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Notes on new and noteworthy plant-inhabiting fungi from Japan (1)

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Six fungi isolated from plant materials in Japan are described. The first is *Pseudohalonectria aomoriensis* sp. nov. (Lasiosphaeriaceae). It differs from other known species of the genus *Pseudohalonectria* in the dimensions of its asci and ascospores. The second, *Monodictys abuensis*, is newly added to the mycoflora of Japan. Its host, *Zelkova serrata*, is also newly recorded. Three others found on new host plants are *Dictyochaeta simplex* on *Quercus myrsinaefolia* and *Bladhia crispa*, *Colletotrichum dematium* on *Aucuba japonica* var. *borealis*, and *Nectria mammoidea* var. *rubi* on *Cercidiphyllum japonicum*. The sixth, *Trochophora fasciculata*, a *Daphniphyllum* sooty leaf spot fungus renamed by Goos from *T. simplex*, is reported with a full list of synonyms.

Key Words——*Colletotrichum dematium*; *Dictyochaeta simplex*; *Monodictys abuensis*; *Nectria mammoidea* var. *rubi*; *Pseudohalonectria aomoriensis*; taxonomy; *Trochophora fasciculata*.

Exploratory research of secondary metabolites has long been dependent on soil fungi. Recently, many kinds of sources other than soil are being used for fungal screening (Bergstrom et al., 1995). Attention is also being paid to plant-inhabiting fungi as a complementary source to soil fungi. Plant-inhabiting fungi have been thoroughly investigated in terms of their biology and pathology, but not for their use in the exploratory search of secondary metabolites. Therefore, we started to collect plant-inhabiting fungi.

Plant-inhabiting fungi are categorized as plant pathogenic fungi, endophytes and saprophytes. Pneumocandins, taxol, and zaragonic acids, which are known to be useful bioactive compounds, are isolated from plant pathogenic fungi and endophytes (Hosoya et al., 1997; Schwartz et al., 1992; Strobel et al., 1996). As a result, it was shown that plant-inhabiting fungi are useful biological resources in the exploratory search for secondary metabolites. In our study, plant pathogenic fungi and endophytes were mainly collected.

Presently, more than 10,000 species of fungi are reported to be associated with various diseases in plants (Agrios, 1997). Although more than 4,000 plant pathogenic fungi in Japan are listed in "Common names of plant diseases in Japan" (Anonymous, 2000), more fungi have yet to be reported. In our search for producers of useful bioactive compounds, we sometimes encountered new or noteworthy plant-inhabiting fungi. This paper describes six such species.

Material and Methods

Plant materials with apparent symptoms were collected from Aomori, Ibaraki, Shizuoka and Shimane. Whenever sporulation was observed on the specimens, spores were isolated immediately. When no sporulation was observed on the specimens, specimens were incubated in moist chambers at 15°C to induce sporulation. Single-spore isolates were obtained using a Skerman's micromanipulator (Skerman, 1968). Single spore isolates were kept on potato dextrose agar (PDA; Nissui, Tokyo) slants as a stock culture.

Both dried and fresh specimens were examined for morphology. For *Nectria mammoidea* var. *rubi* and *Pseudohalonectria aomoriensis*, colony characteristics and sporulation were observed at 23°C on PDA and Miura's agar (1 g glucose, 1 g KH_2PO_4, 0.2 g $MgSO_4 \cdot 7H_2O$, 0.2 g KCl, 2 g $NaNO_3$, 0.2 g yeast extract, 13 g agar and 1,000 ml distilled water, the pH adjusted to 6.5 before sterilization) at 14 and 30 d after transfer of a stock culture onto a new media, respectively.

The specimens were sliced at 5–30 μm with a freeze microtome (Komatsu Electronics, Tokyo) equipped with an electrofreezer (Komatsu Electronics, Tokyo).

Slides were prepared with Melzer's reagent (MLZ; 0.5 g iodine, 1.5 g KI, 20 g chloral hydrate and 20 ml distilled water), Shear's reagent (SH; 10 g sodium acetate, 200 ml glycerol, 300 ml ethanol and 1000 ml distilled water), cotton blue dissolved in lactophenol (CB; 0.5 g of cotton blue and 99.5 ml of lactophenol), 3% KOH or 100% lactic acid for observation, photomicrography and

measurement.

