Mycoscience 41: 223–226, 2000

Species of *Anthostomella* from Brunei, including *A. oblongata* sp. nov.

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Accepted for publication 27 March 2000

Species of *Anthostomella* reported from Brunei have been re-examined and the data is summarized in this paper. Five species are accepted, four are synonyms of previously described species and one is a new species. The new species *Anthostomella oblongata* is described and illustrated and a list of *Anthostomella* species known from Brunei and a key to these species are provided.

Key Words——*Anthostomella*; Brunei; new species; Xylariaceae.

Anthostomella (Xylariaceae, Xylariales) has been partially monographed by Francis (1975) and Rappaz (1995). Hyde (1996) later reviewed the *Anthostomella* species known from the palms. Of ten new species he described, five were collected in Brunei, one was a new record for Brunei, and were the earliest records of *Anthostomella* species in this country. Hyde et al. (1998) recently added another new species from *Calamus* (Palmae) collected in Brunei.

In the course of study on the genus *Anthostomella* and related genera (Lu et al., 1998), the species reported from Brunei have been re-examined. One of the taxa collected from Brunei has been found to be distinct from existing *Anthostomella* species and is described and illustrated. An annotated list of *Anthostomella* species known from Brunei (Table 1) and a key to these species is provided.

Eight species of *Anthostomella* have been described from Brunei (Hyde, 1996; Hyde et al., 1998; Fröhlich et Hyde, 1999). Of these species, *Anthostomella belalongensis* K. D. Hyde, *A. bruneiensis* K. D. Hyde, *A. rattanicola* K. D. Hyde, J. Fröhl. et J. Taylor, and *A. uniseriata* J. Fröhl. et K. D. Hyde are accepted in this study. Four species have been found to be previously described species: *Anthostomella minutoides* K. D. Hyde is a synonym of *A. ludoviciana* Ellis et Langl., *A. daemonoropis* K. D. Hyde is a synonym of *A. nigroannulata* (Berk. et M. A. Curtis) Sacc., *A. pandani* (Rabenh.) Sacc. is a synonym of *A. nitidissima* (Durieu et Mont.) Sacc., and *A. pinangae* K. D. Hyde is a synonym of *A. leptospora* (Sacc.) S. Francis.

The eight species of *Anthostomella* previously described or recorded from Brunei were known from palms, while *A. oblongata* was collected from non palm hosts in this study.

Taxonomy

Anthostomella oblongata B. S. Lu et K. D. Hyde, sp. nov. Figs. 1–11

Ascomata 550 μm diam, 450 μm alta, immersa, globosa, ostiolata. Asci 125–170 × 11.5–15 μm, 8-spori, apparatu subapicale J− cuneato 2.51–3 μm diam. 5–5.5 μm alto praediti. Ascosporae 14–17.5 × 9–11.5 μm, oblongo-ellipsoideae, bilateraliter concavae, olivaceae, fissura germinationis praeditae.

Etymology: from the Latin *oblongata* in reference to the ascospore shape.

Holotypus: Brunei, Temburong, Batu Apio Forest Researve, Kuala Belalong Field Studies Centre (KBFSC), along Ashton trai, on unidentified wood, 29 Aug. 1997, K. D. Hyde, HKU(M) 7313.

Ascomata deeply immersed, visible as blackened, raised conical areas, clustered or mostly solitary (Fig. 1); in vertical section ca 550 μm diam, 450 μm high, subglobose, dark brown, coriaceous, with a central, periphysate ostiolar canal, ca 55 μm diam, 150 μm high (Figs. 2, 3). Peridium 27.5–37.5 μm wide, comprising several layers of compressed cells, walls brown at the inside, dark brown and thick-walled towards the outside (Fig. 4). Paraphyses 2–3 μm ($\bar{x}$ = 2.4 μm, n = 10) wide, hypha-like, flexuose, septate and embedded in a gelatinous matrix (Fig. 6). Asci 125–170 × 11.5–15 μm ($\bar{x}$ = 148.8 × 12.3 μm, n = 20), 8-spored, cylindrical, unitunicate, short pedicellate, apically rounded, with an indistinct J−, wedge-shaped, subapical ring, 2.5–3 μm ($\bar{x}$ = 2.5 μm, n = 10) diam, 5–5.5 μm $\bar{x}$ = 5.1 μm, n = 10) high (Figs. 5, 7, 8). Ascospores 14–17.5 × 9–11.5 μm ($\bar{x}$ = 16.6 × 9.9 μm, n = 25), uniseriate, occasionally overlapping uniseriate, oblong-ellipsoidal, with two sides somewhat concave, hyaline when immature, mostly olivaceous at maturity, unicellular, smooth-walled, surrounded by a 0.5–1.5 μm ($\bar{x}$ = 0.8 μm, n = 10) mucilaginous sheath, germ slit

Table 1. Species of *Anthostomella* reported from Brunei.

