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Short Communication

Microstoma macrosporum stat. nov., a new taxonomic treatment of a vernal discomycete (Sarcoscyphaceae, Pezizales)

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The cup fungus originally described as *Microstoma floccosum* var. *macrosporum* is recognized as an independent species and named *M. macrosporum*, with a full Latin description of the species. It mainly differs from *M. floccosum* in fruiting season, dimensions of asci and ascospores, and hair morphology. At present, *M. macrosporum* has been reported from Japan and China.

Key Words——*Microstoma floccosum*; new rank; Sarcoscyphaceae; taxonomy.

In early spring of 1975, one of us (Y. H.) collected a discomycete on branches in the mountains near Lake Juniko, Aomori Pref., which was then sent to Dr. Yoshio Otani for identification. Based on the material, Otani (1980) described the fungus as a new variety of *Microstoma floccosum* (Schwein.) Raitv. with a brief description: "A typo differt ascosporis magnis 40–65 × 16–20 μm." *Microstoma* Bernstein (1852) is a small genus in the Sarcoscyphaceae, with only three known species, i.e. *M. protoractum* (Fr.) Kanouse, *M. floccosum* and *M. aggregatum* Y. Otani (Eckblad, 1968; Kanouse, 1948; Korf, 1973; Otani, 1980, 1990).

In recent years, we have collected several additional specimens of the fungus in Aomori and Akita Prefectures and examined a collection of *M. floccosum* var. *floccosum* from Tottori Prefecture. We found that *M. floccosum* var. *macrosporum* occurs in late autumn or early spring, whereas var. *floccosum* occurs in summer (Bessette et al., 1997; Kanouse, 1948). Observations of fresh materials of the two varieties and examination of the type specimen of *M. floccosum* var. *macrosporum* revealed more clear differences besides spore size, which warranted distinction of these fungi at the species level. In the present paper, we propose the raising of *M. floccosum* var. *macrosporum* to the species level and give a full Latin description.

Microstoma macrosporum (Y. Otani) Y. Harada et S. Kudo, stat. nov. Figs. 1–6.
Basionym: *Microstoma floccosum* (Schwein.) Raitv. var. *macrosporum* Y. Otani, Trans. Mycol. Soc. Japan **21**: 158, 1980. (as '*floccosa* var. *macrospora*')

Apothecia ex caudice emortuo ad terram prostrato enata, hiemalia vel vernalia, solitaria, scutelliformia, stipitata. Stipites cylindrici, 1–5 cm longi et 1–2 mm in diametro, capillati. Cuplae carnosae, aurantio-cinnabarinae, 5–10 mm in diametoro et 5–10 mm profundae, extrinsecus capillatae, margine recurvato et fissurato in lobos ad maturitatem. Capilli asiculares, septati, pachydermatici, e formis duabus quarum primariae 450–550 × 20–28 μm et alterius alium 30–100 × 5–7 μm. Hymenium 520–580 μm crassum; subhymenium 30 μm crassum. Excipulum ectale 26–32 μm crassum, bistratosum; stratum externum "textura angularis", ex cellulis 8–20 μm latis compositum; stratum internum "textura intricata", 10–15 μm crassum, ex hyphis 3–4 μm in diametro compositum. Excipulum medullare 150–200 μm crassum, "textura porrecta" ex cellulis 4–7 μm lata compositum. Asci cylindro-clavati, apice rotundati, inamyloidei, 500–560 × 23–26 μm, octospori. Paraphyses filiformes, septatae, 2–3 μm in diametro, ramosae et anastomosantes inter se, quam asci paulo longiores, in cellulis pigmento rubro completae. Ascosporae uniseriatae, ellipsoideae vel fusiformes, continuae, crassitunicatae, hyalinae, glabrae, 42–60 × 16–21 μm, multi-guttulatae, tunica hyalina gelatina circumdantes.