An Olympus BH2 microscope equipped with a Nomarski interference contrast device was used for observation. Drawings were made with the aid of an Olympus BH2-DA drawing tube, where 10 μm = 2.3 cm. Color indications followed Kornerup and Wanscher (1978).

Taxonomy

1. *Pseudohalonectria aomoriensis* Yas. Ono et Tak. Kobayashi, sp. nov. Figs. 1, 2

Ascomata in ligno crescentia, solitaria vel gregaria, immersa, partim immersa, vel superficialia, nigra, rostrata, globosa, vel depresso-globosa, 500–1000 μm diam, peridio membranaceo 64–111 μm crasso. Rostra longa, cylindrica, periphysata, pariete ex hyphis parallelis composito, 900–1400 × 160–180 μm. Asci unituncati, cylindracei, recti vel sigmoidei, apparatu apicali annuliformi praediti, octospori, hyalini, inamyloidei, 112–145 × 8–11 μm. Paraphyses hyalinae, septatae, ad apicem attenuatae. Ascosporae hyalinae, cyindricae, rectae vel sigmoideae, apice utrinque rotundatae, laeves, 49–57 × 3–4.5 μm, 5–7-septatae, non constrictae ad septa. Connidiophora macronematosa, mononematosa, recta vel leviter flexuosa, simplicia, laevia, hyalina. Cellulae conidiogenae phialidicae. Phialides cylindricae, ad apicem attenuatae, 9–22.5 × 2–3 μm, collarulo 1–2 μm lato formantes. Conidia allantoidea, aseptata, hyalina, 10–11 × 0.5–1.0 μm.

Holotypus: On unidentified fallen and rotten wood beside Oirase River, Towadako-machi, Aomori Pref. May 24, 1999, Yasunori Ono (YO), P-78, TNS-F-2349 (culture SANK 24499).

Etymology: Latinized from place-name, referring to the type locality.

Ascomata on wood, solitary to aggregated, immersed, partially immersed or superficial, black, rostrate; venter globose to flattened-globose, 500–1000 μm in diam; peridium membranaceous, 64–111 μm thick; outer layer covering with peridium, composed of host matrix and fungal tissues, yellow to yellowish brown, 32–75 μm thick; inner layer plectenchymatous, greenish brown, 30–40 μm thick. Beaks long, cylindrical, periphysate, composed of parallel hyphae, dark yellow to pale yellow, 900–1400 μm long, 160–180 μm diam. Asci unitunicate, cylindrical, straight or slightly sigmoidal, with thimble-shaped apical apparatus stained bright blue in CB, not stained in IKI, containing eight ascospores in two overlapping rows, 112–145 × 8–11 μm. Paraphyses filiform, wide at the base, tapering to the tip, thin-walled, 3- to 5-septate, 97–187 × 4–6.5 μm at base. Ascospores cylindrical, sometimes slightly curved, with bluntly rounded apices, smooth, 5- to 7-septate, not constricted at the septa, hyaline, 49–57 × 3–4.5 μm.

Colonies on PDA (30 d, 23°C) 33 mm diam, velvety, centrally raised, Dark Grey (4F1) to White (4A1); center Greyish Magenta (13E4); margins thin, laciniate; soluble pigment Olive Brown (4E7); reverse Dark Brown (8F4) to Dark Grey (8F1); conidiogenesis not observed. Colonies on Miura's agar (30 d, 23°C) 34 mm diam, floccose, funiculose, centrally raised with abundant sporulation, Greyish Yellow (4C3) to White (4A1); margins thin, entire; soluble pigment Light Yellow (4A4); reverse Dark Brown (8F4), White (1A1) at the margins. Conidiophores macronematous, mononematous, straight or slightly flexuous, unbranched, smooth, hyaline. Phialides flask shaped, hyaline, 9–22.5 × 2–3 μm, collarette 1–2 μm wide. Conidia allantoid, aseptate, hyaline, 10–11 × 0.5–1.0 μm.

