
Fungi on submerged wood and bamboo in the Plover Cove Reservoir, Hong Kong

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Results of an investigation into the fungi associated with submerged wood and bamboo in the Plover Cove Reservoir, Hong Kong, are reported. Fifty-seven fungi were identified, including 17 ascomycetes and 40 mitosporic fungi. The frequency of occurrence of these fungi was also investigated. The most common species was *Kirchsteiniothelia elasterascus*, occurring on 70% of samples, followed by *Didymella aptrooti* (14%) and an unidentified coelomycete (12%). These species are compared with common species found in other studies. Eight hyphomycetes are new species, and they are described and illustrated - three *Dactylaria*, two *Ellisembia*, two *Monodictys*, and one *Dictyochaeta* species.

Key words: Ascomycetes, biodiversity, freshwater fungi, mitosporic fungi, taxonomy

Introduction

The fungi occurring on submerged wood and bamboo in the Plover Cove Reservoir in Hong Kong are reported as part of a continuing investigation on the biogeography, ecology, and biodiversity of fungi involved in the decay of lignicolous substrates in freshwater (Hyde and Goh, 1997, 1998a, b, c, 1999; Hyde *et al.*, 1998). One hundred submerged wood and bamboo samples collected from the Plover Cove Reservoir in Hong Kong (22°29'N, 114°16'E) on 15 November 1996, were examined for the presence of lignicolous fungi, following methods detailed in previous studies (Hyde and Goh, 1998c; Hyde *et al.*, 1998). The results are presented in three sections: a species list, which includes data on the frequency of occurrence (Table 1); numbers of taxa and the most common species found in the Reservoir, are compared to those found in similar studies (Table 2); interesting or new species of hyphomycetes are described or annotated, and illustrated (Figs. 1-61).

Table 1. Frequency of occurrence of fungi on submerged wood in Plover Cove Reservoir, Hong Kong (organised in descending order of frequency and then alphabetically by groups).

Taxa	Percentage occurrence	Representative HKU(M) numbers	References and illustrations
<i>Kirchsteiniothelia elasterascus</i> Shearer	70	3332	Shearer, 1993
<i>Didymella aptrooti</i> K.D. Hyde and S.W. Wong	14	4725	Hyde and Wong, 1999
Unidentified coelomycete sp. 1	12	3340	
<i>Halosarpehia heteroguttulata</i> S.W. Wong and K.D. Hyde	11	3305	Hyde <i>et al.</i> , 1999
<i>Chloridium botryoideum</i> (Corda) S. Hughes var. <i>botryoideum</i>	9	4728	Gams and Holubová-Jechová, 1976
<i>Anthostomella aquatica</i> K.D. Hyde and Goh	7	4720	Hyde and Goh, 1998a
<i>Monodictys melanocephaloides</i> Goh and K.D. Hyde	7	3334	This paper
<i>Phaeoisaria clematidis</i> (Fuckel) S. Hughes	6	3342	Ellis, 1971
<i>Acrogenospora sphaerocephala</i> (Berk. and Broome) M.B. Ellis	5	4724	Goh <i>et al.</i> , 1998b
<i>Aniptodera chesapeakeensis</i> Shearer and Miller	5	3339	Hyde <i>et al.</i> , 1999
<i>Canalisporium caribense</i> (Hol.- Jech. and Mercado) Nawawi and Kuthub.	5	4743	Goh <i>et al.</i> , 1998a
<i>Dictyosporium digitatum</i> J.L. Chen, C.H. Hwang and S.S. Tzeng	5	4729	Goh <i>et al.</i> , 1999
<i>Ellisembia adscendens</i> (Berk.) Subram.	5	4728	Ellis, 1971; Subramanian, 1992
<i>Verticillium</i> sp.	5	3338	
Unidentified aero-aquatic hyphomycete	5	4742	
<i>Brachysporiella gayana</i> Bat.	4	5086	Ellis, 1971
<i>Cateractispora receptacula</i> W.H. Ho, K.D. Hyde and I.J. Hodgkiss	4	4702	Ho <i>et al.</i> , in prep
<i>Cylindrocladiella</i> sp.	4	5983	Crous and Wingfield, 1993
<i>Dactylaria biguttulata</i> Goh and K.D. Hyde	3	3334	This paper
<i>Savoryella aquatica</i> K.D. Hyde	3	4798	Ho <i>et al.</i> , 1997

Table 1. (continued).

Taxa	Percentage occurrence	Representative HKU(M) numbers	References and illustrations
<i>Sporoschisma saccardoii</i> E.W. Mason and S. Hughes	3	4798	Goh <i>et al.</i> , 1997
<i>Annulatasacus hongkongensis</i> W.H. Ho, K.D. Hyde and I.J. Hodgkiss	2	4701	Ho <i>et al.</i> , 1999
<i>Caryospora minima</i> Jeffers	2	3337	Hyde <i>et al.</i> , 1998
<i>Dictyochaeta assamica</i> (Agnihotr.) Aram., Cabello and Mengasc.	2	4735	Hughes and Kendrick, 1968
<i>Dictyochaeta fertilis</i> (S. Hughes and W.B. Kendr.) Hol.-Jech.	2	4718	Holubová-Jechová, 1984; Kuthubutheen and Nawawi, 1991a
<i>Dictyochaeta plovercovensis</i> Goh and K.D. Hyde	2	4724	This paper
<i>Gonytrichum macrocladum</i> (Sacc.) S. Hughes	2	4722	Ellis, 1971; Gams and Holubová-Jechová, 1976
<i>Helicosporium griseum</i> Berk. and M.A. Curtis	2	4729	Goos, 1989
<i>Papulaspora</i> sp. 1	2	4724	
<i>Papulaspora</i> sp. 2	2	4748	
<i>Saccardoella aquatica</i> K.M. Tsui, K.D. Hyde, I.J. Hodgkiss and Goh	2	4799	Tsui <i>et al.</i> , 1998
<i>Sporoschisma uniseptatum</i> Bhat and W.B. Kendr.	2	4732	Goh <i>et al.</i> , 1997
<i>Monodictys trichocladiopsis</i> Goh and K.D. Hyde	2	4741	This paper
<i>Trichoderma</i> sp. 1	2	4722	
<i>Trichoderma</i> sp. 2	2	4729	
<i>Acrogenospora ovalia</i> Goh, K.D. Hyde and K.M. Tsui	1	4743	Goh <i>et al.</i> , 1998b
<i>Boerlagiomyces gigantispora</i> S.J. Stanley and K.D. Hyde	1	4732	Stanley and Hyde, 1997
<i>Canalisporium pulchrum</i> (Hol.-Jech. and Mercado) Nawawi and Kuthub.	1	4741	Goh <i>et al.</i> , 1998a
<i>Candelabrum brocchiatum</i> Tubaki	1	4738	Tubaki, 1975
<i>Chaetopsis probosciophora</i> DiCosmo, S.M. Berch and W.B. Kendr.	1	4731	DiCosmo <i>et al.</i> , 1983

Table 1. (continued).

Taxa	Percentage occurrence	Representative HKU(M) numbers	References and illustrations
<i>Dactylaria obscuriseptata</i> Goh and K.D. Hyde	1	4738	This paper
<i>Dactylaria plovercovensis</i> Goh and K.D. Hyde	1	4738	This paper
<i>Geniculosporium sporodochiale</i> K.D. Hyde and Goh	1	4730	Hyde and Goh, 1998a
<i>Gliocladium</i> sp.	1	4723	
<i>Halosarpheia lotica</i> Shearer	1	4797	Hyde <i>et al.</i> , 1999
<i>Helicosporium guianensis</i> Linder	1	4729	
<i>Massarina bipolaris</i> K.D. Hyde	1	4745	Hyde, 1995
<i>Massarina ingoldiana</i> Shearer and K.D. Hyde	1	4800	Shearer and Hyde, 1997
<i>Nais aquatica</i> K.D. Hyde	1	4738	Hyde <i>et al.</i> , 1999
<i>Nectria</i> sp.	1	4701	
<i>Torrentispora fibrosa</i> K.D. Hyde, W.H. Ho, E.B.G. Jones, K.M. Tsui and S.W. Wong	1	4702	Hyde <i>et al.</i> , in prep.
<i>Pleurophragmium bitunicatum</i> Matsush.	1	4723	Matsushima, 1975
<i>Ellisemia plovercovensis</i> Goh and K.D. Hyde	1	10421	This paper
<i>Ellisemia repentioriunda</i> Goh and K.D. Hyde	1	10422	This paper
<i>Sporodesmium altum</i> (Preuss) M.B. Ellis	1	4741	Ellis, 1971; this paper
<i>Tiarosporella paludosa</i> (Sacc. and Fiori) Höhn	1	4720	Hyde, 1993
Unidentified coelomycete sp. 2	1	4718	

Results and discussion

Species list and frequency of occurrence of fungi on submerged wood

Seventeen ascomycetes and 40 mitosporic fungi were identified in this study (Table 1) with an average of 2.4 fungi per sample. The most common species in the current study were *Kirchsteiniothelia elasterascus* (70%) and *Didymella aptrooti* (14%), neither of which are common in other streams (Table 2). *Didymella aptrooti* was restricted to bamboo, while *K. elasterascus* was common to this substrate, and may account for the commonness of these taxa.

Comparison with other studies

The only similar study in which a "lake" habitat was sampled for freshwater fungi is that of Hyde and Goh (1998b), who collected 100 wood samples from Lake Barrine in North Queensland. Samples were treated similarly in both studies. In Lake Barrine 15 ascomycetes, 23 mitosporic fungi and 1 basidiomycete were identified, with an average of 1.4 fungi identified per sample following initial examination.

Studies where 100 wood samples have been collected from streams and examined for fungi have been reported by Hyde and Goh (1997, 1998c, 1999), or 150 wood samples by Hyde *et al.* (1998). The numbers of taxa, average number of taxa and most common species identified in these studies are given in Table 2. The following observations and conclusions can be drawn from this Table.

1. The diversity of fungi found in the River Coln, a temperate stream, was lower than that found in studies on subtropical/tropical streams. The common fungi also differed and there was only one species (*Acrogenospora sphaerocephala*) that occurred in tropical rivers or lakes. This single result suggests that species diversity is both lower and different in temperate streams, but further studies are needed to support this conclusion.
2. The highest numbers of fungi per sample were identified at the Plover Cove reservoir.
3. Most fungi were identified from the Palmiet River (58 species), but 150 wood samples were examined. Fifty-seven taxa were identified from the Plover Cove Reservoir, but as only 100 wood samples were examined, this site may actually have a higher fungal diversity. The Plover Cove Reservoir receives water run off from local streams and also water pumped from a river in China. The varied water sources may account for the higher diversity.
4. With the exception of *Annulatascus velatisporus* there is no overlap in the three most common species at each site.