Apothecia arising from dead stem on the ground in early winter through early spring, solitary, scutelliform, stipitate. Stipe cylindric, 1–5 cm long and 1–2 mm in diam, hairy. Disc fleshy, orange red, 5–10 mm in diam and 5–10 mm deep, externally hairy, margin recurved and split into lobes at maturity. Hairs asicular, septate, thick-walled, of two types, one 450–550 × 20–28 μm, the other 30–100 × 5–7 μm. Hymenium 520–580 μm thick, subhymenium 30 μm thick. Ectal excipulum 26–32 μm thick, two-layered, ectal layer of textura angularis, cells 8–20 μm wide, ental layer of textura intricata, 10–15 μm thick, hyphae 3–4 μm in diam. Medullary

Fig. 1. *Microstoma macrosporum*. Apothecia in the habitat. Takisawa, Aomori-shi, Aomori Pref., 3 May 1992.

excipulum 150–200 μm thick, of textura porrecta, cells 4–7 μm wide. Asci cylindric clavate, with rounded apex, non-amyloid, 500–560 × 23–26 μm, 8-spored. Paraphyses filiform, septate, 2–3 μm in diam, branching and anastomosing, slightly longer than the asci, with red pigment in the cell. Ascospores uniseriate, ellipsoid or fusiform, continuous, thick-walled, hyaline, smooth, 42–60 × 16–21 μm, multi-guttulate, covered with a hyaline, gelatinous sheath.

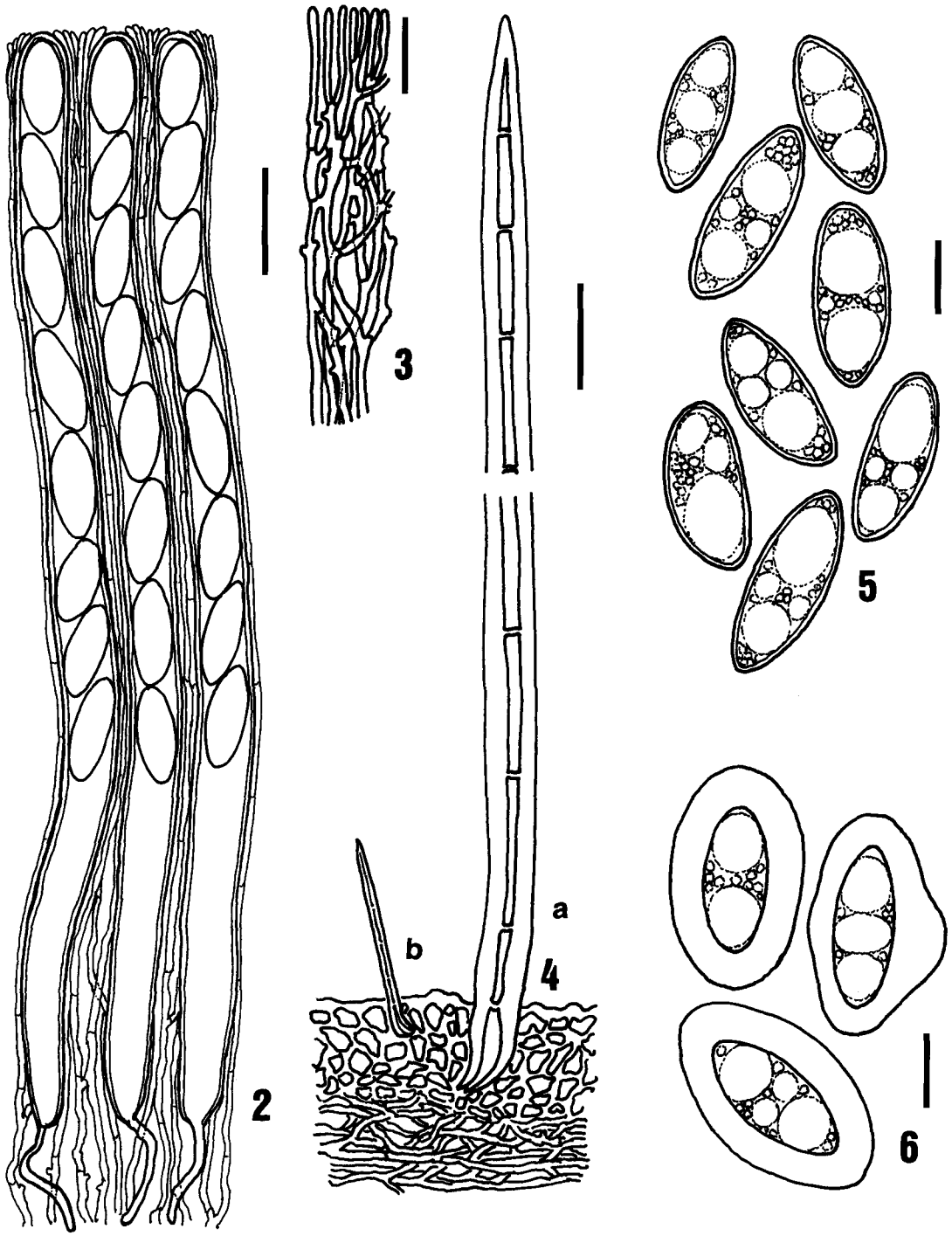
Hab.: ad ramos emortuos *Araliae elatae* (Miq.) Seem., mensis Aprilis 13, 1975, in provincia Aomori, Japonia, leg. Yuikio Harada (TNS-F-50255, holotypus), deposited in the Herbarium of National Science Museum, Tsukuba.