Species	Herbarium	Host in Brunei	Conclusion	Reference
A. oblongata B. S. Lu et K. D. Hyde	HKU(M)	Unidentified wood	New species	This paper
A. belalongensis K. D. Hyde	BRIP	*Arenga* (Palmae)	Accepted species	Hyde, 1996
A. bruneiensis K. D. Hyde	BRIP	*Licuala* (Palmae)	Accepted species	Hyde, 1996
A. minutoides K. D. Hyde	BRIP	*Calamus* (Palmae)	A synonym of *A. ludoviciana* Ellis et Langl.	Hyde, 1996; this paper
A. daemonoropis K. D. Hyde	BRIP	*Daemonorops* (Palmae)	A synonym of *A. nigroannulata* (Berk. et M. A. Curtis) Sacc.	Hyde, 1996; this paper
A. pandani (Rabenh.) Sacc.	BRIP	*Oncosperma* (Palmae)	A synonym of *A. nitidissima* (Durieu et Mont.) Sacc.	Hyde, 1996; this paper
A. pinangae K. D. Hyde	BRIP	*Pinanga* (Palmae)	A synonym of *A. leptospora* (Sacc.) S. Francis	Francis, 1975; Hyde, 1996; this paper
A. rattanicola K. D. Hyde, J. Fröhl. et J. E. Taylor	HKU(M)	*Daemonorops* (Palmae)	Accepted species	Hyde et al., 1998
A. uniseriata J. Fröhl. et K. D. Hyde	HKU(M)	*Calamus* (Palmae)	Accepted species	Fröhlich and Hyde, 1999

straight, 10–14 μm ($\bar{x}$ = 11.4 μm, n = 10) (Figs. 9–11).

Known distribution: Brunei.

Known host: Unidentified wood.

Anthostomella oblongata differs from all other species of *Anthostomella* as it has distinctly shaped ascospores which are olivaceous, oblong-ellipsoidal, with somewhat concave sides, and rounded ends. *Anthostomella oblongata* is distinct from *A. nigroannulata* (Berk. et M. A. Curtis) Sacc. as ascospores are oblong-ellipsoidal, with somewhat concave sides as compared to broadly oblong-ellipsoidal, with straight sides in *A. nigroannulata*. Ascul rings are J− in *A. oblongata* and J+ in *A. nigroannulata*.

The formal synonymies of *Anthostomella* species from Brunei are given below.

Anthostomella leptospora (Sacc.) S. Francis, Mycological Papers **139**, 24 (1975).

≡*Anthostomella tomicum* (Lév.) Sacc. var. *leptospora* Sacc., Sylloge Fungorum **1**, 282 (1882).

=*Anthostomella pinangae* K. D. Hyde, Nova Hedwigia **62**, 329 (1996).

Material examined: Brunei, Temburong, Kuala Belalong, Rainforest Research Station, on dead trunk of *Pinanga* sp., Jul. 1993, K. D. Hyde (B125) 1819 (BRIP 21959, holotype of *A. pinangae*); France, on *Cladium mariscus*, as *A. tomicum* (PAD, holotype of *A. leptospora*).

Anthostomella ludoviciana Ellis et Langl., Proceedings of the Academy of Natural Sciences of Philadelphia **42**, 228 (1890).

=*Anthostomella minutoides* K. D. Hyde, Nova Hedwigia **62**, 315 (1996).

Material examined: Indonesia, Java, Cibodas, National Park, on dead leaf of *Pandanus* sp., Mar. 1992, K. D. Hyde 1123a (BRIP 21957, holotype of *A. minutoides*); USA, Iowa, St Martinsville, on dead stems of *Smilax* sp., 21 Jan. 1889, A. B. Langlois, *Flora Ludoviciana* 1696 (BPI 583018, 583019, CUP, IMI 190673, NY, W 18966, isotypes of *A. ludoviciana*).

Hyde (1996) placed several species of *Anthostomella* with small ascospores in *A. pandani* and described *A. minutoides* K. D. Hyde for a species with very small ascospores (4.8–6.4 × 2–2.8 μm) which are oblong-ellipsoidal to ellipsoidal, but not flattened in one plane. An earlier collection of this species was discovered in *A. ludoviciana* (spores 5.5–7.5 × 2.5–3 × 1.5–2 μm) which was collected from *Smilax* sp. in USA (this paper).