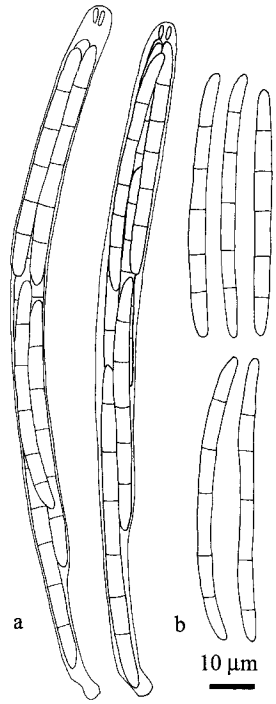

Fig. 1. *Pseudohalonectria aomoriensis*. (TNS-F-2349) a, Asci and ascospores; b, Ascospores.

Specimen examined: On unidentified fallen and rotten wood beside Oirase River, Towadako-machi, Aomori Pref. May 24, 1999, YO, P-78, TNS-F-2349 (culture SANK 24499).

Note: Morphological characteristics of the present fungus accord well with the description of the genus *Pseudohalonectria* Minoura et T. Muroi (Minoura and Muroi, 1978), which belongs to the Lasiosphaeriaceae (Chen et al., 1995; Shearer, 1989). However, the dimensions of its asci and ascospores are clearly different from those of the eight hitherto known species of *Pseudohalonectria* described by Hyde et al. (1999), Minoura and Muroi (1978) and Shearer (1989) from Australia, Chile, Japan, Panama and USA (Table 1).

The present fungus has ascospores similar in size and number of septa to those of *P. lignicola* Minoura et T. Muroi (Minoura and Muroi, 1978). However, the length/width ratio of asci and ascospores of *P. aomoriensis* is larger than that of *P. lignicola*. Furthermore, *P. aomoriensis* has the largest perithecium among the hitherto known species of *Pseudohalonectria*.

The present fungus formed an anamorph in culture.

