

## Notes on some Japanese Ascomycetes XIII\*

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### Summary

This thirteenth paper of a series considers 4 species of soil-inhabiting and coprophilous Ascomycetes collected from various areas of Japan. A new species, *Zopfiella attenuata* isolated from soil, Niiharu-mura, Tone-gun, Gunma-pref., is described. It is characterized by conspicuously narrow ascospores. The remainders, *Zopfiella erostrata*, *Triangularia angulospora* and *T. mangenotii*, are reported for the first time from Japan. A proposal of new combination for *Z. erostrata* (*Pleurage erostrata* Griffiths) is included.

During a floral survey of ascomycetous fungi in Japanese soils, we discovered an infrequent isolate with setose cleistothecia containing a loose fascicle of evanescent, clavate asci and two-celled spores. This fungus undoubtedly belongs to the genus *Zopfiella* Winter (Malloch and Cain, 1971). It is notable in the production of conspicuously narrow ascospores, proving to be a new species that failed to fit into any known taxon of the genus. Three additional descriptions are represented still by a single record since the original isolation or as the first one in Japan.

*Zopfiella attenuata* Udagawa et Furuya sp. nov. (Figs. 1, 5)

Coloniis in agaro Weitzmanii et Silva-Hutneri effusis, floccosis, griseo-olivaceis vel viridi-griseis, cleistotheciis abundantibus; reverso valde olivaceo-griseo.

Mycelio hyalino vel dilute flavo-brunneo, laevi, septato, ramoso, saepe anastomosanti et in fasciculis disposito. Cleistotheciis superficialibus vel leviter immersis, nigris, sphaericis vel subsphaericis, 90-400  $\mu\text{m}$  diam., primo pilosis, postremo fere nudis; pilis dilute flavo-brunneis, flexuosis, superne pallescentibus, laevibus, septatis, basi 2-2.5  $\mu\text{m}$  latis. Peridio tenui, dilute flavo vel olivaceo-brunneo, membranaceo, semitranslucido; cellulis externis fere angulatis, 6-20  $\times$  4-15  $\mu\text{m}$ . Ascis in fasciculo dispositis, octosporis,

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clavatis, brevi-stipitatis,  $42-48 \times 14-16 \mu\text{m}$  (parte sporif. circa  $30-35 \mu\text{m}$ ), superne rotundatis, sine apice spectabili, evanescentibus. Ascosporis irregulariter biseriatis, primo hyalinis, uni-cellularibus, deinde transverse uniseptatis, anguste ellipsoideis,  $(14-16-22(-23) \times 6-7(-8) \mu\text{m}$ . Cellula superiore valde olivacea vel brunnea,  $12-16(-18) \mu\text{m}$  longa; foramine germinali rotundo,  $1-1.5 \mu\text{m}$  diam. ad apicem sito. Cellula inferiore hyalina, tenui, cylindracea, deinde collapsa,  $2-5 \times 2-3 \mu\text{m}$ . Conidiis incognitis.

Typo: in culturis ex solo, Niiharu-mura, Tone-gun, Gunma-pref., Japan, Sept. 7, 1973, NHL 2724 (=SANK 14074).

Colonies on Weitzman and Silva-Hutner's medium (Weitzman and Silva-Hutner, 1967) spreading broadly, attaining a diameter of 6.8-7.0 cm in 2 weeks at 25 C, consisting of a thin basal felt with floccose hyphae, more or less zonate, showing some tendency toward sector variation, grayish olive green to greenish gray, rapidly developing black cleistothecia on the felt, thinly scattered throughout but produced more abundantly