Anthostomella nigroannulata (Berk. et M. A. Curtis) Sacc., Sylloge Fungorum **1**, 279 (1882).

≡*Sphaeria nigroannulata* Berk. et M. A. Curtis, Cuban Fungi 889; Journal of the Linnean Society, Botany, **10**, 288 (1869).

=*Anthostomella daemonoropis* K. D. Hyde, Nova Hedwigia **62**, 294 (1996).

Material examined: Brunei, Temburong, Sungai Belalong, Rainforest Research Station, on dead rachis of *Daemonorops* sp., Jul. 1993, K. D. Hyde B29 (BRIP 21946, holotype of *A. daemonoropis*); Cuba, C. Wright 377 (K, holotype of *Sphaeria nigroannulata*).

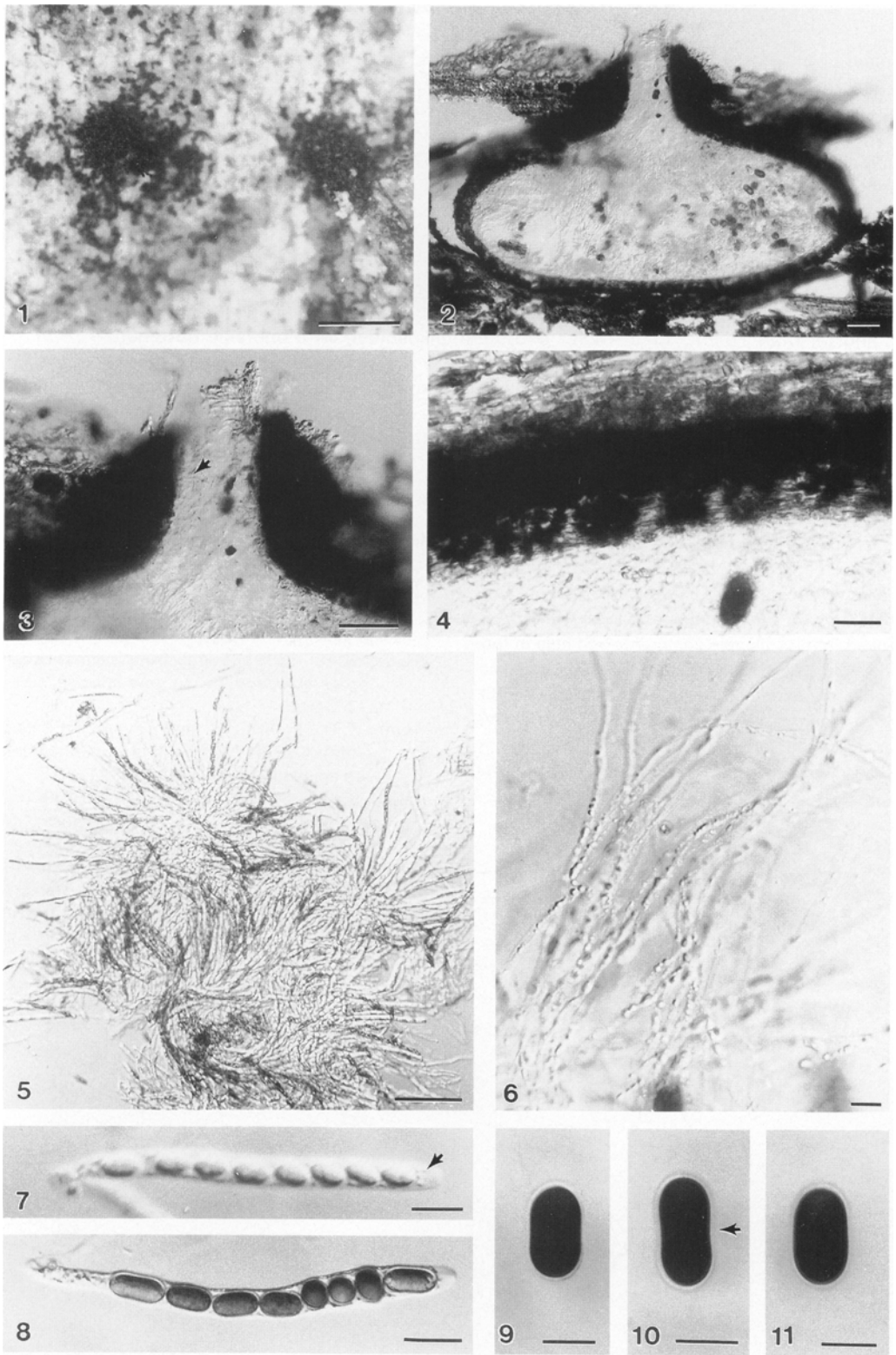
Anthostomella nitidissima (Durieu et Mont.) Sacc., Sylloge Fungorum **1**, 279 (1882).