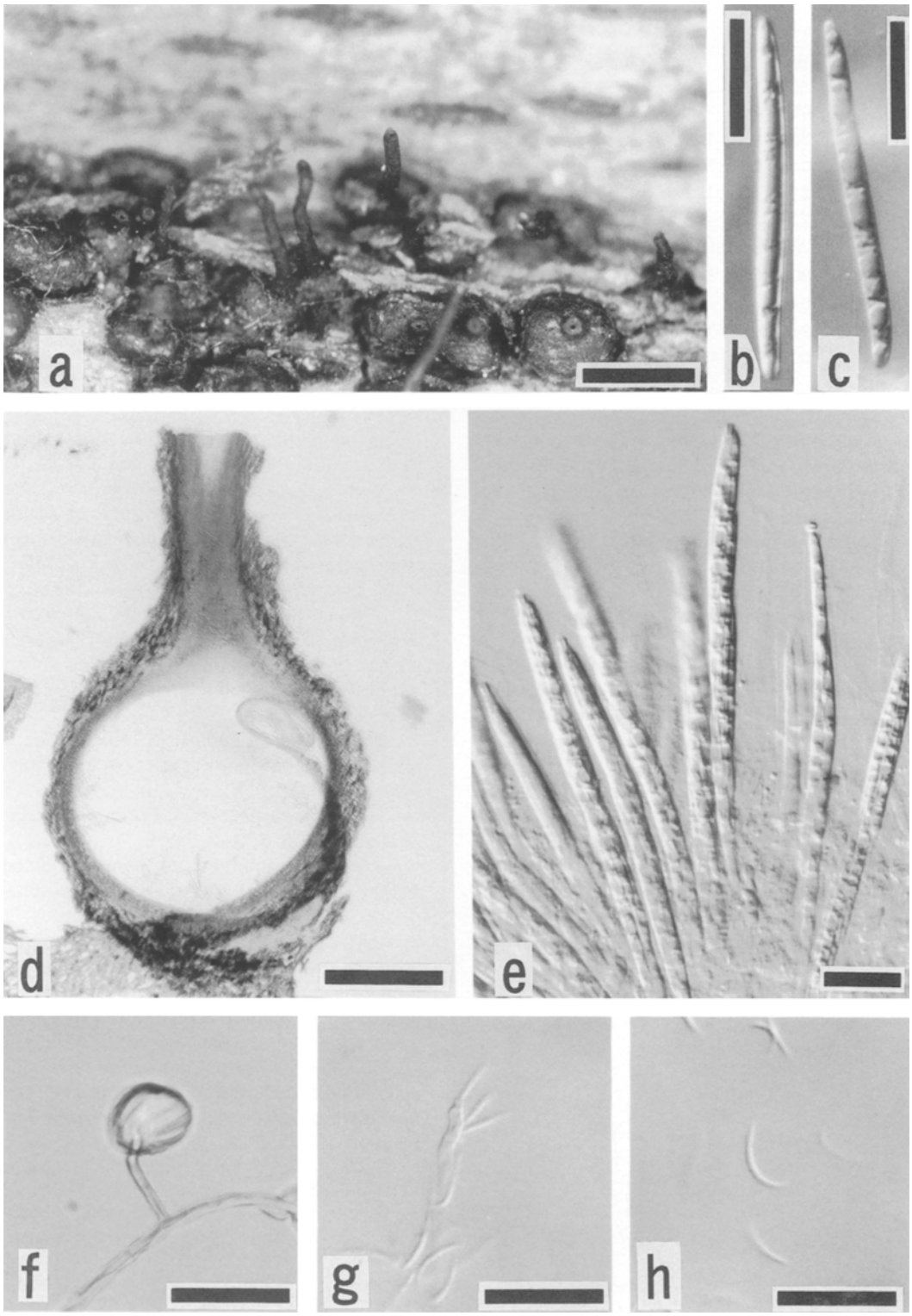

Fig. 2. *Pseudohalonectria aomoriensis*. (a–e, TNS-F-2349; f–h, SANK 24499) a, Ascomata on wood; b, c, Ascospores; d, Vertical section of an ascoma; e, Asci with ascospores; f, g, Conidiophore and conidia; h, Conidia. Scale bars: a=10 mm; b, c, f, g, h=20 μm; d=200 μm; e=25 μm.

A similar phialidic anamorph has been described in *P. phialidica* Shearer (Shearer, 1989). All species of this genus produced fruiting bodies on submerged wood in fresh water.

Table 1. Dimensions of hitherto known species of *Pseudohalonectria* and the present fungus.

Species	Perithecia	Beaks	Asci		Ascospores			
	diam (μm)	length × diam (μm)	length × width (μm)	L/W	length × width (μm)	average (μm)	L/W	septa
P. adversaria[a]	445–614	79–248 × 109–158	120–150 × 13–20	8.2	34–49 × 4.5–7.0	41.9 × 5.9	7.1	6–7
P. eubenangeensis[b]	286–458	135–175 × 90–125	80–120 × 8–11.5	10.3	70–98 × 2.5–3.5		28.0	3–5
P. lignicola[c]	290–480	300–650 × 100–160	110–133 × 13.8–16	7.8	55–70 × 4.6–6.5		11.3	5–7
P. lignicola[a]	227–524	170–621 × 65–221	90–132 × 11–17.6	7.8	38–75 × 3.6–6.6	62.6 × 5.1	12.3	5–11
P. falcata[a]	277–535	81–162 × 81–108	106–244 × 14.4–21.6	9.7	97–166 × 4.2–7.2	135 × 5.8	23.3	6–16
P. longirostrum[a]	178–396	1683–3712 × 118–168	94–120 × 8.4–12	10.5	84–106 × 3.0–4.0	91.3 × 3.6	25.4	4–8
P. lutea[a]	290–540	300–600 × 160–200	122–192 × 14.4–18	9.7	48–68 × 4.8–8.4	56.5 × 6.7	8.4	5
P. palmicola[b]	264–332	(–1600) × 132–152	120–156 × 13–15	9.9	74–83 × 4–4.5		18.5	3–6
P. phialidica[a]	129–426	614–1946 × 89–129	82–99 × 5–7.9	14.0	65–79 × 2.0	72.4 × 2.0	36.2	0–4
The present fungus[d]	500–1000	900–1400 × 160–180	112–145 × 8–11	13.8	49–57 × 3.0–4.5	52.1 × 3.6	14.5	5–7

[a] Shearer (1989); [b] Hyde et al. (1999); [c] Minoura and Muroi (1978); [d] The present study.