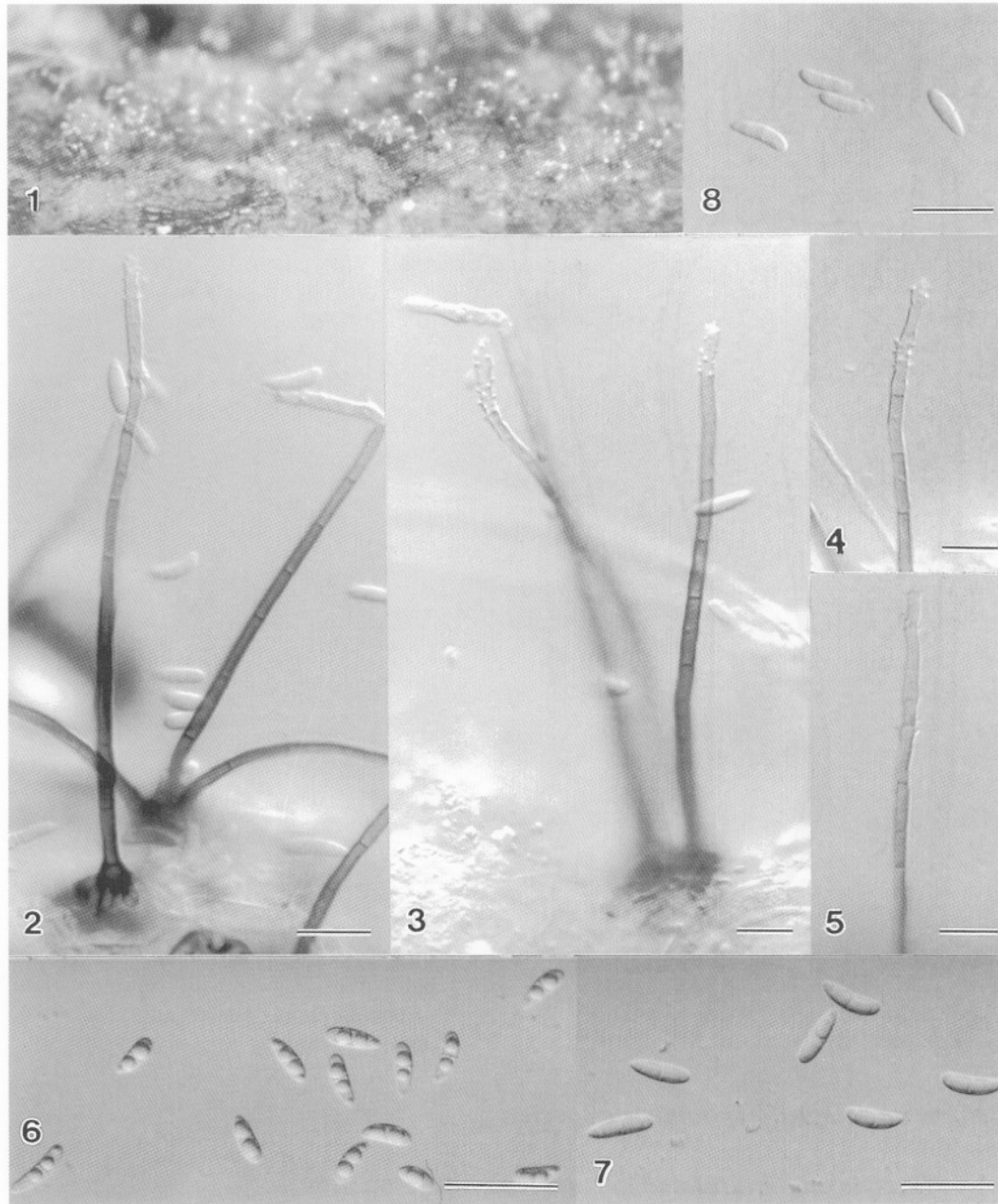
The results presented here represent the mycota at the sampling times, and under the present incubation conditions. They must therefore be treated with caution as collections made at different times and incubated under different conditions may give differing results. The results do, however, give an indication of the differences in fungi to be found in streams and rivers, and provide an insight into the fungi that degrade submerged wood in reservoirs.

Table 2. Numbers of taxa, average number of taxa identified and most common species identified in similar studies on freshwater fungi

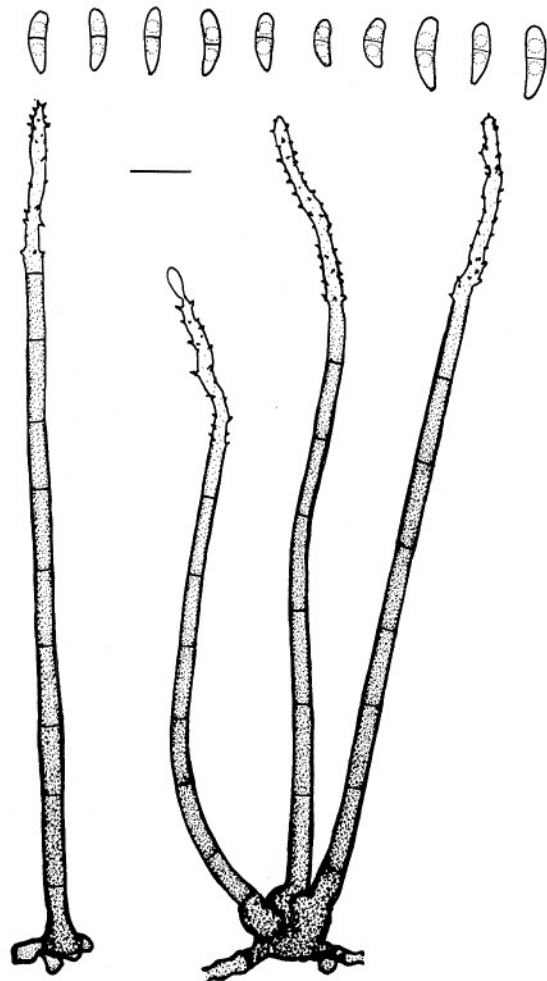
Location	Plover Cove Reservoir, Hong Kong	Lake Barrine, North Queensland	Mt Lewis stream, North Queensland	Palmiet River, South Africa	Riviere St Marie-Louis, Seychelles	River Coln, UK
Climate	Subtropical	Tropical	Tropical	Subtropical	Tropical	Temperate
Number taxa identified	57	39	42	58 ^b	34	25
Average number taxa identified per sample	2.4	1.4(1.7 ^a)	0.9	1.7	1.97	0.8
Three most common species	<i>Kirchsteiniothelia elasterascus</i> (70%), <i>Didymella aptrooti</i> (14%), Unidentified coelomycete sp. (12%)	<i>Candelabrum brocciatum</i> (41%), <i>Trichocladium linderi</i> (11%), <i>Canalisporium pulchrum</i> (9%)	<i>Verticillium</i> sp. (8%), <i>Helicomycetes roseus</i> (6%), <i>Jahnula bipolaris</i> (6%)	<i>Nais aquatica</i> (34%), <i>Ophioceras</i> sp. (22%), <i>Annulatascus velatisporus</i> (15%)	<i>Jahnula seychellensis</i> (30%), <i>Verticillium</i> sp. (26%), <i>Annulatascus velatisporus</i> (21%)	<i>Pseudohalonectria lutea</i> (20%), <i>Ascotaiwania paliida</i> (5%), <i>Cryptosporiopsis</i> sp. (6%)
Reference	This paper	Hyde and Goh, 1998b	Hyde and Goh, 1997	Hyde <i>et al.</i> , 1998	Hyde and Goh, 1998c	Hyde and Goh, 1999

^a after 6 months incubation

^b 150 samples examined



Figs. 1-8. *Dactylaria biguttulata* (from holotype). **1.** Portion of colony on natural substratum. **2-5.** Conidiophores with polydentate conidiogenous cells at the apex. **6.** Conidia in water showing guttules. **7, 8.** Conidia in lactophenol showing the central septum. Bars: 2-5 = 50 μm , 6-8 = 20 μm .



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Fig. 9. *Dactylaria biguttulata* (from holotype). Diagrammatic representation of conidiophores and conidia. Bar = 10 μ m.

Notes on selected hyphomycete species

1. *Dactylaria biguttulata* Goh and K.D. Hyde, **sp. nov.** (Figs. 1-9)

Etymology: *biguttulata*, referring to the two-celled conidia, which consistently have a guttule in each cell.

Conidiophora erecta, solitaria vel 2-8 agregata, cylindrica, 100-170 \times 3-4 μ m, in latitudine uniformia, recta vel leniter flexuosa, non ramosa, laevia, equidistante multiseptata, pallide vel modice brunnea, apicem versus pallidiora. *Cellulae conidiogenae* polydenticulatae, subhyalinae vel pallidissime brunneae. *Conidia* 10-13 \times 3.5-4.5 μ m, hyalina, laevia,

allantoidea vel ellipsoidea, ad basem subapiculata vel obconica, ad apicem obtusa vel subobtusa, plerumque leniter curvata, uniseptata, biguttulata; conidiorum secessio schizolytica.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC20 (HKU(M) 3334).

Colonies on natural substratum effuse, olivaceous brown (Fig. 1). *Mycelium* partly superficial and partly immersed, comprising subhyaline to pale brown, 2-3 μm wide, smooth, septate, branched hyphae. *Setae* and *hyphopodia* absent. *Stromata* not developed. *Conidiophores* erect, solitary or aggregated in groups of 2-8, arising from a small knot of hyphae (12-15 μm wide), cylindrical, 100-170 \times 3-4 μm , uniform in width, straight to slightly flexuous, unbranched, smooth, multiseptate, septa more or less equidistantly (12-15 μm) spaced, pale to medium brown, paler towards the apex (Figs. 2-5, 9). *Conidiogenous cells* integrated, 5-45 μm long, subhyaline to very pale brown, polydenticulate, denticles pointed, 0.5-1.5 μm long. *Conidial secession* schizolytic. *Conidia* 10-13 \times 3.5-4.5 μm , hyaline, smooth, allantoid to ellipsoidal, subapiculate or obconic toward the base, obtuse to subobtuse at the apex, usually slightly curved, two-celled, with a large guttule in each cell (Figs. 6-8, 9).