≡*Sphaeria nitidissima* Durieu et Mont., Sylloge Generum Specierumque Cryptogamarum no 831 (1856).

=*Anthostomella pandani* (Rabenh.) Sacc., Sylloge Fungorum **1**, 292 (1882).

=*Sphaeria pandani* Rabenh., Hedwigia **17**, 45 (1878).

Material examined: Alger, Kaddous, Sur L'Arundo donax, ex herb. Durieu de Maisonneuve, Jan. 1840, slide ex herb PC (IMI 180626, type of *Sphaeria nitidissima*); Brunei, Jalan Kapok Kanan, Simpang 301, on dead rachis of *Oncosperma figillarum*, Nov. 1992, K. D. Hyde 1654 (BRIP 21956, as *A. pandani*); India, Calcutta, on leaves of *Pandanus fuccati*, S. Kurz, *Rabenhorst, Fungi europaena* 2338 (PAD, lectotype of *Sphaeria pandani*).



Figs. 1–11. *Anthostomella oblongata* (holotype). 1. Appearance of ascomata on the host surface. 2. Section of ascoma. 3. Ostiolar canal, with periphyses (arrowed). 4. Peridium, comprising several layers of compressed cells, walls brown at the inside, dark brown and thick-walled towards the outside. 5. Squash mount of asci and paraphyses. 6. Paraphyses. 7, 8. Asci, with a J-, wedge-shaped subapical ring (arrowed in 7). 9–11. Ascospores. Note that the two sides are somewhat concave (arrowed in 10). Scale bars: 1 = 500 μm; 2, 3, 5 = 50 μm; 7, 8 = 20 μm; 4, 6, 9–11 = 10 μm.

A key to species of *Anthostomella* from Brunei

1. Ascal subapical ring J−. 2
1. Ascal subapical ring J+. 3
2. Ascal subapical ring discoid; ascospores 15–17.5×4.5–5.5 μm, inequilaterally oblong-ellipsoidal, with a hyaline dwarf cell, wall verrucose, germ slit spiral ..... *A. rattanicola*
2. Ascal subapical ring wedge-shaped; ascospores 14–17.5×9–11.5 μm, oblong-ellipsoidal, with two sides somewhat convex, smooth-walled, germ slit straight. ..... *A. oblongata*
3. Ascospores with a hyaline dwarf cell, 20–26.5×8–9.5 μm, broadly inequilaterally ellipsoid-fusiform, with one side beaked, germ slit straight. ..... *A. belalongensis*
3. Ascospores lacking a dwarf cell. 4
4. Ascal subapical ring wedge-shaped. 5
4. Ascal subapical ring discoid. 7
5. Ascospores shorter than 15 μm, 11.5–14.5×5–6.5 μm, ellipsoidal, with one side flattened. ..... *A. leptospora*
5. Ascospores longer than 15 μm. 6
6. Ascospores 20.5–26.5×5.5–7.5 μm, inequilaterally ellipsoid-fusiform, beaked at the poles. ..... *A. bruneiensis*
6. Ascospores 15–20×7.5–10 μm, broadly oblong-ellipsoidal, with two sides parallel. ..... *A. nigroannulata*
7. Ascospores longer than 15 μm, 19.5–24×5.5–7.5×4–4.5 μm, oblong-ellipsoidal, with one side flattened and tapering ends. ..... *A. uniseriata*
7. Ascospores shorter than 15 μm. 8
8. Ascospores 5–7.5×2.5–3×1.5–2 μm, oblong-ellipsoidal. ..... *A. ludoviciana*
8. Ascospores 7.5–10×4.5–5.5×4–4.5 μm, inequilaterally ellipsoidal, with one side flattened. ..... *A. nitidissima*

Acknowledgements——Bing-Sheng Lu would like to thank The University of Hong Kong for a Postgraduate Studentship. Dr. E. Mckenzie is thanked for his valuable comments and help in fungal identification. Ms. Helen Leung is thanked for her technical assistance. Thanks are extended to curators of herbaria BRIP and HKU(M) for the loan of type specimens examined in this study. J. Charles, D. Edwards and all staff of the Biology Department of the University Brunei Darussalam are thanked for help and encouragement in working on the fungi of Brunei.

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