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Astrosphaeriella and *Roussoëlla* species on bamboo from Hong Kong and Yunnan, China, including a new species of *Roussoëlla*

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Abstract – A survey of bambusicolous fungi in Hong Kong and Yunnan, China yielded many specimens of *Astrosphaeriella* and *Roussoëlla*. *Roussoëlla hysterioides* and *R. pustulans* are new records for Hong Kong and Yunnan; *Astrosphaeriella fissuristoma*, *A. maculans*, *A. splendida*, *A. stellata* and *Roussoëlla intermedia* are new records for Hong Kong; *Astrosphaeriella bakeriana* is a new record for Yunnan. A new species, *Roussoëlla angustispora* on bamboo from Hong Kong is also reported in this paper.

Ascomycetes / lignicolous fungi / taxonomy

INTRODUCTION

Astrosphaeriella and *Roussoëlla* species are ascomycetes that commonly occur on palms and bamboo (Hawksworth, 1981; Hyde *et al*., 2002a; Hyde, 1997; Hyde & Fröhlich, 1997, Yanna *et al*., 2002). Eight species of *Astrosphaeriella* have been reported from bamboo (Teodoro, 1937; Hino, 1961; Hawksworth & Boise, 1985; Hyde & Fröhlich, 1997; Eriksson & Yue, 1998; Zhou & Hyde, 2002), while nine species of *Roussoëlla* have also been collected from bamboo (Candoussau *et al*., 1985; Hyde, 1997; Eriksson & Yue, 1998, Hyde *et al*., 2002b). Many specimens of *Astrosphaeriella* and *Roussoëlla* were recently collected from Hong Kong and Yunnan during a survey of bambusicolous fungi in 1998-1999. Among the 474 ascomycete specimens identified, 36 were *Astrosphaeriella* species and 116 were *Roussoëlla* species, which account for 8% and 24% of the total ascomycete specimens collected respectively.

MATERIALS AND METHODS

Bamboo samples were collected from Tai Po Kau Natural Reserve, The New Territories, Hong Kong and Kunming, Yunnan. They were returned to the

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laboratory where they were incubated in plastic bags lined with moistened tissue. Materials were periodically examined for the presence of fruiting bodies. All microscopic measurements were taken from specimens mounted in water. All fungal specimens listed in this paper are deposited in HKU(M).

TAXONOMY

Astrosphaeriella Syd. & P. Syd. Annales Mycologici 11: 260 (1913).

Astrosphaeriella in the Melanommataceae was reviewed by Hawksworth (1981), who accepted 4 species and circumscribed *Astrosphaeriella* as an exclusively tropical genus on palms and bamboos. This genus is closely related to *Trematosphaeria,* but differs by its relatively narrow and often paler ascospores as well as its palm and bamboo hosts (Hyde & Fröhlich, 1997). Hyde & Fröhlich (1997) monographed the genus and reported 31 species (including 10 new species and 5 new combinations) which were collected from palm and bamboo hosts in Australia, South East Asia and South America. A key and pictorial synopsis to accepted species of *Astrosphaeriella* was provided (Hyde & Fröhlich, 1997). The genus *Javaria* is similar to *Astrosphaeriella* and was treated as congeneric (Hyde & Fröhlich, 1997).

Astrosphaeriella bakeriana (Sacc.) K.D. Hyde & J. Fröhl., Sydowia 50: 93 (1997).

Known hosts: *Calamus tetradactylus, C. walkerii, Livistona chinensis* (Hyde & Fröhlich, 1997), *Bambusa chungii, Dendrocalamus pulverulentus* and *Phyllostachys pubscens* (this paper).

Known distribution: Hong Kong, Japan, Papua New Guinea, Singapore (Hyde & Fröhlich, 1997) and Yunnan (this paper).

Material examined: HONG KONG, New Territories, Tai Po Kau Natural Reserve, on senescent culm of *Bambusa* sp., 15 July 1998, Dequn Zhou (HKU(M) 9021); *ibid.,* on senescent culm of *Bambusa chungii*, 18 May 1999, Dequn Zhou (HKU(M) 9223); *ibid*., on dead culm of *B. glaurescens*, 18 May 1999, Dequn Zhou (HKU(M) 9233); *ibid*., Tai Shi King, on dead culm of *Dendrocalamus pulverulentus*, on 29 July 1998, Dequn Zhou (HKU(M) 9063); CHINA, Yunnan, Kunming, An ning, Qiu Mu Yuan, on senescent culm of *Phyllostachys pubscens*, 5 October 1998, Dequn Zhou (HKU(M) 9158).