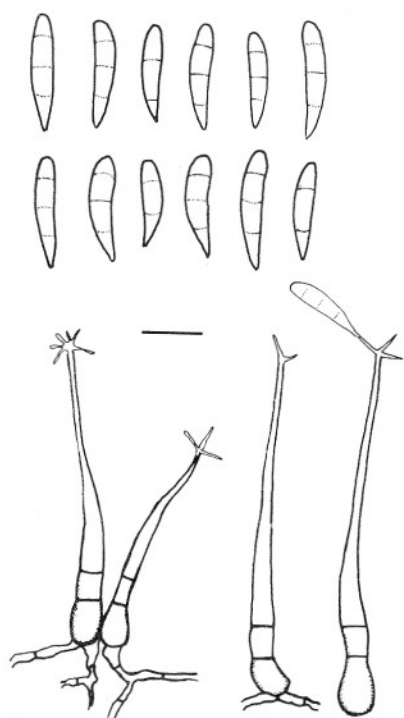
Notes: Species of *Dactylaria* are numerous and the genus is heterogeneous. Forty-one species were accepted by de Hoog (1985) who subdivided them into four sections. A further 41 species were revised by Goh and Hyde (1997) who provided a key to those species. Four other species were recently added to the genus (Castañeda Ruíz *et al.*, 1996; Tsui *et al.*, 1997; Hyde and Goh, 1998b). *Dactylaria biguttulata* can be grouped under the sect. *Diplorhinostrichum* (*sensu* de Hoog, 1985) as it has brown conidiophores and hyaline conidia. It is most similar to *D. uniseptata* Matsushima (1971) in having uniseptate conidia. In *D. uniseptata*, however, conidia are straight and larger (14-18 \times 3.5-5 μm). The conidia of *D. biguttulata* are also comparable to those of *D. longidentata* Cazau, Aram. and Cabello (Cazau *et al.*, 1990) in being guttulate and similar in shape. In *D. longidentata*, however, conidia are predominantly unicellular and smaller (8-11 \times 2-3 μm).

2. *Dactylaria obscuriseptata* Goh and K.D. Hyde, *sp. nov.* (Fig. 10)

Etymology: *obscuriseptata*, referring to the conidia in which the septa are indistinct.

Conidiophora erecta, solitaria, hyalina, subulata, 35-65 μm longa, ad basem 5-7 μm lata, apicem versus attenuata, polydenticulata, plerumque recta, non ramosa, laevia, fere 2-septata. *Conidia* 15-20 \times 3.5-4 μm , hyalina, tenuiseptata, laevia, indistincte 2-3-septata, clavata vel ellipsoidea vel leniter fusiformia, ad apicem subobtusa, basem versus attenuata et apiculata, leniter curvata.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC7 (HKU(M) 4738).

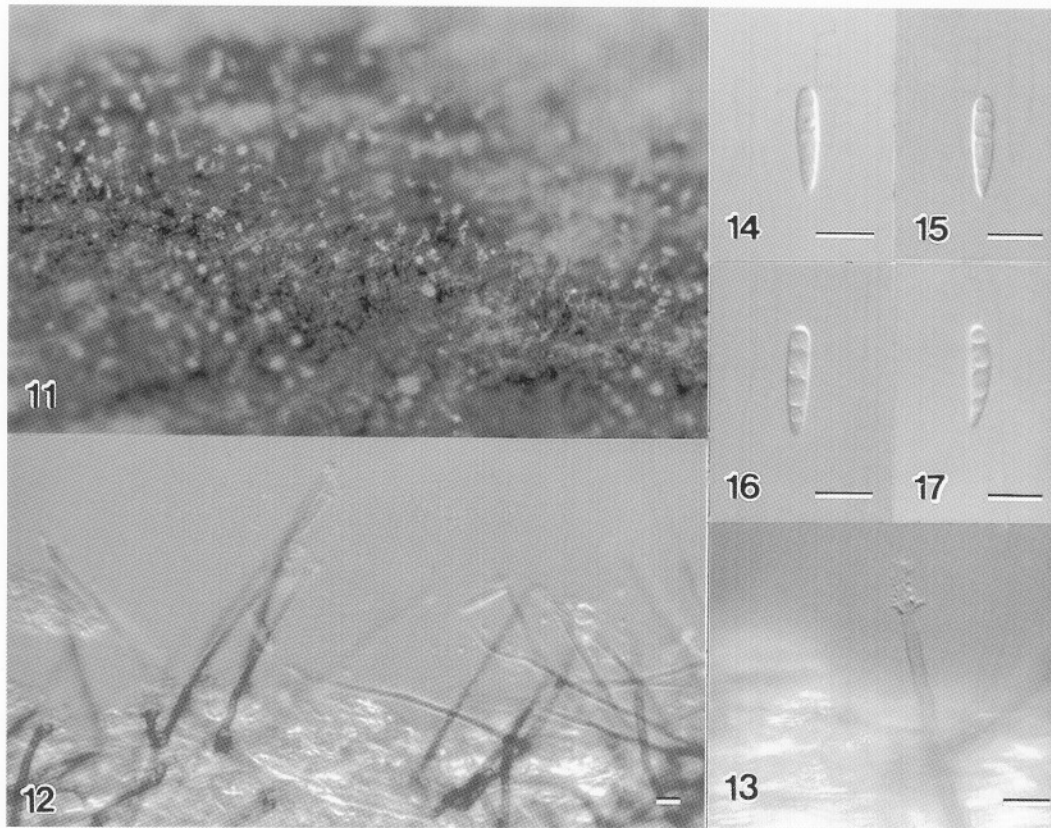


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Fig. 10. *Dactylaria obscuriseptata* (from holotype). Diagrammatic representation of conidiophores and conidia. Bar = 10 μ m.

Colonies on natural substratum effuse, yellowish. Mycelium partly superficial and partly immersed, comprising subhyaline to very pale brown, 2-3 μ m wide, smooth, septate, branched hyphae. *Setae* and *hyphopodia* absent. *Stromata* none. *Conidiophores* erect, solitary, hyaline, subulate, 35-65 μ m long, 5-7 μ m wide at the base, attenuate to ca. 2 μ m wide towards the polydentate apex, usually straight, unbranched, smooth, always 2-septate, septa near to the base. *Denticles* spine-like, 2-5 μ m long, arising from the tip of the conidiophores. *Conidial secession* schizolytic. *Conidia* 15-20 \times 3.5-4 μ m, hyaline, thin-walled, smooth, indistinctly 2-3-septate, clavate to ellipsoidal or slightly fusiform, subobtuse at the apex, attenuate toward the apiculate base, slightly curved.

Notes: None of the previously reported *Dactylaria* species (*sensu lato*) are similar to *D. obscuriseptata*. This species can be grouped under the sect. *Dactylaria* (*sensu de Hoog, 1985*) because the conidiophores are hyaline and little-differentiated. Within this section, this species is distinct in having 2-septate conidiophores, with the two septa consistently positioned in the basal portion of the conidiophores.



Figs. 11-17. *Dactylaria plovercovensis* (from holotype). 11. Portion of colony on natural substratum. 12. Squash-mount of conidiophores. 13. Apical portion of a conidiophore with polydentate conidiogenous cell. 14-17. Conidia. Bars = 10 μm .

3. *Dactylaria plovercovensis* Goh and K.D. Hyde, **sp. nov.** (Figs. 11-18)

Etymology: *plovercovensis*, referring to Plover Cove Reservoir, the location where this taxon was collected.

Conidiophora erecta, solitaria, cylindrica, 85-115 \times 3-4(-5) μm , in latitudine uniformia, recta vel leniter flexuosa, non ramosa, laevia, equidistante multiseptata, pallide vel modice brunnea, apicem versus pallidiora. *Cellulae conidiogenae* in conidiophoris incorporatae, 20-45 μm longae, hyalinae to subhyalinae, polydentatae. *Conidia* 16-22 \times 4-4.5(-5) μm , hyalina, laevia, clavata vel elongato-ellipsoidea, ad apicem late rotundata, ad basem obconica, recta vel leniter curvata, 3-septata; conidiorum secessio schizolytica.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC7A (HKU(M) 4738).

Colonies on natural substratum effuse, olivaceous brown (Fig. 11). *Mycelium* partly superficial and partly immersed, comprising pale olivaceous to pale brown, 1.5-2.5 μm wide, smooth, septate, branched hyphae. *Setae* and

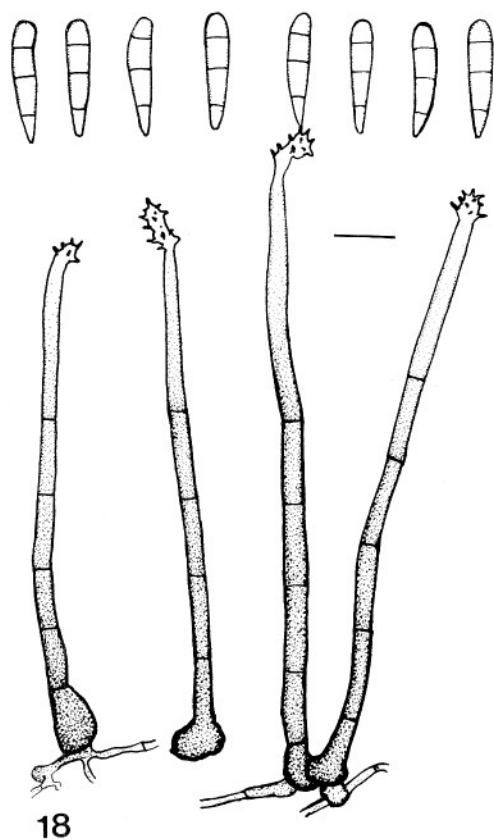
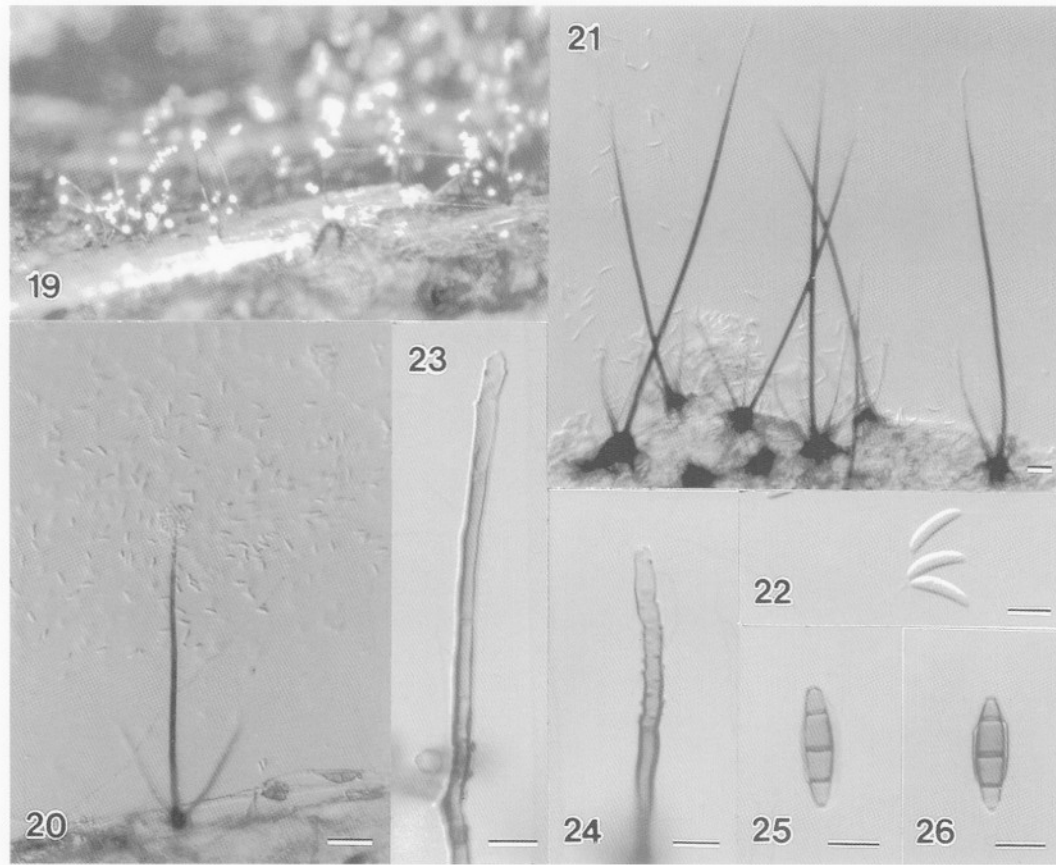