2. *Monodictys abuensis* (Chouhan et K. S. Panwar) Vasant Rao et de Hoog, Stud. Mycol. **28**: 26. 1986.

≡*Berkleasmium abuense* Chouhan et K. S. Panwar, Indian Phytopathol. **33**: 287. 1980. Fig. 3

Colonies on bark surface punctiform, black, composed of densely aggregated conidia which are blackish and glistening. Hyphae subhyaline to pale olivaceous brown, 2.5–5 μm wide, with mostly verrucose walls of variable thickness and thin septa. Conidia globose to subglobose, muriform, slightly constricted at septa, arising terminally from undifferentiated hyphae or short lateral branches, moderately thick-walled, smooth-walled, dull olivaceous brown, 22–43 μm in diam.

Specimen examined: On bark of *Zelkova serrata* (Thunb.) Makino (Keyaki) kept under moist condition, Tagû, Ushiku-shi, Ibaraki Pref. May 9, 1999, Takao Kobayashi (TK), P-51 (culture SANK 23599).

Note: Morphological characteristics of the present fungus agreed well with the description of *M. abuensis* (Rao and de Hoog, 1986). Among the species of *Monodictys* S. Hughes, *M. abuensis*, *M. castaneae* (Wallr.) S. Hughes (Ellis, 1971), *M. cruciseptata* Schokn. et J. L. Crane (Schoknecht and Crane, 1983) and *M. putredinis* (Wallr.) S. Hughes (Ellis, 1971) have subglobular conidia. Conidial dimensions of *M. castanaea*, *M. cruciseptata* and *M. putredinis* were respectively smaller than those of *M. abuensis* (Table 2). Moreover, conidia of *M. cruciseptata* are crusiately septated.

This is the first record of *M. abuensis* in Japan, and *Z. serrata* is its first recognized host. *Monodictys abuensis* has been recorded as being found on rotten bark and wood from India (Rao and de Hoog, 1986).

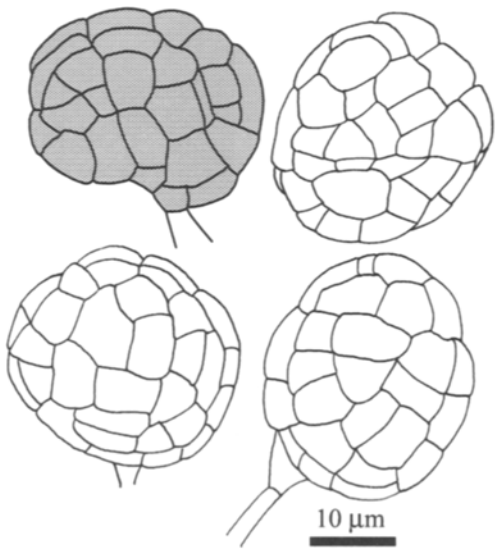

Fig. 3. *Monodictys abuensis*. Conidia.

3. *Dictyochaeta simplex* (S. Hughes et W. B. Kendr.) Hol.-Jech., Folia geobotanica et phytotaxonomica **19**: 434. 1984.

≡*Codinaea simplex* S. Hughes et W. B. Kendr., New Zealand J. Bot. **6**: 362. 1968. Fig. 4

Mycelia immersed or semi-immersed, branched, septate, subhyaline to brown. Setae absent. Conidiophores macronematous, mononematous, simple, erect, straight, cylindrical, smooth, 1- to 3-septate, arising singly or mostly in groups from the swollen base, variously bent or irregularly geniculate, pale brown to brown and thick-walled towards the base, subhyaline to pale brown and thin-walled towards the apex, 30–90(–150) μm long, and 2.5–3 μm wide just above the base. Conidiogenous cells polyphialidic, integrated, terminal, cylindrical, with conspicuous collarettes. Collarettes funnel-shaped, developing sympodially with 1–2 successive proliferations,

Table 2. Spore dimensions of species of *Monodictys* with globose conidia.

species	conidia (μm)
M. abuensis[a]	25–45
M. castaneae[b]	14–40 × 10–25
M. cruciseptata[c]	18–23 × 19–23
M. putredinis[b]	20–30 × 17–30
the present fungus[d]	22–43

[a] Rao and de Hoog (1986); [b] Ellis (1971); [c] Schoknecht and Crane (1983); [d] The present study.