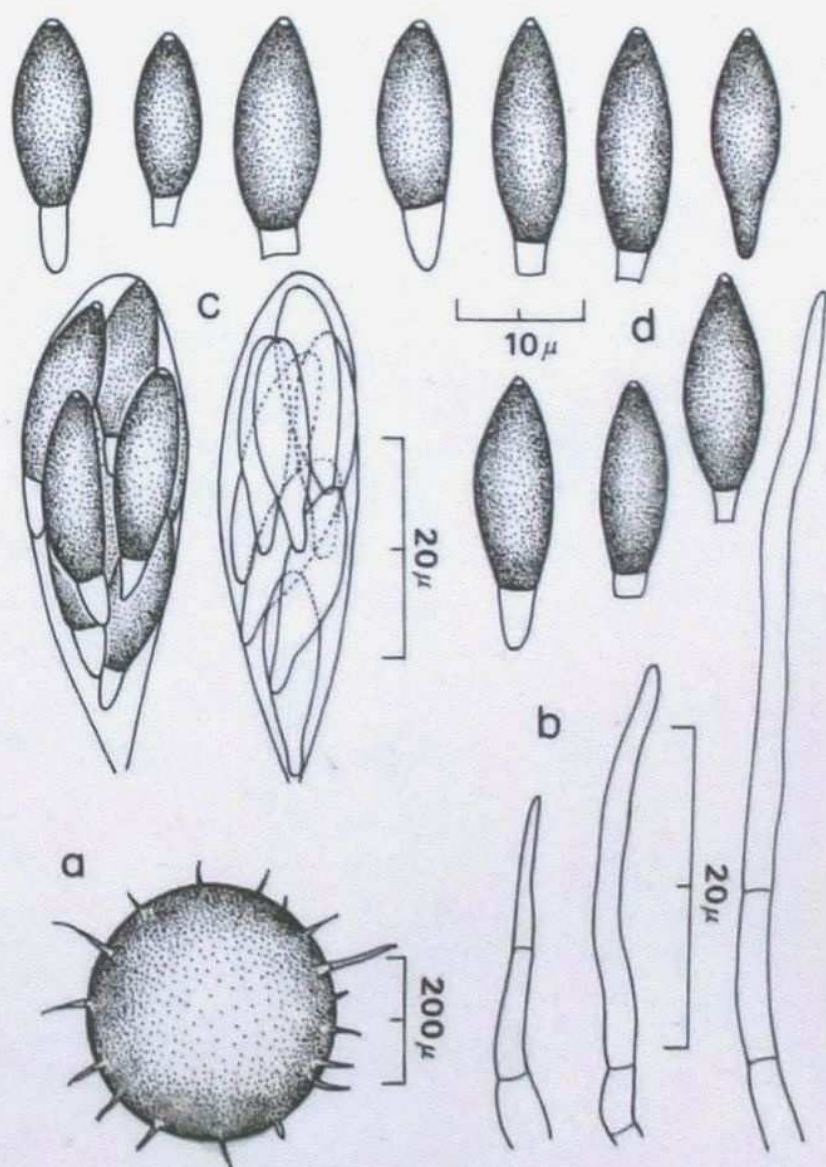


Fig. 1. *Zopfiella attenuata*  
 a. Cleistothecium. b. Hairs of the cleistothecium.  
 c. Asci. d. Ascospores.

near the submarginal colony areas; reverse dark olive gray.

Mycelium hyaline to pale yellowish brown, smooth-walled, septate, branched, often anastomosing and aggregated in funicles. Cleistothecia superficial or slightly immersed, black, spherical to subspherical, 90–400  $\mu\text{m}$  in diameter, covered with numerous hyphal-like hairs when young, nearly glabrous in age; cleistothecial hairs pale yellowish brown, flexuous, fading above, smooth, septate, 2–2.5  $\mu\text{m}$  wide at base. Peridium thin, pale yellow to olivaceous brown, membranaceous, semitransparent, the outer layer consisting of almost angular cells measuring 6–20  $\times$  4–15  $\mu\text{m}$ . Asci borne on croziers in a fascicle, 8-spored, clavate, short-stipitate, 42–48  $\times$  14–16  $\mu\text{m}$  (part sporif. about 30–35  $\mu\text{m}$  long), rounded above, no apical structure visible, evanescent. Ascospores irregularly biseriolate, at first hyaline, one-celled, becoming transversely uniseptate, narrowly ellipsoidal, (14–)16–22(–23)  $\times$  6–7(–8)  $\mu\text{m}$  (including the hyaline cell); upper cell dark olive green to brown at maturity, 12–16(–18)  $\mu\text{m}$  long, with an apical, circular germ pore measuring 1–1.5  $\mu\text{m}$  in diameter; lower cell hyaline, thin, cylindrical but collapsing in age, 2–5  $\times$  2–3  $\mu\text{m}$ . Conidial structures lacking.