Fig. 18. *Dactylaria plovercovensis* (from holotype). Diagrammatic representation of conidiophores and conidia. Bar = 10 μ m.

hyphopodia absent. *Stromata* not developed. *Conidiophores* erect, solitary, arising from a swollen basal cell (6-12 μ m wide), cylindrical, 85-115 \times 3-4(-5) μ m, uniform in width, straight to slightly flexuous, unbranched, smooth, multiseptate, septa more or less equidistantly (10-14 μ m) spaced, pale to medium brown, paler towards the apex (Figs. 12, 13, 18). *Conidiogenous cells* integrated, 20-45 μ m long, hyaline to subhyaline, polydenticulate, denticles cylindrical, 0.5-1.5 μ m long. *Conidial secession* schizolytic. *Conidia* 16-22 \times 4-4.5(-5) μ m, hyaline, smooth, clavate to elongate-ellipsoidal, broadly rounded at the apex, obconic at the base, straight or slightly curved, 3-septate (Figs. 14-17, 18).

Notes: *Dactylaria plovercovensis* is a distinct species in the sect. *Diplorhinostrichum* (*sensu de Hoog*, 1985) as it has brown conidiophores and hyaline, 3-septate conidia. Within this section there is no other species that has a combination of morphological characters similar to that of *D. plovercovensis*.

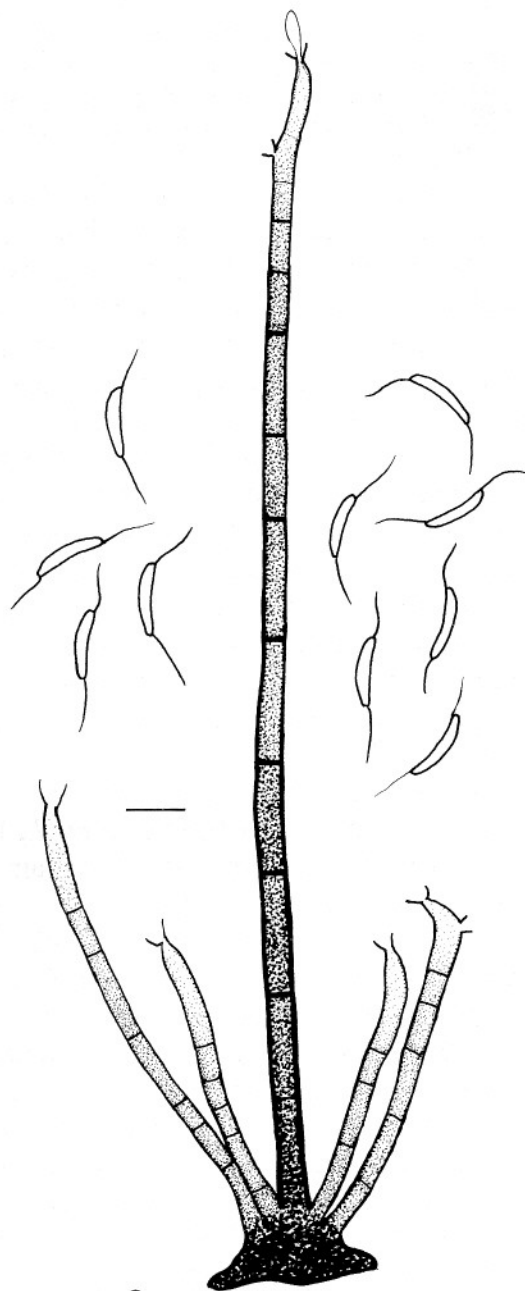


Figs. 19-22. *Dictyochaeta plovercovensis* (from holotype). **19.** Portion of colony on natural substratum. **20, 21.** Squash-mount of setae, conidiophores and conidia. Note the black basal stromata where the setae and conidiophores arose. **22.** Conidia with a single setula at each end. **Figs. 23-26.** *Pleurophragmium bitunicatum* (from HKU(M) 4723, Hong Kong collection). **23, 24.** Conidiophores with polydentate conidiogenous cells at the apex. **25, 26.** Conidia. Bars: 20, 21 = 20 μ m, 22 = 5 μ m, 23-26 = 10 μ m.

4. *Dictyochaeta plovercovensis* Goh and K.D. Hyde, **sp. nov.** (Figs. 19-22, 27)

Etymology: *plovercovensis*, referring to Plover Cove Reservoir, the location where this taxon was collected.

Coloniae in substrato naturali effusae, brunneae vel atrobunneae. Mycelium plerumque immersum, ex hyphis pallide vel modice brunneis, 2-4 μ m latis, laevibus, septatis, ramosis compositum. *Stromata* atrobrunnea vel nigra, 28-32 μ m lata, in basibus setarum et conidiophorum oriunda. *Setae* fertiles, erectae, rectae, septatae, crassitunicatae, atrobunneae, apicem versus pallidiorae, laeves, 300-480 μ m longae, deorsum 6-7 μ m latae, superne 4-5 μ m latae, plerumque in phialide singula terminates. *Conidiophora* distincta, erecta, 3-5 fasciculata cum 1 seta consociata, simplicia, pallide flavidobrunnea, ad apicem pallidiora, 3-5(-6)-septata,



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Fig. 27. *Dictyochaeta plovercovensis* (from holotype). Diagrammatic representation of basal stroma, seta, conidiophores and conidia. Bar = 10 μ m.

anguste clavata, 48-90 μm longa, deorsum 3-3.5 μm lata, superne 4.5-5 μm lata, plerumque in phialide singula terminata. *Conidia* hyalina, in capitulum mucosum incoloratum aggregata, 13-15 \times 1.5-2 μm , 0-septata, leniter curvata, asymmetrica, ad apicem rotundata, basem versus leniter attenuata, utrinque setulis 8-9 μm longis singulis simplicibus praedita.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC16 (HKU(M) 4724).

Colonies on natural substratum effuse, brown to dark brown (Fig. 19). *Mycelium* mostly immersed, comprising pale to medium brown, 2-4 μm wide, smooth, septate, branched hyphae, aggregated to form dark brown to black stromata (28-32 μm wide) at the bases of setae and conidiophores. *Setae* fertile, erect, septate, straight, thick-walled, dark brown, gradually becoming paler towards the apex, smooth, 300-480 μm long, 6-7 μm wide above the swollen base, tapering imperceptibly to 4-5 μm wide near the apex, terminating in a single or rarely two phialides with a funnel-shaped collarette. *Conidiophores* distinct, erect, 3-5 fasciculate around the base of a seta (Figs. 20, 21, 27), simple, pale yellowish brown, paler at the apex, 3-5(-6)-septate, narrowly clavate, 48-90 μm long, 3-3.5 μm wide near the base, 4.5-5 μm wide at the apex, terminating in a single or rarely two phialides with a funnel-shaped collarette. *Conidia* hyaline, aggregated in colourless slimy masses, 13-15 \times 1.5-2 μm , 0-septate, slightly curved, asymmetrical, bluntly rounded at the distal end, slightly tapering to the proximal end, provided with a simple, single setula 8-9 μm long at each end (Figs. 22, 27).

Notes: Most of the species in *Codinaea* have been transferred to *Dictyochoaeta* due to nomenclatural priority (Gamundi *et al.*, 1977). A key to 59 *Dictyochoaeta* species and 10 other species that still remain in *Codinaea* was provided by Kuthubutheen and Nawawi (1991b). Since then a further six species have been described (Castañeda Ruiz and Kendrick, 1990a, b; Bhat and Kendrick, 1993; Hernández-Gutiérrez and Mena, 1996; Castañeda Ruiz *et al.*, 1998). *Dictyochoaeta plovercovensis* is most similar to *D. assamica* (Agnihothr.) Aramb. Cabello and Mengasc. (Kuthubutheen and Nawawi, 1991a), *D. fertilis* (S. Hughes and B. Kendr.) Hol.-Jech. (Holubová-Jechová, 1984), and *D. gamundii* Aramb. and Cabello (Arambarri *et al.*, 1987), species that also have long fertile setae, fasciculate conidiophores, and unicellular bisetulate conidia. *Dictyochoaeta assamica* and *D. gamundii* differ in having larger conidia with longer setulae. Although *D. fertilis* has conidia of about the same size as those of *D. plovercovensis*, the former species differs in lacking a stroma and in having dense fascicles of long conidiophores (up to 300 μm) which end in a polyphialide with up to 8 successive proliferations.

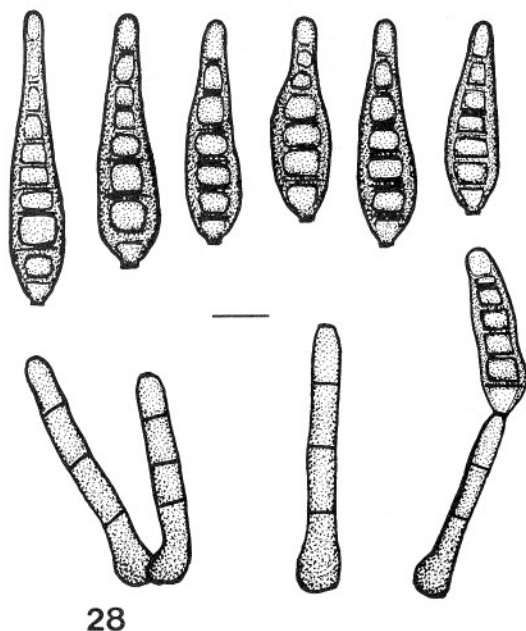


Fig. 28. *Ellisembia plovercovensis* (from holotype). Diagrammatic representation of conidiophores and conidia. Bar = 10 μ m.