Other specimens examined: Takisawa, Aomori-shi, 3 v 1992, by S. Kudo (no. 25597); Moura, Hiranai-machi, Higashitsugaru-gun, Aomori Pref., 6 iv 1997, by S. Ito & S. Kudo (no. 25085); the same location, 29 xi 1997, by S. Kudo & Y. Harada (no. 25598); Subari, Fujisato-machi, Yamamoto-gun, Akita Pref., 4 v 1998, by S. Kudo & K. Kudo (no. 25601). All were found on dead branches of forest trees and are kept in the Herbarium of the Faculty of Agriculture and Life Science, Hirosaki University.

Microstoma floccosum and *M. macrosporum* are somewhat similar in gross morphology, both having funnel-shaped, relatively large apothecia with scarlet hymenia and whitish hairs on the exterior. However, the margin of the cup of *M. floccosum* is entire (Bissette et al., 1997; Kanouse, 1948), while that of *M. macrosporum* is split into lobes at maturity (Fig. 1).

Microscopically, *M. macrosporum* has larger asci

(500–560 × 23–26 μm) and ascospores (42–60 × 16–21 μm) (Figs. 2, 5) than *M. floccosum* whose asci and ascospores measure 300–350 × 18–20 μm and 20–30 × 14–16 μm, respectively (Kanouse, 1948). A Japanese specimen of *M. floccosum* (TMI 17770) gave the measurements of 200–220 × 15–16 μm for asci and 19–27 × 9.5–11 μm for ascospores. These two fungi also differ in shape and size of the hairs on the exterior of apothecia. *Microstoma macrosporum* bore hairs of two different sizes, larger (450–550 × 20–28 μm) and smaller (30–100 × 5–7 μm) ones (Fig. 4), both of which dissolved in 2.5% aqueous KOH solution in several hours. On the contrary, *M. floccosum* bore only larger hairs (300–650 × 12–15 μm), which were clearly more slender than the larger



Figs. 2–6. *Microstoma macrosporum*. 2. Asci with ascospores. 3. Upper part of paraphyses. 4. Larger (a) and smaller (b) hairs on the exterior of apothecia. 5. Swelling of the epispore. Scale: 50 μm for 2, 3 and 4; 20 μm for 5 and 6.

hairs of *M. macrosporum*. In KOH solution, ascospores of *M. macrosporum* showed marked swelling of the epispore (Fig. 6), while those of *M. floccosum* (Japanease materials) did not.

In Aomori, *Microstoma macrosporum* occurs mostly in early spring. However, apothecia at near maturity are often seen in late autumn (November to December), and these overwinter under snow and mature in early April when snow melts. Suspected hosts include broad-leaved trees like *Alaria elata* Seem., *Zelkova serrata* Thunb. and *Cornus controversa* Hemsley, and rarely evergreen hiba arbor-vitae *Thujopsis dolabtara* (L. f.) Sieb. & Zucc. var. *hondai* Makino.

This is fourth spcies of *Microstoma* reported in Japan (Otani, 1980, 1990). Recently, the present fungus was reported from China (Heilongjiang), under the name of *M. 'floccosa* var. *macrospora'* (Zhuang and Wang, 1997).

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