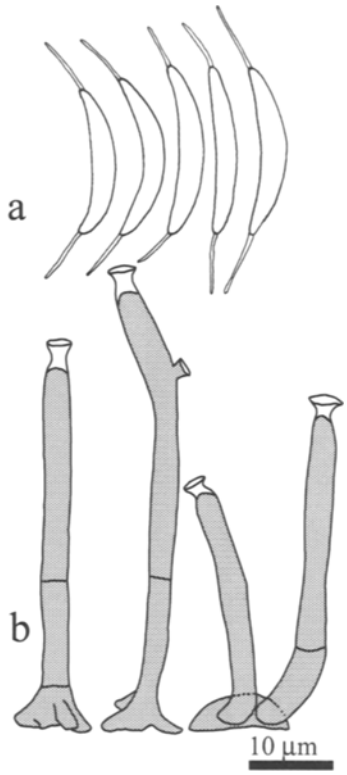

Fig. 4. *Dictyochaeta simplex*. a, Conidia; b, Conidiophores.

subhyaline to pale brown, 2–4 µm wide, 1–3 µm deep. Conidia formed in slimy colorless masses, aseptate, fusiform to cylindrical, curved, bluntly pointed at both ends, hyaline, 16–19 × 2–3 µm, with polar appendages, 4–8 µm long.

Specimen examined: On leaves of *Quercus myrsinaefolia* Blume (Shirakashi) kept under moist conditions, Inaoka, Tsukuba-shi, Ibaraki Pref. April 20, 1999, YO, P-244 (culture SANK 23899) and *Bladhia crispa* Thunb. (Yabukôji) Ito-shi, Shizuoka Pref. Sep. 28, 1999, YO and TK, P-244 (culture SANK 30399).

Note: The morphological characteristics of the present fungus agreed well with the descriptions of *D. simplex* (≡*C. simplex*) reported by Holubová-Jechová (1984), Hughes and Kendrick (1968), Kuthubutheen and Nawawi (1991a, 1991b), Matsushima (1971, 1975, 1980) and Sutton and Hodges (1975). Among them, Matsushima (1975) recorded *D. simplex* from Japan, on *Quercus* sp. in Nara Pref. and *Podocarpus macrophyllus* (Thunb.) D. Don in Chiba Pref.

Dictyochaeta simplex has been recorded on *Bischofia javanica* Blume, *Castanopsis* sp., *Diospyros discolor* Willd., *Eucalyptus globulus* Labill., *Eucalyptus* sp., *Fagus sylvatica* L., *P. macrophyllus*, *Q. petraea* (Mattuschka) Liebl., *Q. robur* L., *Quercus* sp., *Rubus* sp. and *Weinmannia racemosa* L. f. from Brazil, the Czech Republic, India, Japan, Malaysia, New Zealand, Papua-New Guinea, Slovakia and Taiwan (Dorai and Vittal, 1987; Holubová-Jechová, 1984; Hughes and Kendrick, 1968; Kuthubutheen and Nawawi, 1991b; Matsushima, 1971, 1975, 1980; Sankaran et al., 1995; Sutton and Hodges, 1975).

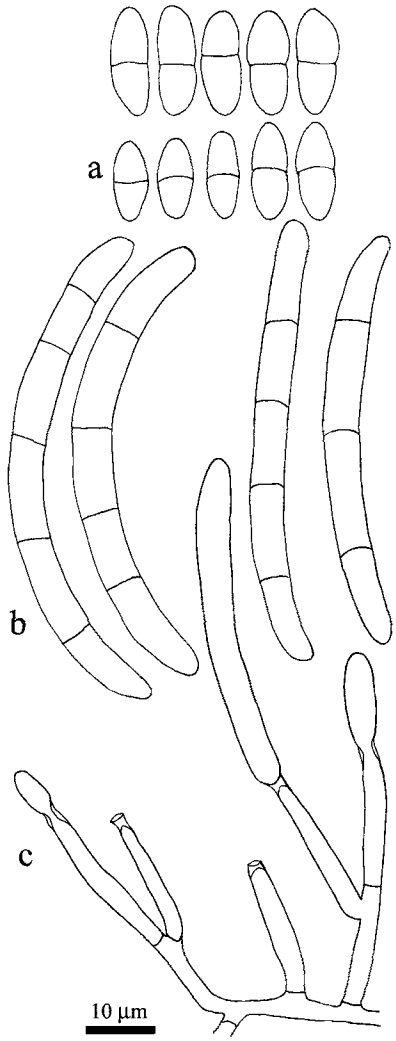

Fig. 5. *Nectria mammoidea* var. *rubi*. a, Ascospores; b, Conidia; c, Conidiophores.