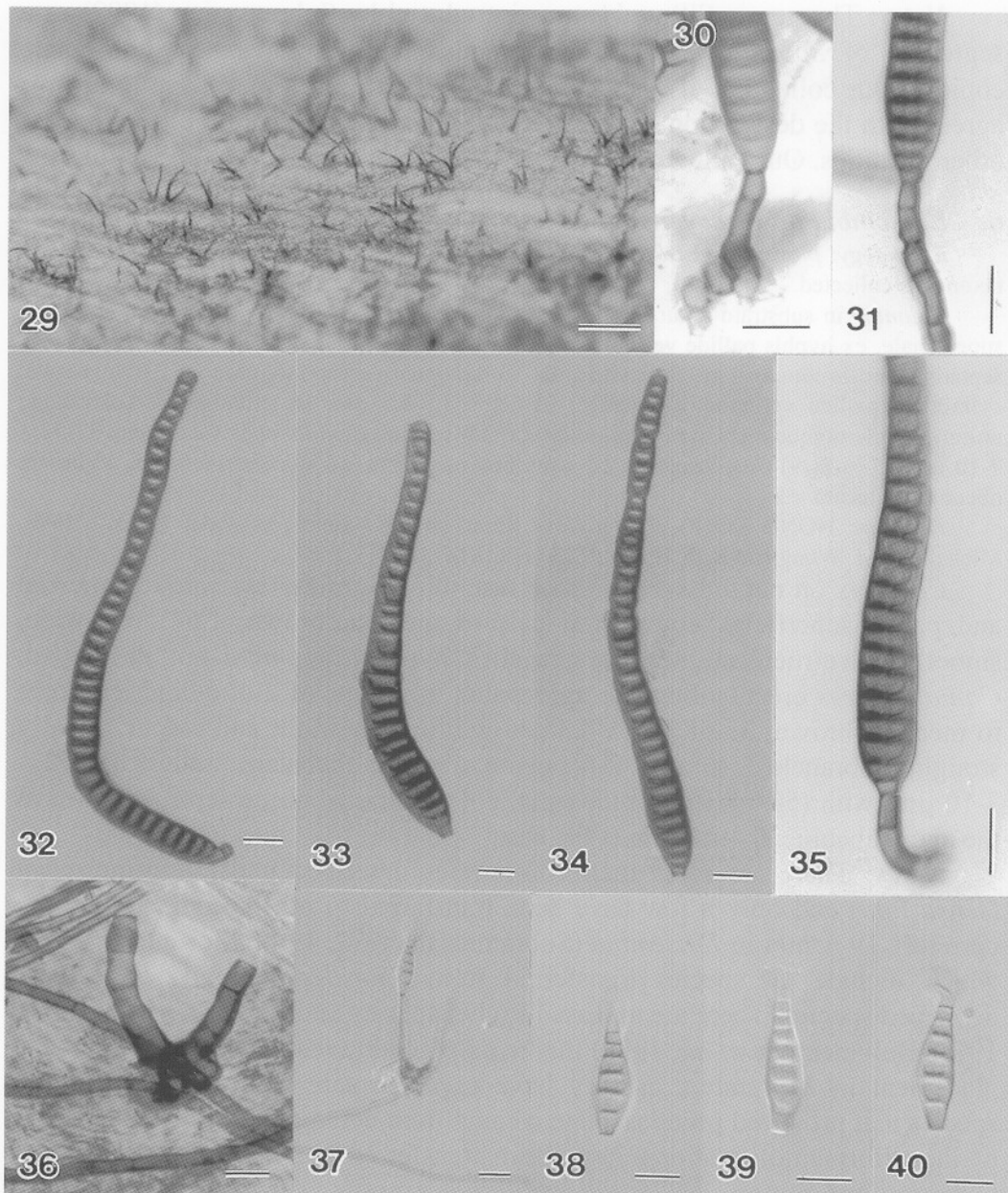
5. *Ellisembia adscendens* (Berk.) Subram., Proceedings of the Indian National Science Academy B58, 4: 183 (1992). (Figs. 29-36)

= *Sporidesmium adscendens* Berk., Annals of Natural History 4: 291 (1840).

= *Clasterosporium adscendens* (Berk.) Sacc., Sylloge Fungorum 4: 394 (1886).

Colonies hairy, black (Fig. 29). *Mycelium* partly immersed and partly superficial, comprising branched, anastomosing, pale brown, smooth, 2-4 μ m wide hyphae. *Conidiophores* medium to dark reddish brown, solitary or rarely in groups of 2-3, sometimes arising from superficial hyphae (Fig. 36), 20-45 \times 5-8 μ m (Figs. 30, 31, 35). *Conidia* flexuous, cylindrical-obclavate, elongate, pseudoseptate, broadly rounded at the apex, obconically truncate at the base, medium to dark reddish brown, smooth, 150-500 \times 14-17(-20) μ m (Figs. 32-34)

Material examined: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC45 (HKU(M) 4728).



Figs. 29-36. *Ellisembia adscendens* (from HKU(M) 3343, Hong Kong collection). 29. Portion of colony on natural substratum. 30, 31, 35. Solitary conidiophores bearing conidia. 32-34. Conidia. 36. Conidiophores arising from superficial hyphae. Figs. 37-40. *Ellisembia repentioriunda* (from holotype). 37. A conidiophore arising from repent hypha, bearing a conidium. 38-40. Conidia, each provided with a mucilaginous sheath at the apex. Bars: 29 = 50 μ m, 30-35 = 20 μ m, 36-40 = 10 μ m.

Notes: The genus *Ellisembia* was introduced by Subramanian (1992) as a segregate of *Sporidesmium* to accommodate species having pseudoseptate conidia. Our collection of *Ellisembia adscendens* from Plover Cove Reservoir agrees with the description of this species recorded by Ellis (1958, 1971) from other localities. Our collection, however, has longer conidia (up to 500 µm).

6. *Ellisembia plovercovensis* Goh and K.D. Hyde, **sp. nov.** (Fig. 28)

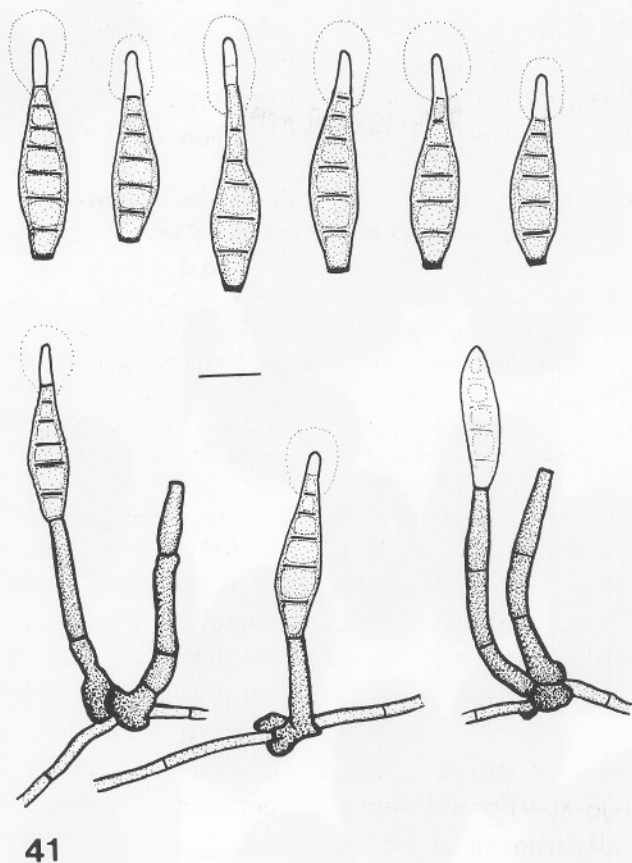
Etymology: *plovercovensis*, referring to Plover Cove Reservoir, the location where this taxon was collected.

Coloniae in substrato naturali effusae, brunneae. *Mycelium* partim immersum et partim superficiale, ex hyphis pallide vel modice brunneis, 1.5-3 µm latis, laevibus vel verruculosus, septatis, ramosis compositum. *Stromata* nulla. *Conidiophora* erecta, solitaria vel 2-4 aggregata, cylindrica, pallide vel modice brunnea, 35-58 × 3.5-4.5 µm, in latitudine et coloratione uniformia, plerumque recta, non ramosa, laevia, 2-4-septata. *Conidia* obclavata, recta, 32-52 × 7-10 µm, (5-)6-8(-9)-pseudoseptata, ad septa non constricta, ad apicem rotundata, ad basem obconico-truncata.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC28 (HKU(M) 10421).

Colonies on natural substratum effuse, brown. *Mycelium* partly immersed and partly superficial, comprising pale to medium brown, 1.5-3 µm wide, smooth or verruculose, septate, branched hyphae. *Stromata* not developed. *Conidiophores* erect, solitary or aggregated in groups of 2-4, cylindrical, pale to medium brown, 35-58 × 3.5-4.5 µm, uniform in width and colour, usually straight, unbranched, smooth, 2-4-septate. *Conidia* obclavate, straight, 32-52 × 7-10 µm, with (5-)6-8(-9) pseudosepta, not constricted at the septa, rounded at the apex, obconically truncate at the base.

Notes: There are more than 200 species described under *Sporidesmium* (*sensu lato*) and only a few have been transferred to other genera. There are currently 19 names in *Ellisembia* (Subramanian, 1992, 1997; McKenzie, 1995), which include 14 species transferred from *Sporidesmium* and 5 recently described species. There are at least 14 other species (examples in Matsushima, 1975; Dulymamode *et al.*, 1998) that require generic reassessment and perhaps placement in *Ellisembia*, as they have pseudoseptate conidia. Some of the species that produced pseudoseptate conidia from conidiophores with doliiform or lageniform proliferations, have been transferred to *Imimyces* (Hernández-Gutiérrez and Sutton, 1997). *Ellisembia plovercovensis* is, however a distinct species in having small, obclavate conidia with a rounded apex that lacks a mucilaginous sheath. They are mostly 5-8-distoseptate and the septa are closely spaced. No other *Ellisembia* species has a comparable combination of morphological characters (Ellis, 1971; McKenzie, 1995; Subramanian, 1997).



