

## Some freshwater Ascomycetes from Japan

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箕浦久兵衛\*・室井 哲夫\*：日本の淡水産子のう菌類数種について

### Summary

Six species of ascomycetous fungi are reported. They were found on the sterilized balsa wood submerged in freshwater lakes and ponds for several months. Three new species and one new genus, *Phomatospora aquatica* sp. nov., *Pseudohalonectria lignicola* gen. et sp. nov. and *Savoryella verrucosa* sp. nov., are proposed. Other three species are *Aniptodera chesapeakeensis*, *Debaryella gracilis* and *Naïs inornata*.

The methods of collecting the materials used for this study were fundamentally the same as those described by Tubaki (1966). The specimens have been deposited in the Herbarium, Dept. Ferment. Technol., Facult. Engineer., Hiroshima Univ.

***Aniptodera chesapeakeensis*** Shearer et Miller, *Mycologia* 69: 894 (1977). (Fig. 1)

Perithecia subglobose to ovoid, rarely elongated pyriform, white to creamish yellow, 100-190  $\mu\text{m}$  in height, 100-170  $\mu\text{m}$  in diam.; neck cylindrical to conical, sometimes covered by a band-like hyphal structure, white to creamish yellow, 100-200  $\times$  30-50  $\mu\text{m}$ . Peridium composed of a few layered cells, 3-5  $\mu\text{m}$  thick at the sides. Asci 75-90  $\times$  20-25  $\mu\text{m}$ . Ascospores 20-27  $\times$  8-10  $\mu\text{m}$ .

Habitat: On balsa wood submerged in Lake Biwa, Otsu, Shiga Pref. from May 3 to July 30, 1976. (Herbarium, HUT 40001).

The sizes of the above-mentioned organisms were smaller than those of the original. According to Shearer and Miller (1977), the cells at or near the apex of the perithecial neck turn brown at maturity. However, the necks of the present specimen were persistently white to creamish yellow, and sometimes provided with many short hyphal-like hairs.

***Debaryella gracilis*** Munk, *Bot. Tidsskr.* 51: 226 (1954). (Fig. 2)

Perithecia immersed or partly immersed, solitary or gregarious, pyriform, hyaline to white, 200-250  $\mu\text{m}$  in height, 110-140  $\mu\text{m}$  in diam. Periphyses present. Peridium hyaline, textura prismatica, 12-18  $\mu\text{m}$  thick at the sides. Asci unitunicate, nearly

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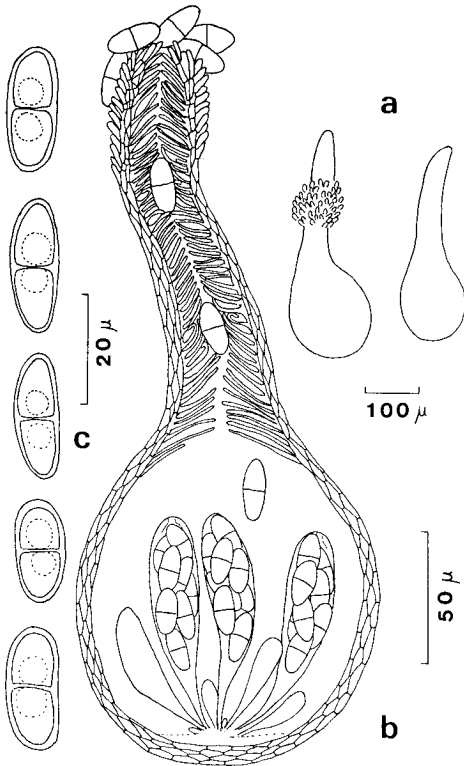


Fig. 1.

Fig. 1. *Aniptodera chesapeakensis*. a, Perithecia. b, Section through a perithecium. c, Ascospores.

