long fimbriate, basally dark brown to black, felty, textura prismatica, up to 430 μm long × 28–30 μm wide. Peridium dark brown to black, slightly hard, rough, basally with red brown hyphae, textura angularis. Paraphyses longer than the asci. Asci dehiscent, 8-spored, clavate, apically rounded and with an ocular chamber, pedicel mostly short and not furcate, thick-walled, bitunicate. Ascospores obliquely biseriate, overlapped, 2(−3)-celled, clavate, straight, hyaline, thin-walled, smooth, coarsely guttulate, septa smooth and thin-walled, (17)18–23(26) × 4–7.5 μm. Asexual morph sporothrix-like (in culture). Conidiophores poorly differentiated, unbranched, cylindrical, up to 30 μm long. Conidiogenous cells polyblastic, sympodial, terminal, denticulate. Conidia dacrioid, hyaline, smooth- and thin-walled, 3–4.5 × 1.5–2 μm. Blastoconidia growing directly from undifferentiated hyphae, lateral, globose to subglobose, smooth- and thick-walled, light brown, 3–4 × 2–4 μm wide.

Culture characteristics: Colonies on OA attaining 13–20 mm diam. after 1 week at 25 °C, flat, scarce aerial mycelium, dark brown. On MEA flat, creamy with scarce aerial mycelium, dirty white turning dark brown with age.

Specimens examined: England, Essex, Epping Forest, horse dung, G.E. Massee & E.S. Salmon [Massee G.E and E.S. Salmon, Ann. Bot. Lond. 15, Fig. 27] (Lectotype designed here, MycoBank MBT373089). Netherlands, near Oostvoorne, dune grassland, on cow (Galloway) dung, 26 Jan. 2016, coll. J. van der Lee, det. R.K. Schumacher, iso. A. Giraldo (epitype designated here, CBS H-22665, MycoBank MBT373090; culture ex-epitype CBS 141464 = CPC 30521).

Notes: As far as we know, this is the first report of this fungus after its original description. The sexual morph was only observed in natural substrata; many attempts to obtain this morph in culture resulted only in the sporothrix-like asexual morph. Several macroscopic and microscopic pictures were observed to corroborate the identity from the specimen. In the original protologue, Massee and Salmon (1901) mentioned cylindrical asci, 110–113 × 13–15 μm, versus narrow clavate in the illustration, and 2-celled, ellipsoidal ('oblongis utrinque rotundatis') spores, 15–19 × 5 μm. Unfortunately, due to the dehiscent nature of the asci and the scarce material available, these structures were not observed in this study. The authors refer the perithecia at the conidium-bearing stage to the genus *Rhynchophoma*, a similar genus described from the wood of *Tilia ulmifolia* (Karsten 1884). However, the type of this fungus is apparently lost and, according to De Beer et al. (2013), this genus does not belong to either Ophiostomatales or Microascales.

Among the coprophilous fungi, *Kathistes* is one of the genera morphologically similar to *Spumatoria* in having transversely septate ascospores and perithecia with long and dark necks, but can be differentiated by its narrower ascospores, particular sporidiomata and absence of paraphyses (Malloch and Blackwell 1990). Based on their morphological similarities and common habit, they were placed together with *Klasterskya* in the Kathistaceae within Ophiostomatales (Hawksworth et al. 1995; Kirk et al. 2008). However, the analysis of the SSU region showed the affinity of this family to be with the Dothideomycetes rather than the Ophiostomatales (Blackwell and Spatafora 1994); consequently, *Klasterskya* and *Spumatoria* were excluded from the latter order based on the morphological characters as reported in the original description (De Beer et al. 2013). It is important to mention that, from the approximately 300 genera currently included in the Ophiostomatales, *Spumatoria* is the only genus showing septate ascospores. However, our results of the molecular data, which include LSU (Fig. 4), ITS and β-tubulin (data not shown) loci, demonstrate the inclusion of the latter genus within the Ophiostomatales. Based on phylogenetic placement, *Spumatoria* could be considered a synonym of the older name *Sporothrix* (Hektoen and Perkins 1900). Although *S. longicollis* also have a sporothrix-like asexual state, it differs from other *Sporothrix* spp. based on septate ascospores, light coloured ascomata and dung-inhabiting biology. We, thus, suggest that further study including sequences of multiple gene regions and more taxa is needed in order to elucidate its relation with the type species of *Sporothrix*, *S. schenckii* and other species in the genus.

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