Notes: This is the first collection of this species from dead bamboo culms.

Astrosphaeriella fissuristoma J. Fröhl., K.D. Hyde & Aptroot, in Hyde *et al*., Nova Hedwigia 70: 147 (2000).

Known hosts: *Calamus australis, C. caryotoides, C. conirostris, C. flabellatus, C. moti, C. pogonacanthus, C. radicadis, C. sordidus, Licuala* sp., *Mauritia flexuosa* (Hyde *et al*., 2000) and *Bambusa shiuyingiana* (this paper).

Known distribution: Pan-tropical, recorded from Australia, Brunei (Hyde *et al*., 2000) and Hong Kong (this paper).

Material examined: Hong Kong, New Territories, Tai Po Kau Nature Reserve, on senescent culm of *Bambusa shiuyingiana*, 27 August 1999, Dequn Zhou (HKU(M) 9352).

Notes: Hyde *et al*. (2000) compared *Astrosphaeriella fissuristoma* with *A. mangrovei*, which is the most similar species, with asci and ascospores of similar size and morphology. They differ greatly in habit, as *A. mangrovei* has only been collected on mangroves in intertidal habitats.

Astrosphaeriella maculans (Rehm) Aptroot, K.D. Hyde & Joanne E. Taylor, Nova Hedwigia 70: 152 (2000).

Known hosts: *Archontophoenix alexandrae, Arenga mindorensis* (Hyde *et al*., 2000) and *Bambusa chungii* (this paper).

Known distribution: Australia, Philippines (Hyde *et al*., 2000) and Hong Kong (this paper).

Material examined: HONG KONG, New Territories, Kadoorie Farm, on dead culm of *Bambusa chungii*, 10 August 1998, Dequn Zhou (HKU(M) 9091); *ibid*., Tai Po Kau Nature Reserve, on senescent culm of *B. chungii*, 26 June 1998, Dequn Zhou (HKU(M) 8385).

Notes: Hyde *et al*. (2000) stated that there is considerable variation in the size ranges of the characters of this species, but these are continuous and the morphology is so consistent that it is considered to represent infraspecific variation only.

Astrosphaeriella splendida K.D. Hyde & J. Fröhl., Sydowia 50: 112-113 (1997).

Known hosts: *Astrocaryum, Iriartia, Jessenia bataua, Mauritia flexuosa* (Hyde & Fröhlich, 1997) and *Arundinaria hindsii* (this paper).

Known distribution: Ecuador (Hyde & Fröhlich, 1997) and Hong Kong (this paper).

Material examined: HONG KONG, Hong Kong Island, Lung Fu Shan Country Park, on senescent culm of *Arundinaria hindsii*, 5 June 1999, Dequn Zhou (HKU(M) 9240).

Notes: Hyde & Fröhlich (1997) stated that this species differs from other *Astrosphaeriella* species as its ascospores have unusual appendages at each end. The collection is most identical to *Astrosphaeriella splendida* in morphology of ascomata, asci and ascospores, but ascospores are slightly narrower (48-54 × 6-8 µm *vs* 42-63 × 7.5-10 µm) (Hyde & Fröhlich, 1997).

Astrosphaeriella stellata (Pat.) Sacc., Sylloge Fungorum 24: 938 (1928).

Known hosts: Bamboo, *Calamus* (Hyde & Fröhlich, 1997) *Bambusa textilis* and *Dendrocalamus pulverulentus* (this study).

Known distribution: Australia, French Guiana, Hong Kong, India, Indonesia (Java), Japan, Papua New Guinea, Philippines. Vietnam (Hyde & Fröhlich, 1997) and Hong Kong (this study).

Material examined: HONG KONG, New Territories, Tai Po Kau Nature Reserve, on senescent culm of *Bambusa textilis*, 6 June 1998, Dequn Zhou (HKU(M) 8351); *ibid*., on senescent culm of *B. shiuyingiana*, 27 August 1999, Dequn Zhou (HKU(M) 9362); *ibid*., 3 September 1999, Dequn Zhou (HKU(M) 9206); *ibid*., Tai Shui Kang, on senescent culm of *Dendrocalamus pulverulentus*, 29 July 1998, Dequn Zhou (HKU(M) 9064); *ibid*., Kadoorie Farm, on senescent culm of *D. pulverulentus*, 5 August 1998, Dequn Zhou (HKU(M) 9089).