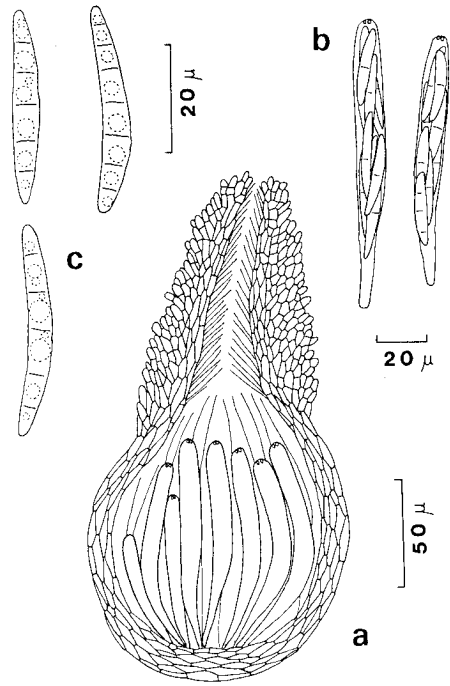


Fig. 2.

Fig. 2. *Debaryella gracilis*. a, Section through a perithecium. b, Asci. c, Ascospores.

cylindrical, 8-spored, with an apical ring,  $105\text{--}113 \times 8\text{--}10 \mu\text{m}$ . Paraphyses present. Ascospores biseriata, rounded-fusiform, slightly curved, hyaline, inconspicuously 5- to 7-septate, not constricted at the septum, smooth-walled,  $30\text{--}35 \times 4\text{--}5 \mu\text{m}$ .

Habitat: On balsa wood submerged in Pond Nanatsu-ike, Higashihiroshima, Hiroshima Pref., from May 13 to Sept. 17, 1976. (Herbarium, HUT 40002).

*D. gracilis* was originally found in old empty perithecia of *Nectria modesta* on very rotten wood in Denmark. As the diagnosis of this genus Munk (1954) proposed the term "hyper-saprophytism" which means the ecological phenomenon that a fungus occurs on or in another dead fungus. This character, however, is not always true because the present one had been not associated with any other fungus. The present fungus had smaller perithecia, thinner peridium, longer asci and somewhat larger ascospores than the Munk's one did.

*Naïs inornata* Kohlmeyer, Nova Hedwigia 4: 409 (1962).

Habitat: On balsa wood submerged in Lake Biwa, Otsu, Shiga Pref., from May 3 to July 30, 1976. (Herbarium, HUT 40003).

*Phomatospora aquatica* Minoura et Muroi sp. nov. (Fig. 3)

Perithecia eorum immersa, cum rostris protrusis, solitaria vel gregaria, atribrunnea vel atriaeriginosa, globosa vel subglobosa, 95–180  $\mu\text{m}$  diam.; rostrum modo papillatum modo conicale, protrusum, nigrum, habens in pariete interno periphyses, 50–90  $\times$  40–50  $\mu\text{m}$ . Murus brunneus, textura prismatica, 8.7–13  $\mu\text{m}$  crasso. Asci cylindrati, unilocati, habens octo sporas et stipitem, habens apparatus apicalem, sine ulla reactione iodinii, 75–113  $\times$  5–7  $\mu\text{m}$ . Sine paraphysibus. Ascospores in unisere, unicellulis, hyalinae, ellipsoideae cum apicibus truncatis, tunicatae fere leves vel tenuiter striatae aliquotofariam in longitudinem, saepe appendentes ad apices ambos suos biguttulas sicut pilleatae, 11–13  $\times$  3.2–4  $\mu\text{m}$  (spores corpus).

Habitat: On balsa wood submerged in Pond Nanatsu-ike, Higashihiroshima, Hiroshima Pref., from May 13 to Sept. 17, 1976. (Herbarium, HUT 40004 Type).

In the ascospore dimensions, *P. aquatica* may be closely related to *P. salvadorina* (Ahmad, 1948), *P. argentina* and *P. angelicae*. But it can be easily distinguished from the other *Phomatospora* species by the presence of ascospore appendages. Few species in this genus have ascospore appendages. Only *P. gelatinospora* (Barr, 1970) produces ascospores with a gelatinous capsule.

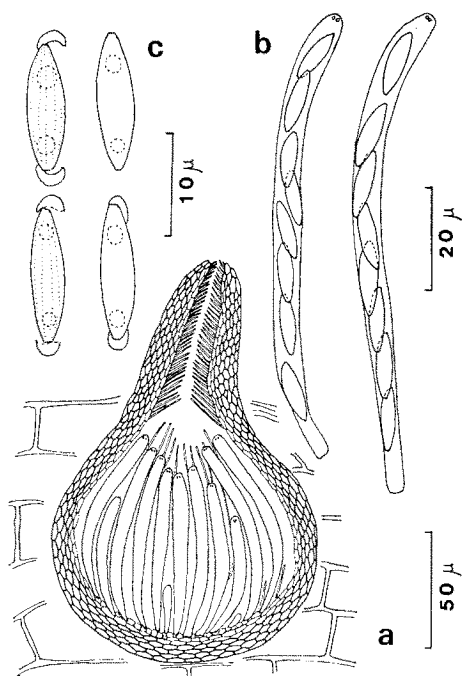


Fig. 3.