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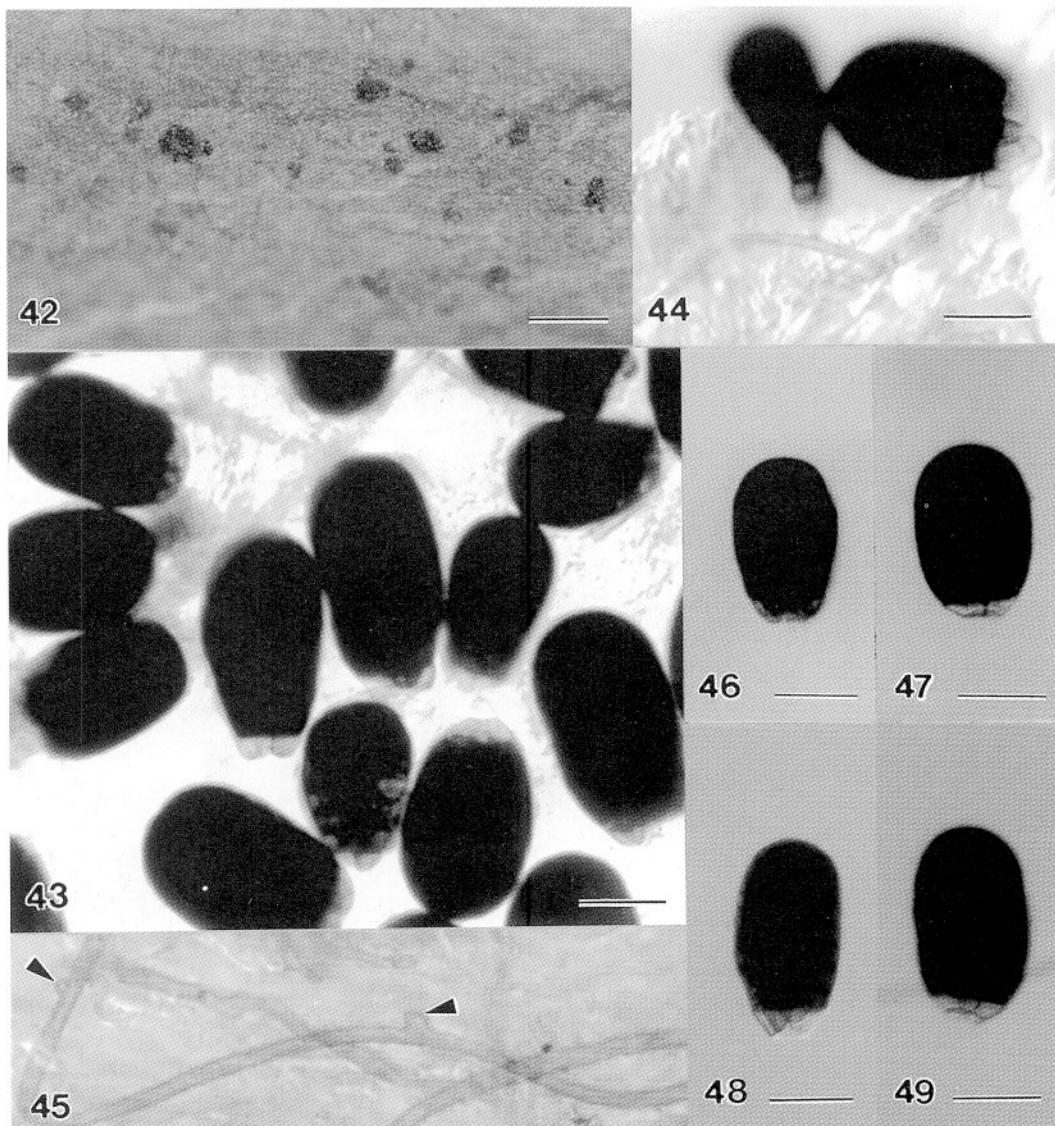
Fig. 41. *Ellisembia repentioriunda* (from holotype). Diagrammatic representation of conidiophores and conidia. Bar = 10 μ m.

7. *Ellisembia repentioriunda* Goh and K.D. Hyde, *sp. nov.* (Figs. 37-41)

Etymology: *repentioriunda*, referring to the conidiophores of this taxon, which are borne on superficial repent hyphae.

Coloniae in substrato naturali velutinae, olivaceobrunneae. *Mycelium* plerumque superficiale, ex hyphis pallide vel modice brunneis, 2-3(-3.5) μ m latis, laevibus vel verruculosis, septatis, perlate ramosis compositum. *Stromata* nulla. *Conidiophora* ex hyphis laevibus superficialibus vel repentibus oriunda, solitaria vel 2-3 aggregata, recta vel leniter flexuosa, cylindrica, pallide vel modice brunnea, 15-35 \times 3.5-4.5 μ m, in latitudine et coloratione uniformia, non ramosa, laevia, 0-2-septata. *Conidia* obclavata, leniter rostrata, recta vel leniter asymmetrica, pallide griseobrunnea, 30-45 \times 7-9 μ m, plerumque 6-pseudoseptata, raro 7-pseudoseptata, ad septa non constricta, ad apicem hyalina, saepe cum tunica gelatinosa hyalina subglobosa ca. 10-15 lata praedita, ad basem obconico-truncata.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC28A (HKU(M) 10422).



Figs. 42-49. *Monodictys melanocephaloides* (from holotype). **42.** Portion of colony on natural substratum. **43.** Squash-mount of a sporodochioid clump showing conidia. **44.** Two conidia arising from conidiogenous hyphae. **45.** Conidiogenous hyphae bearing conidiogenous cells (arrowed). **46-49.** Conidia. Bars: 42 = 20 μ m, 43-49 = 10 μ m.

Colonies on natural substratum velvety, olivaceous brown. *Mycelium* mostly superficial, comprising pale to medium brown, 2-3(-3.5) μ m wide, smooth or verruculose, septate, extensively ramifying hyphae. *Setae* and *hyphopodia* absent. *Stromata* not developed. *Conidiophores* borne on

superficial smooth hyphae, with a knot of hyphae 7-9 μm wide at the base, solitary or aggregated in groups of 2 to 3, straight to slightly flexuous, cylindrical, pale to medium brown, 15-35 \times 3.5-4.5 μm , uniform in width and colour, unbranched, smooth, 0-2-septate, not cicatrized, sometimes with one percurrent proliferation (Figs. 37, 41). *Conidial secession* schizolytic. *Conidia* obclavate, slightly rostrate, straight or slightly asymmetrical, pale greyish brown, 30-45 \times 7-9 μm , mostly with 6 pseudosepta, rarely 7-pseudoseptate, not constricted at the septa, apical cell usually hyaline, rounded at the tip, usually provided with a hyaline, subglobose (*ca.* 10-15 μm diam.) mucilaginous sheath, obconically truncate at the base and usually with a slightly darkened hilum (Figs. 38-41).

Notes: *Ellisembia repentioriunda* differs from other *Ellisembia* species (or other similar *Sporidesmium sensu lato* species) in a combination of morphological characters. One of the important features in this species is that the conidiophores are borne on superficial hyphae, rather than arising directly from the surface of natural substratum. The superficial hyphae are extensive, stout, and are mostly verruculose, however, those in the vicinity of conidiophores are smooth (Fig. 41). *Ellisembia gelatinosa* (Matsush.) Subram. (Subramanian, 1992) and *S. minigelatinosum* Matsush. (Matsushima, 1971) are most similar to *E. repentioriunda* as they have pseudoseptate conidia with a mucilaginous sheath at the apex, and also have conidiophores arising from vegetative hyphae (Matsushima, 1971, 1975). *Ellisembia gelatinosa* differs in having larger conidia (48-76 \times 11-14 μm), while in *S. minigelatinosum* the conidia are slender (6-8 μm wide) and have more septa (7-11-pseudoseptate).

8. ***Monodictys melanocephaloides*** Goh and K.D. Hyde, **sp. nov.** (Figs. 42-50)

Etymology: *melanocephaloides*, referring to the dark conidia of this taxon which superficially resemble those of *Melanocephala* species.

Coloniae in substrato naturali sporodochioideae, farinosae, atrae. *Mycelium* partim superficiale et partim immersum, ex hyphis pallide vel modice brunneis, 1.5-2.5 μm latis, laevibus vel verruculosis, septatis, ramosis compositum. *Conidiophora* micronematosa. *Conidia* ex hyphis superficialibus oriunda, doliiformia vel late ellipsoidea vel obovata, laevia, (22-)28-35(-37) \times (12-)15-28 μm , atrobrunnea vel atra, dictyoseptata, cellulae ad basem subhyalinae vel pallidissime brunneae, cum septis visibilibus; conidiorum secessio rhexolytica.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC35 (HKU(M) 3334).

Colonies on natural substratum sporodochioid, farinose, black (Fig. 42). *Mycelium* partly superficial and partly immersed, comprising pale to medium brown, 1.5-2.5 μm wide, smooth or verruculose, septate, branched hyphae (Fig. 45). *Setae* and *hyphopodia* absent. *Stromata* not developed. *Conidiophores* micronematous. *Conidial secession* rhexolytic. *Conidia* borne on

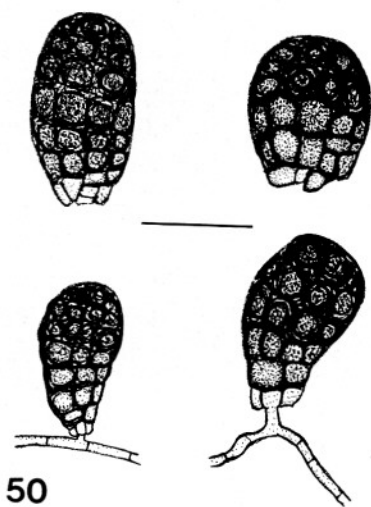
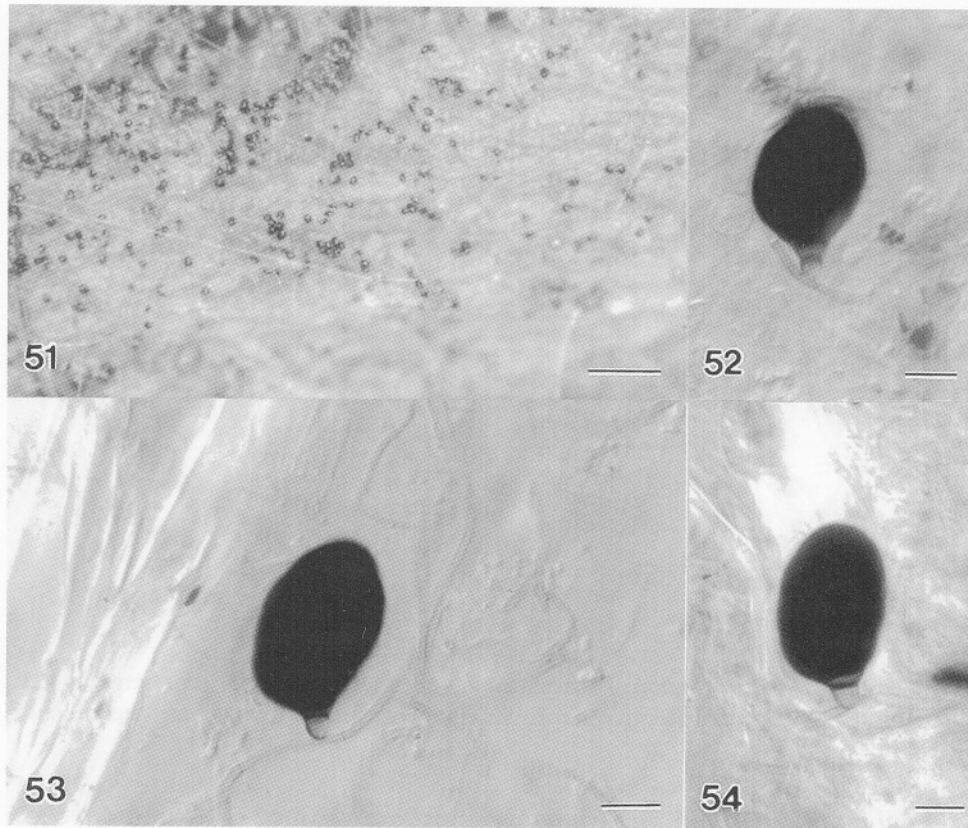


Fig. 50. *Monodictys melanocephaloides* (from holotype). Diagrammatic representation of conidiogenous hyphae and muriform conidia. Bar = 20 μ m.

undifferentiated hyphae which are usually aggregated into sporodochioid clumps, doliiform to broadly ellipsoidal or obovate, smooth-walled, (22-)28-35(-37) \times (12-)15-28 μ m, dark brown to black, dictyoseptate, septa often obscured by the dark pigmentation, the base mostly comprising three cells which are subhyaline to very pale brown with visible septa (Figs. 43-50).