At 37 C, growth is nil.

Etymology: Referring to the narrow ascospores.

**Holotype:** In culture from soil, Niiharu-mura, Tone-gun, Gunma-pref., Sept. 7, 1973. Deposited in the herbarium of the National Institute of Hygienic Sciences, Tokyo, NHL 2724 (=SANK 14074).

*Z. attenuata* is apparently assigned to the non-cephalothecoid series of the genus, but differs from *Z. latipes* (Lundq.) Malloch et Cain (1971) particularly in producing ascospores that are conspicuously narrow and equipped with an apical germ pore whereas the ascospores in *Z. latipes* are evidently wider (upper cell: 16.5–20.5  $\times$  10–13  $\mu\text{m}$ ) and with a subapical germ pore. It can be distinguished readily from the most recently discovered species, *Z. flammifera* Huang (1973), by the shape of ascospores.

***Zophiella erostrata*** (Griffiths) Udagawa et Furuya comb. nov. (Figs. 2, 6)

$\equiv$  *Pleurage erostrata* Griff., Mem. Torrey Botan. Club 11: 71 (1901).

$\equiv$  *Sordaria erostrata* (Griff.) Sacc. et D. Sacc., Syll. Fung. 17: 604 (1905).

$\equiv$  *Tripterospora erostrata* (Griff.) Cain, Can. J. Botany 34: 702 (1956); Lundqvist, Botan. Notis. 122: 590 (1969); Cailleux, Cah. La Maboké 8: 5 (1970).

Cultures on potato-carrot agar growing fairly rapidly, almost plane, consisting of a thin basal felt with surface appearing rather floccose, dark olive green to grayish green, usually producing abundant cleistothecia which are obscured by overlying hyphae and conidial structures; reverse greenish black.

Cleistothecia slowly developed, superficial, scattered, black, spherical to subspherical, 200–240  $\mu\text{m}$  or more in diameter, clothed with very long, flexuous (often geniculate), olivaceous brown, septate hairs, measuring 600  $\mu\text{m}$  or more in length and 4–5  $\mu\text{m}$  in