Fig. 3. *Phomatospora aquatica*. a, Section through a perithecium. b, Asci. c, Ascospores.

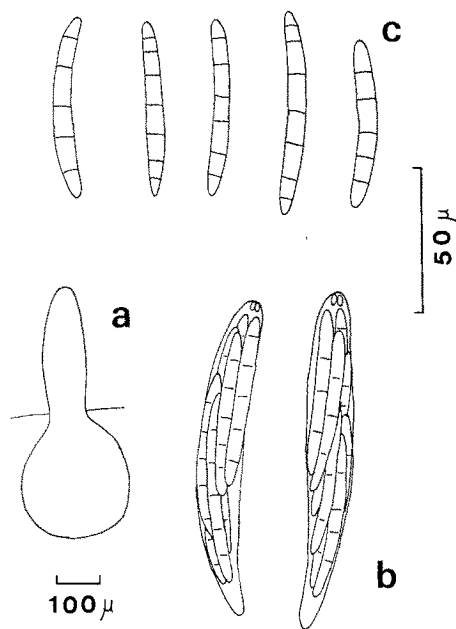


Fig. 4.

Fig. 4. *Pseudohalonectria lignicola*. a, Perithecium. b, Asci. c, Ascospores.

***Pseudohalonectria*** Minoura et Muroi gen. nov.

Perithecia dilucida colorata, cum rostris protrusis; rostrum cylindratum, habens in pariete interno periphyses. Asci cylindrati vel clavati, unitunicati, habens apparatus apicalem, sine ulla reactione iodinii, secundum parietem internum perithecii. Paraphysibus. Ascosporae cylindratae, leves, hyalinae vel tenuiter coloratae.

Type species: *Pseudohalonectria lignicola*.

***Pseudohalonectria lignicola*** Minoura et Muroi sp. nov. (Fig. 4)

Perithecia eorum immersa, cum rostris protrusis, solitaria vel gregaria, lutea, globosa vel depresso globosa, 290–480  $\mu\text{m}$  diam.; rostrum cylindratum prope entasim vel cylindratum medioque protruberatum, luteum, 300–650  $\times$  100–160  $\mu\text{m}$ , habens in pariete interno periphyses. Murus luteus, 30–38  $\mu\text{m}$  crasso. Asci cylindrati prope clavas, habens apparatus apicalem, tenuiter unitunicati, sine ulla reactione iodinii, habens octo sporas et brevem stipitem, secundum parietem internum perithecii, 110–132.5  $\times$  13.8–16  $\mu\text{m}$ . Paraphyses hyalinae, saeptatae, brevifiliformes. Ascosporae cylindratae, rotundae ad apices, leves pariete externo, 55–70  $\times$  4.6–6.5  $\mu\text{m}$ , habens 5–7 saepta, sine ulla constrictione apud saepta; alia hyalinae alia helveolae alia tenuiter brunneae, crassata aurantiae; octo ascosporae conjugatae in parallelae in forma cylindrata.

Habitat: On balsa wood submerged in Lake Biwa, Otsu, Shiga Pref., from May 3 to July 30, 1976. (Herbarium, HUT 40005 Holo Type; Living culture, HUT 4165).

The above description coincides with that of *Ophiobolus* sp. in Tubaki and Ito (1973). However, *Ophiobolus* is a loculoascomycetous genus and produces bitunicate asci, so the present specimen cannot be accommodated in the genus because of its unitunicate asci. Yellowish perithecia and long cylindrical ascospores are very close to those of *Halonectria milfordensis*. *P. lignicola* can be distinguished from *H. milfordensis* in its large septate ascospores, in its asci with a distinct apical ring, and in having paraphyses. Since the above-mentioned characters do not fit the diagnosis of *Halonectria* (Jones, 1965), a new genus *Pseudohalonectria* is proposed.