Notes: The conidia of *Monodictys melanocephaloides* are aggregated in sporodochioid clumps on the natural substratum and thus superficially resemble colonies of *Berkleasmiium* species. There are presently 41 species in *Monodictys* (Index of Fungi; Mercado Sierra *et al.*, 1995; Sinclair *et al.*, 1996; Castañeda Ruíz *et al.*, 1997), and a key to 30 *Monodictys* species together with 8 other fungi is provided by Rao and de Hoog (1986). The conidia of *M. melanocephaloides* have a similar size range to those of *M. paradoxa* (Corda) S. Hughes. In both species, conidia are black for the most part with the septa obscured, but with paler proximal cells. In *M. paradoxa*, however, the conidiogenous cells are nearly always distinctly swollen (Hughes, 1950; Ellis, 1971; Matsushima, 1975), and the conidia usually have a single, distinct basal cell. In *M. melanocephaloides* conidiogenous cells are not distinctly swollen (Figs. 45, 50), and the base of the conidia usually comprise 3-5 paler cells. Because of these basal cells and the dark pigmentation, the conidia somewhat resemble those of *Melanocephala* S. Hughes. *Melanocephala* species, however, have macronematous conidiophores that proliferate percurrently (Hughes, 1979).



Figs. 51-54. *Monodictys trichocladopsis* (from holotype). 51. Portion of colony on natural substratum. 52-54. Conidiogenous hyphae bearing conidia. Septation of the conidia is obscured by the dark pigmentation. Bars: 51 = 5 μ m, 52-54 = 10 μ m.

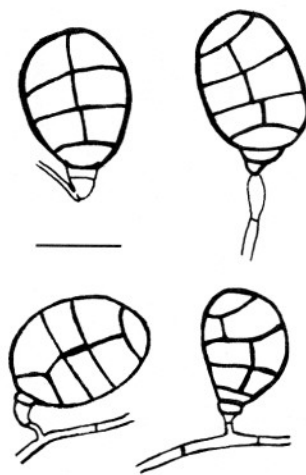
9. *Monodictys trichocladopsis* Goh and K.D. Hyde, **sp. nov.** (Figs. 51-55)

Etymology: *trichocladopsis*, referring to the conidia of this taxon in which the septa are obscured by dark pigmentation and thus superficially resemble those of *Trichocladium* species.

Coloniae in substrato naturali effusae, atrae, nitidae. *Mycelium* partim superficiale et partim immersum, ex hyphis subhyalinis vel pallide flavidobrunneis, 1.5-2 μ m latis, laevibus vel verruculosus, septatis, ramosis compositum. *Stromata* nulla. *Conidiophora* micronemata. *Conidia* ex hyphis superficialibus oriunda, solitaria, disseminata vel laxe gregaria, ellipsoidea vel pyriformia, laevia, 30-40 \times 20-25(-27) μ m, atra, dictyoseptata, cellula basilaris subglobosa, flavidobrunnea, 4-5 μ m diam.; conidiorum secessio rhexolytica.

Holotype: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC52 (HKU(M) 4739).

Colonies on natural substratum effuse, black, glistening. *Mycelium* partly superficial and partly immersed, comprising subhyaline to pale yellowish brown, 1.5-2 μ m wide, smooth or verruculose, septate, branched hyphae. *Setae*

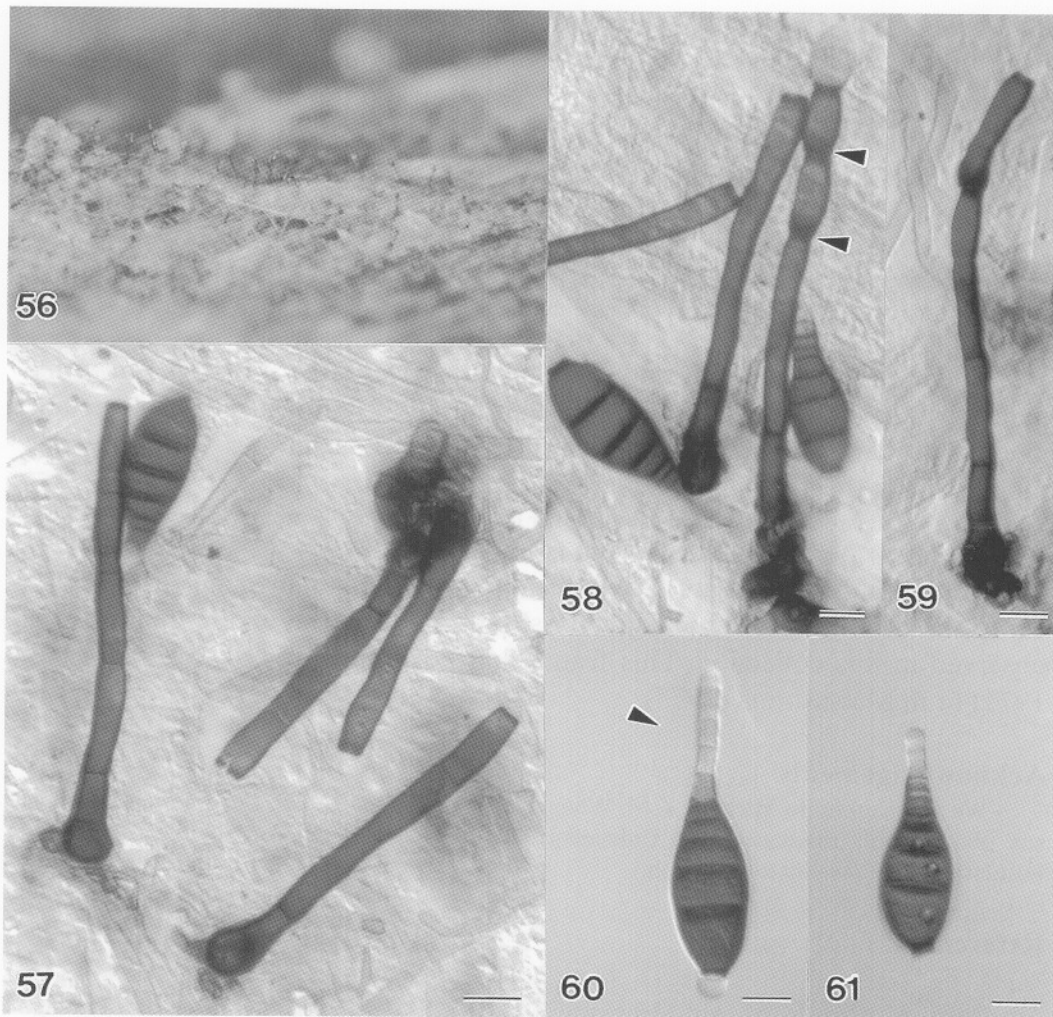


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Fig. 55. *Monodictys trichocladopsis* (from holotype). Diagrammatic representation of conidiogenous hyphae and muriform conidia. Stippling is omitted to illustrate septation of conidia. Bar = 20 μ m.

and *hyphopodia* absent. *Stromata* not developed. *Conidiophores* micronematous. *Conidial secession* rhexolytic. *Conidia* borne on undifferentiated hyphae, solitary, scattered or in loose clumps, ellipsoidal or pyriform, smooth-walled, 30-40 \times 20-25(-27) μ m, black, dictyoseptate, septa often obscured by the dark pigmentation; basal cell subglobose, yellowish brown, 4-5 μ m diam.

Notes: The conidia in this species are mostly darkly pigmented throughout except at the proximal portion where the cells are pale. Because the septa are obscured by the pigmentation, the conidia superficially resemble those of *Trichocladium* species (Goh and Hyde, 1999). This species also resemble *Bactrodesmium linderi* (Crane and Shearer) M.E. Palm and E.L. Stewart (syn. *Trichocladium linderi*; Crane and Shearer, 1978) based on the shape and pigmentation of the conidia. *Monodictys trichocladopsis* differs, however, in having muriform conidia, which are larger than those of *B. linderi*. Moreover, the colonies of *M. trichocladopsis* on natural substratum are effuse, whereas those of *B. linderi* are sporodochial.



Figs. 56-61. *Sporidesmium altum* (from HKU(M) 4741, Hong Kong collection). 56. Portion of colony on natural substratum. 57-59. Conidiophores. Note percurrent proliferations (arrowed in 58). 60, 61. Conidia. Note mucilaginous sheath at the apex (arrowed in 60). Bars: 57-61 = 10 μ m.

10. *Pleurophragmium bitunicatum* Matsush., *Icones microfungorum a Matsushima lectorum*: 115 (1975). (Figs. 23-26)

Conidiophores polydentate, up to 350 μ m long and 4-4.5 μ m wide. *Conidia* fusiform, 3-septate, greyish brown, the two end cells paler, 20-25 \times 5-7 μ m, with a distinct sheath.

Material examined: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC62 (HKU(M) 4741).

Notes: Matsushima (1975) reported that the conidia of this species could have up to 5 septa and were up to 35 μm long. Our collection has conidia which are exclusively 3-septate, and do not exceed 25 μm in length.

11. *Sporidesmium altum* (Preuss) M.B. Ellis, Mycological Papers 70: 46 (1958). (Figs. 56-61)

≡ *Helminthosporium altum* Preuss, Sturm's Deutschlands Flora 6: 33 (1848).

≡ *Brachysporium altum* (Preuss) Sacc., Sylloge Fungorum 4: 425 (1886).

≡ *Podoconis alta* (Preuss) E.W. Mason and S. Hughes, The Naturalist, London 846: 119 (1953).

Conidiophores solitary, dark brown, cylindrical, 40-110 \times 5-6 μm , often percurrently proliferating. *Conidia* obclavate, 40-52 \times 15-20 μm , 5-8-septate, medium to dark brown, subhyaline at the apex and sometimes with a hyaline mucilaginous sheath (Fig. 60).

Material examined: HONG KONG, Plover Cove Reservoir, on submerged wood, 15 Nov. 1996, Michelle K.M. Wong and K.D. Hyde, PC64 (HKU(M) 4741).

Notes: This is a true *Sporidesmium* (*sensu* Subramanian, 1992) with euseptate conidia. The mucilaginous sheath at the apex of the conidia was observed in this collection. This feature has not been reported in Ellis (1958, 1971) or in Matsushima (1975).