Quercus myrsinaefolia and *B. crispa* are identified as new host plants.

4. *Colletotrichum dematium* (Pers.: Fr.) Grove, J. Bot., Lond. **56**: 341. 1918.

≡*Sphaeria dematium* Pers., Syn. meth. Fung. 88. 1801.

Specimen examined: On leaves of *Aucuba japonica* Thunb. var. *borealis* Miyabe et Kudo (Hime-aoki) kept under moist conditions, Nishimeya-machi, Aomori Pref. May 24, 1999, YO, P-60 (culture SANK 25099).

Note: *Colletotrichum dematium* has an important role in the regeneration of Japanese beech (*Fagus crenata* Blume) forests (Kobayashi et al., 1984; Sahashi et al., 1995). *Aucuba japonica* var. *borealis* grows in beech forests and is a newly recorded host for *C. dematium*. This fungus causes anthracnose of mulberry (*Morus* spp.) throughout Japan (Yoshida et al., 1995). *Passiflora edulis* Sims was recorded as a host plant of *C. dematium* and is found in Ogasawara-Chichijima Is. (Sato

Table 3. Dimensions of hitherto known species of *Nectria* and the present fungus.

Species	Perithecia	Asci	Ascospores	Phialides	Conidia		Chlamydospores
	diam (μm)	length × width (μm)	length × width (μm)	length × width (μm)	length × width (μm)	septa	
N. mammoidea var. *mammoidea*[a]	400–700	90–130 × 8–10	16–17 × 6.5–7	15–24 × 3–6	54–72 × 6–7	3–7	–
N. mammoidea var. *minor*[b]	–	–	11.5–13 × 4.6–5.9	–	31–45 × 4–6	3–5	–
N. mammoidea var. *rubi*[a]	350–500	90–110 × 7–9	12–14 × 5–6.5	15–16 × 3–4	50–65 × 6–8	3–5	–
N. mammoidea var. *rugulosa*[a]	550–700	100–135 × 11–13	18–21 × 6–7	9–12 × 6–7.5	40–55 × 6–7	4	18–20
The present fungus[c]	220–460	–	11–15 × 4–6	18.5–25 × 2–3.5	53–68 × 5–6	3–5	–

[a] Booth (1959); [b] Booth (1966); [c] The present study.

et al., 1991).

5. *Nectria mammoidea* W. Phillips et Plowr. var. ***rubi*** (Osterw.) Weese, Zeitsch. Garungsphysiol. **1**: 129, 1912.

≡*Nectria rubi* Osterw., Ber. dt. Bot. Ges. **29**: 611–622. 1911.

Anamorph: *Cylindrocarpon ianthothele* Wollenw., Ann. mycol. Berl. **15**: 56. 1917. Fig. 5

Ascomata solitary to aggregated, superficial, subglobose to broadly obpyriform, orange, not changing color in 3% KOH and 100% lactic acid, 220–460 μm in diam; papilla smooth, dark red. Perithecial walls 40–55 μm thick, composed of two layers of cells; outer layer textura angularis cells, dark orange; inner layer thin, textura porrecta composed of elongated hyphal cells, hyaline. Asci not observed due to the overmaturation. Ascospores ellipsoid to broadly fusiform, slightly constricted at the single central septum, smooth or rough, hyaline, 11–15 × 4–6 μm.