This species was pure-cultured by the method of single ascospore isolation, and many fruiting bodies have been produced on the YpSs agar slant with a stick of rotten balsa wood after one to three months incubation at 22 C or at room temperature.

***Savoryella verrucosa*** Minoura et Muroi sp. nov. (Fig. 5)

Perithecia immersa partim vel totum, cum rostris protrusis, solitaria vel gregaria, subglobosa vel ovata, inferne atribrunnea et superne dilute brunnea, glabera, 170–320  $\mu\text{m}$  alta et 160–300  $\mu\text{m}$  lata; rostrum cylindratum, glabrum, hyalinum vel dilute brunneum, 110–240  $\times$  50–65  $\mu\text{m}$ , habens in pariete interno periphyses. Murus brunneus, membranaceus. Asci cylindrati vel similis clavarum, unitunicati, habens octo sporas et stipitem, 187–215  $\times$  23–35  $\mu\text{m}$ . Sine paraphysibus. Ascosporae in serie una vel dua, ellipsoidae, habens trisaepta, ad saeptum insigniter constrictis, ex quatuor cellularum mediae duae brunneae et verrucosae, externae duae subhyalinae vel helveolae et leves,

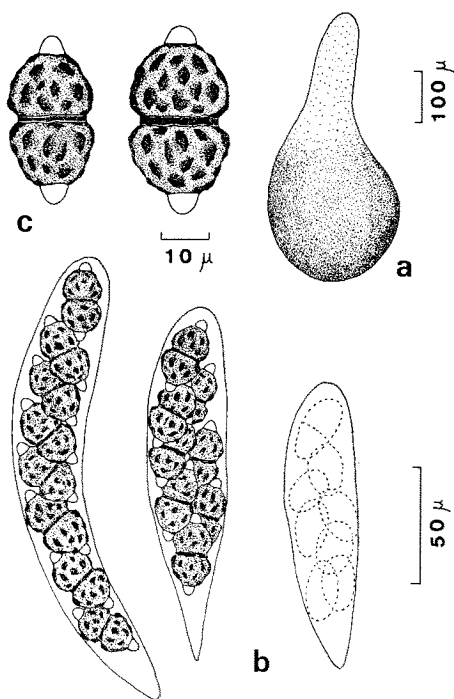


Fig. 5. *Savoryella verrucosa*. a, Perithecium. b, Asci. c, Ascospores.

29–38 × 13–18 μm.

Habitat: On balsa wood submerged in Pond Shizu-numa, Nishinasuno, Nasu-gun, Tochigi Pref., from Aug. 14, 1975 to Jan. 4, 1976. (Herbarium, HUT 40006 Holotype).

*S. verrucosa* can be separated from *S. lignicola* on the basis of its ascospores with tuberculous ornamentation. Moreover, ascospores of the former are strongly constricted at the septum, while those of the latter are not or faintly constricted at the septum.

We would like to thank Dr. K. Nagasaka for preparing the Latin diagnoses.

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#### 要 約

殺菌バルサ材を淡水湖沼中に沈め生育する菌を調べた結果以下の子う菌類を得た。

1. *Aniptodera chesapeakeensis* は最近新設された1属1種の菌であるが日本産の株では有性世代の諸器官は

アメリカ産のそれに対して比較的小型であった。また成熟するにつれ子のう果首部が暗色になるという特徴は観察されず、代りに首部には短い菌糸から成る首飾り様の構造がしばしば観察された。

2. *Debaryella gracilis* は最初デンマークで腐敗の著しい木材上に発見されたが、本株は広島の間部の沼より分離された。

3. *Naïs inornata* は海水菌として知られており、汽水よりしばしば分離報告がある。

4. *Phomatospora aquatica* sp. nov. は子のう胞子両端にゼラチン様付属器を有する点よりこの属の他種から容易に区別できる。

5. *Pseudohalonectria lignicola* gen. et sp. nov. は海水菌の *Halonectria milfordensis* に近似するが、子のう先端に明瞭な環状構造を有し、隔壁のある子のう胞子を形成する点で明らかに区別できる。

6. *Savoryella verrucosa* sp. nov. はその子のう胞子表面が著しくあばた状であるのが特徴である。この属の別種 *S. lignicola* は日本の汽水中に広く分布するのが知られている。

(Accepted for publication 3 April 1978)