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References

- Arambarri, A., Cabello, M. and Mengascini, A. (1987). New hyphomycetes from Santiago River (Buenos Aires Province, Argentina). *Mycotaxon* 29: 29-35.
- Bhat, D.J. and Kendrick, B. (1993). Twenty-five new conidial fungi from the Western Ghats and the Andaman Island (India). *Mycotaxon* 49: 19-90.
- Castañeda Ruiz, R.F. and Kendrick, B. (1990a). Conidial fungi from Cuba I. University of Waterloo Biology Series 32: 1-53.
- Castañeda Ruiz, R.F. and Kendrick, B. (1990b). Conidial fungi from Cuba II. University of Waterloo Biology Series 33: 1-61.
- Castañeda Ruiz, R.F., Guarro, J. and Cano, J. (1996). Notes on conidial fungi. VIII. Two new species of *Dactylaria* from Cuba. *Mycotaxon* 58: 253-258.
- Castañeda Ruiz, R.F., Guarro, J. and Figueras, M.J. (1997). Notes on conidial fungi. XV. *Monodictys bicolorata*, sp. nov. *Mycotaxon* 64: 189-193.
- Castañeda Ruiz, R.F., Kendrick, B., Guarro, J. and Mayayo, E. (1998). New species of *Dictyochoaeta* and *Helicoma* from rain forests in Cuba. *Mycological Research* 102: 58-62.
- Cazau, C., Arambarri, A. and Cabello, M. (1990). New hyphomycetes from Santiago River.

- IV. (Buenos Aires Province, Argentina). *Mycotaxon* 38: 21-25.
- Crane, J.L. and Shearer, C.A. (1978). Two new species of *Trichocladium* (Hyphomycetes) from submerged wood. *Mycologia* 70: 866-874.
- Crous, P.W. and Wingfield, M.J. (1993). A re-evaluation of *Cylindrocladiella*, and a comparison with allied genera. *Mycological Research* 97: 433-448.
- DiCosmo, F., Berch, S. and Kendrick, B. (1983). *Cylindrotrichum*, *Chaetopsis*, and two new genera of hyphomycetes, *Kylindria* and *Xenokylindria*. *Mycologia* 75: 949-973.
- Dulymamode, R., Wu, W. and Peerally, A. (1998). Three new hyphomycetes on *Pandanus* leaves from Mauritius. *Mycoscience* 39: 285-291.
- Ellis, M.B. (1958). *Clasterosporium* and some allied Dematiaceae-Phragmosporae I. *Mycological Papers* 70: 1-89.
- Ellis, M.B. (1971). Dematiaceous hyphomycetes. Commonwealth Mycological Institute, Kew, UK.
- Gamundi, I.J., Arambarri, A.M. and Gaiotti, A. (1977). Micoflora de la hojarasca de *Nothofagus dombeyi*. *Darwiniana* 21: 81-114.
- Gams, W. and Holubová-Jechová, V. (1976). *Chloridium* and some other dematiaceous hyphomycetes growing on decaying wood. *Studies in Mycology* 13: 1-99.
- Goh, T.K. and Hyde, K.D. (1997). A revision of *Dactylaria*, with description of *D. tunicata* sp. nov. from submerged wood in Australia. *Mycological Research* 101: 1265-1272.
- Goh, T.K. and Hyde, K.D. (1999). A synopsis of *Trichocladium* species, based on the literature. *Fungal Diversity* 2: 101-118.
- Goh, T.K., Hyde, K.D. and Tsui, K.M. (1998b). The hyphomycete genus *Acrogenospora*, with two new species and two new combinations. *Mycological Research* 102: 1309-1315.
- Goh, T.K., Ho, W.H., Hyde, K.D. and Umali, T.E. (1997). New records and species of *Sporoschisma* and *Sporoschismopsis* from submerged wood in the tropics. *Mycological Research* 101: 1295-1307.
- Goh, T.K., Hyde, K.D., Ho, W.H. and Yanna. (1999). A revision of the genus *Dictyosporium*, with descriptions of three new species. *Fungal Diversity* 2: 65-100.
- Goh, T.K., Ho, W.H., Hyde, K.D., Whitton, S.R. and Umali, T.E. (1998a). New records and species of *Canalisporium* (Hyphomycetes), with a revision of the genus. *Canadian Journal of Botany* 76: 142-152.
- Goos, R.D. (1989). On the anamorph genera *Helicosporium* and *Drepanospora*. *Mycologia* 8: 356-374.
- Hernández-Gutiérrez, A. and Mena, J. (1996). *Dictyochaeta minutissima* sp. nov. on *Coccothrinax miraguama* from Cuba. *Mycological Research* 100: 687-688.
- Hernández-Gutiérrez, A. and Sutton, B.C. (1997). *Imimyces* and *Linkosia*, two new genera segregated from *Sporidesmium sensu lato*, and redescription of *Polydesmus*. *Mycological Research* 101: 201-209.
- Ho, W.H., Hyde, K.D. and Hodgkiss, I.J. (1997). Ascomycetes from tropical freshwater habitats: the genus *Savoryella*, with two new species. *Mycological Research* 101: 803-809.
- Ho, W.H., Ranghoo, V.M., Hyde, K.D. and Hodgkiss, I.J. (1999). Acal ultrastructural study in *Annulatascus hongkongensis* sp. nov., a freshwater ascomycete. *Mycologia* 91: (In press).
- Holubová-Jechová, V. (1984). Lignicolous hyphomycetes from Czechoslovakia 7. *Chalara*, *Exochalara*, *Fuschalara* and *Dictyochaeta*. *Folia Geobotanica et Phytotaxonomica* 19: 387-438.
- Hoog, G.S. de. (1985). Taxonomy of the *Dactylaria*-complex IV. *Dactylaria*, *Neta*, *Subulispora* and *Scolecobasidium*. *Studies in Mycology* 26: 1-60.

- Hughes, S.J. (1950). Studies on Microfungi. IV. Two fungi of *Betula* periderm. Mycological Papers 37: 1-17.
- Hughes, S.J. (1979). Relocation of species of *Endophragmia* auct. with notes on relevant generic names. New Zealand Journal of Botany 17: 139-188.
- Hughes, S.J. and Kendrick, W.B. (1968). New Zealand Fungi 12. *Menispora*, *Codinaea*, *Menisporopsis*. New Zealand Journal of Botany 6: 323-375.
- Hyde, K.D. (1993). Tropical Australian freshwater fungi. VI. *Tiarosporella paludosa* and *Clohesymyces aquaticus* gen. et sp. nov. (Coelomycetes). Australian Systematic Botany 6: 169-173.
- Hyde, K.D. (1995). Tropical Australia freshwater fungi. VII. New genera and species of ascomycetes. Nova Hedwigia 61: 119-140.
- Hyde, K.D. and Goh, T.K. (1997). Fungi on submerged wood in a small stream on Mt. Lewis, north Queensland, Australia. Muelleria 10: 145-157.
- Hyde, K.D. and Goh, T.K. (1998a). Tropical Australian Freshwater Fungi XIII. A new species of *Anthostomella* and its sporodochial *Geniculosporium* anamorph. Nova Hedwigia 67: 225-233.
- Hyde, K.D. and Goh, T.K. (1998b). Fungi on submerged wood in Lake Barrine, north Queensland, Australia. Mycological Research 102: 739-749.
- Hyde, K.D. and Goh, T.K. (1998c). Fungi on submerged wood in the Riviere St. Marie-Louis, The Seychelles. South African Journal of Botany 64: 330-336.
- Hyde, K.D. and Goh, T.K. (1999). Fungi on submerged wood from the River Coln, England. Mycological Research 103: (In press).
- Hyde, K.D. and Wong, S.W. (1999). *Didymella aptrooti* sp. nov., from bamboo submerged in freshwater. Australian Mycologist: (In press).
- Hyde, K.D., Goh, T.K. and Steinke, T.D. (1998). Fungi on submerged wood in the Palmiet River, Durban, South Africa. South African Journal of Botany 64: 151-162.
- Hyde, K.D., Ho, W.H. and Tsui, K.M. (1999). The genera *Aniptodera*, *Halosarpehia*, *Nais* and *Phaeonectriella* from freshwater habitats. Mycoscience 40: 165-184.
- Kuthubutheen, A.J. and Nawawi, A. (1991a). *Dictyocheata guadalcanalensis* comb. nov. and several new records of the genus in Malaysia. Mycological Research 95: 1220-1223.
- Kuthubutheen, A.J. and Nawawi, A. (1991b). Key to *Dictyocheata* and *Codinaea* species. Mycological Research 95: 1224-1229.
- Matsushima, T. (1971). Microfungi of the Solomon Island and Papua-New Guinea. Published by the author, Kobe, Japan.
- Matsushima, T. (1975). Icones microfungorum a Matsushima lectorum. Published by the author, Kobe, Japan.
- McKenzie, E.H.C. (1995). Dematiaceous hyphomycetes on Pandanaceae 5. *Sporidesmium sensu lato*. Mycotaxon 56: 9-29.
- Mercado Sierra, A., Heredia, G. and Mena Portales, J. (1995). New species of dematiaceous hyphomycetes from Veracruz, Mexico. Mycotaxon 55: 491-499.
- Rao, V. and Hoog, G.S. de. (1986). New or critical Hyphomycetes from India. Studies in Mycology 28: 1-84.
- Shearer, C.A. (1993). A new species of *Kirchsteiniotelia* (Pleosporales) with an unusual fissitunicate ascus. Mycologia 85: 963-969.
- Shearer, C.A. and Hyde, K.D. (1997). *Massarina ingoldiana*, a new ascomycete from freshwater habitats. Mycologia 89: 114-119.
- Sinclair, R.C., Boshoff, S. and Eicker, A. (1996). A new species of *Monodictys* from South

- Africa. Mycotaxon 59: 359-366.
- Stanley, S.J. and Hyde, K.D. (1997). *Boerlagiomyces grandisporus* sp. nov., a new tropical freshwater ascomycete from the Philippines. Mycological Research 101: 635-640.
- Subramanian, C.V. (1992). A reassessment of *Sporidesmium* (Hyphomycetes) and some related taxa. Proceedings of the Indian National Science Academy B58, 4: 179-190.
- Subramanian, C.V. (1997). Hyphomycetes from South East Asia-Novelties from Singapore and Malaysia. Kavaka 22/23: 52-76.
- Tsui, K.M., Goh, T.K. and Hyde, K.D. (1997). A new species of *Dactylaria* from Hong Kong. Sydowia 49: 182-186.
- Tsui, K.M., Hyde, K.D., Hodgkiss, I.J. and Goh, T.K. (1998). A new freshwater species of *Saccardoella* from Hong Kong and South Africa. Mycologia 90: 701-704.
- Tubaki, K. (1975). Notes on the Japanese hyphomycetes VI. *Candelabrum* and *Beverwykella* gen. nov. Transactions of the Mycological Society of Japan 16: 132-140.