Colonies on PDA (14 d, 23°C) 22 mm diam, centrally raised, floccose to funiculose, consisting of a basal felt with abundant sporulation, Greyish Violet (17E7) to Dark Violet (17F4); exudate Dark Violet (17F4); reverse Dark Violet (16F3). Conidiophores erect, simple or irregularly branched, terminating in phialides. Phialides doliform, with apical collar, 18.5–25 × 2–3.5 μm. Macroconidia cylindrical, rounded ends, slightly curved, 3- to 5-septate, hyaline, 53–68 × 5–6 μm. Microconidia and chlamydospore absent.

Specimen examined: On bark of *Cercidiphyllum japonicum* Siebold et Zucc. (Katsura) Towadako-machi, Aomori Pref. May 24, 1999, YO, P-79 (culture SANK 24499).

Note: Morphological characteristics of the present fungus accord with the description of *N. mammoidea* var. *rubi* (*Nectria mammoidea* group, sensu Booth, 1959) and its anamorph *Cylindrocarpon ianthothele* reported by Booth (1959, 1966), except for the width of conidia (Table 3). Among the other species of the *N. mammoidea* group, *N. mammoidea* var. *minor* Reinking has ascospores of similar dimensions to those of the present fungus. However, conidia of *N. mammoidea* var. *minor* are shorter than those of the present fungus and have a wedge-shaped foot cell (Booth, 1966). Therefore, the present fungus is identified as *N. mammoidea* var. *rubi*.

Recently, Rossman et al. (1999) re-examined the genus *Nectria* based on teleomorph-anamorph relationships. They placed the species of the *N. coccinea*/*galligena* group, which have a *Cylindrocarpon* anamorph, in the genus *Neonectria* Wollenw. However, they did not transfer species belonging to the *N. mammoidea* group, the *N. radicicola* group, the *N. rugulosa* group or the *N. veuillotiana* group.

Cercidiphyllum japonicum is identified as a new host plant.

6. *Trochophora fasciculata* (Berk. et M. A. Curtis) Goos, Mycologia **78**: 759. 1986. ("*fasciculatum*")

≡*Helicoma fasciculatum* Berk. et M. A. Curtis, U.S. North Pacific Exped. No. 142. 1853–56. 1859.

≡*Helicosporium fasciculatum* (Berk. et M. A. Curtis) Sacc., Syll. Fung. **4**: 560. 1886.

≡*Helicomyces fasciculatus* (Berk. et M. A. Curtis) Pound et Clem., Bull. Minn. Geol. Nat. Hist. Survey **9**: 658. 1896.

=*Helicosporium simplex* Syd. et P. Syd., Herb. Boissier Mem. **4**: 7. 1900.

≡*Helicoma simplex* (Syd. et P. Syd.) Linder, Ann. Mo. Bot. Gard. **16**: 315. 1929.

=*Helicostilbe simplex* Petch, Ann. Royal Bot. Gard. Peradeniya **7**: 321. 1922.

≡*Trochophora simplex* (Petch) R. T. Moore, Mycologia **47**: 90. 1955.

=*Curvidigitus daphniphylli* Sawada, Rep. Govt. Res. Inst. Formosa **86**: 176. 1943. (nom. inval.)

Specimen examined: On leaves of *Daphniphyllum macropodum* Miq. (Yuzuriha) Toride-shi, Ibaraki Pref. April 25, 1999, by TK, P-45 (culture SANK 23299) and *D. teijsmannii* Zoll. (Himeyuzuriha) Nishikawazu-machi, Matsue-shi, Shimane Pref. June 22, 2000, YO, P-673 (culture SANK 17401).

Note: The present fungus had long been known in Japan as *T. simplex* and by its synonyms, *Helicoma fasciculatum*, *Helicoma simplex*, *Helicosporium simplex* and *Helicostilbe simplex* (Anonymous, 2000; Hara, 1954; Hennings, 1902; Hino and Katumoto, 1964; Ito, 1932; Katsuki, 1952a, 1952b, 1955; Kobayashi et al., 1990; Matsumura, 1904; Matsushima, 1985; Nambu, 1904; Shirai, 1905; Shirai and Hara, 1927; Suto, 1975a, 1975b; Yokoyama, 1971). However, Goos (1986) concluded that *Helicoma fasciculatum*, *Helicoma simplex* and *T. simplex* were the same species. Among these names, *Helicoma fasciculatum* was the earliest valid

name for this species. Therefore, *T. fasciculata* is the correct name for the present fungus.

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