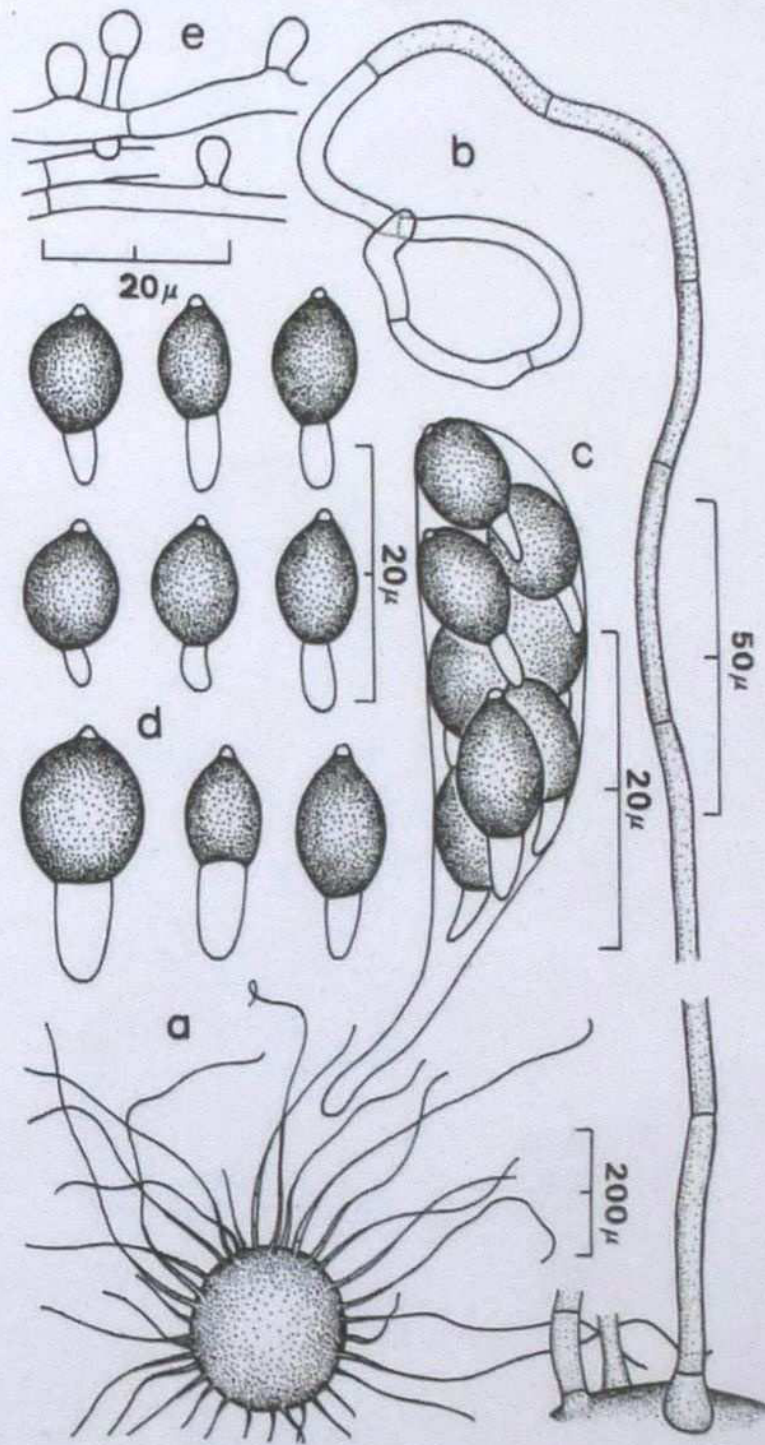


Fig. 2. *Zopfiella erostrata*  
 a. Cleistothecium. b. Hair of the cleistothecium. c. Ascus.  
 d. Ascospores. e. Conidial structures.

diameter. Peridium olivaceous brown, somewhat opaque, membranaceous, consisting of more or less thick-walled, angular cells measuring 6–12  $\mu\text{m}$  in diameter. Asci 8-spored, clavate, (28–)40–45  $\times$  10–14  $\mu\text{m}$ , broadly rounded above, without a distinct structure in apex, tapering below into a short stipe measuring 8–15  $\mu\text{m}$  long, very evanescent, surrounded by hyaline, swollen cells. Ascospores biseriate, hyaline at first, one-celled, clavate to elongate, guttulate, then becoming transversely uniseptate, totally 13–20(–22)  $\mu\text{m}$  long; upper cell ranging through pale olivaceous to light brown, opaque, broadly ellipsoid, 8–12(–13)  $\times$  6–8(–9)  $\mu\text{m}$ , rounded at apex, slightly truncate at base,

with an apical, circular germ pore; lower cell remaining hyaline, cylindrical,  $4-8(-12) \times 2.5-4 \mu\text{m}$ , often collapsed; secondary appendages not observed. Gelatinous sheath lacking.

Conidial structures simple, of aleuriospore-type. Mycelium hyaline to pale olivaceous brown, sinuous,  $1-4 \mu\text{m}$  in diameter, branched, septate, smooth to minutely roughened. Conidiogenous cells simple, solitary, borne as lateral branches from the mycelium or aerial hyphae, up to  $6-18 \mu\text{m}$  or more long and  $2-2.5 \mu\text{m}$  wide, often lacking. Conidia hyaline to slightly yellowish brown, globose to ovate or elongate,  $2.5-6 \times 2-4 \mu\text{m}$ , with a truncate base, smooth-walled.

At 37 C, slight growth.

Isolation: on deer dung, Yamabe-cho, Furano-shi, Hokkaido, June 7, 1972, NHL 2712 (=SANK 19173).

This species is sufficiently characterized by the ascocarps covered with long flexuous hairs and the smallest ascospores. Malloch and Cain (1971) reserved *Tripterospora* for a genus with *Podospora*-like ascospores. Although it is speculative that some *Tripterospora* are the non-ostiolate counterparts of *Podospora*, in fact *Tripterospora* can hardly be distinguished from *Zopfiella*. Recently von Arx (1973) transferred the type species *Tripterospora longicaudata* Cain to *Zopfiella*.