Notes: These collections are indistinguishable from *A. stellata* except that the ascospores are slightly narrower (37.5-47.5 × 5-6 µm *vs* 42-58 × 5.5-7 µm) (Hyde & Fröhlich, 1997).

Astrosphaeriella trochus (Penz. & Sacc.) D. Hawksw., Botanical Journal of the Linnean Society 82: 46 (1981).

Known hosts: Old bamboo stems and stout grasses (Hyde & Fröhlich, 1997) and *Phyllostachys pubscens* (this study).

Known distribution: Chile, China, Colombia, Ecuador, French Guiana, Indonesia (Java), Japan, South Africa, Taiwan, Uganda (Hyde & Fröhlich, 1997).

Material examined: CHINA, Yunnan, Kunming, An ning, Qiu Mu Yuan, on senescent culm of *Phyllostachys pubscens*, 5 October 1998, Dequn Zhou (HKU(M) 9154); *ibid*., Yiliang, on dead culm of *P. bambusoides*, 27 July 1999, Dequn Zhou (HKU(M) 9350); *ibid*., 13 September 1999, Dequn Zhou (HKU(M) 9359).

Notes: Our collections match *Astrosphaeriella trochus*. Ascomata however, have no teeth-like flangers (Hawksworth, 1981) and colour of the ascospores are pale olivaceous-brown (*vs* reddish-brown) (Hyde & Fröhlich, 1997).

Roussoëlla Sacc., in Saccardo & Paoletti, Atti Accademia Scientitica Veneto-Trentino-Istriana 6: 410 (1888).

Roussoëlla Sacc. was introduced by Saccardo for the single species *R. nitidula* Sacc. & Paol. (Saccardo & Paoletti, 1888). It was redescribed by Hyde *et al*. (1996) and the anamorph of *Roussoëlla hysterioides*, *Cytoplea hysterioides* K.D. Hyde was determined and described. *Roussoëlla* was then reviewed by Hyde (1997) and a modified key for *Roussoëlla* species was provided based on the one proposed by Ju *et al*. (1996). *Roussoëlla* species are normally confined to bamboo (Candoussau *et al*., 1985; Hyde, 1997; Eriksson & Yue, 1998) and palms. It is characterized as immersed ascomata containing long and cylindrical asci and brown bicelled ornamented ascospores. In our survey on bambusicolous fungi, we found that *Roussoëlla* species are very common on bamboo culms in Hong Kong and Yunnan, China.

Roussoëlla angustispora D.Q. Zhou, L. Cai & K.D. Hyde, sp. nov. (Figs 1-8)

Ascomata sub stomata immersa, 750-900 µm diam., 300 µm alta, subglobosa. Asci 200-240 × 14-17 µm, 8-spori, cylindrici, pedicellati, bitunicati. Ascosporae 24-28 × 6-8 µm, uniseriatae, ellipsoidea-fusiformis, 1-septatae, ad septum constrictae, brunneae, reticulatae.

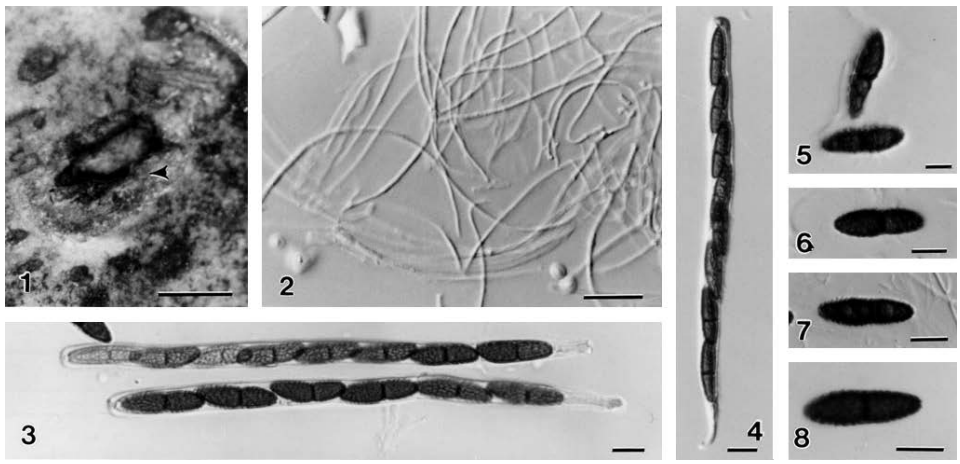
Ascomata forming under black, shiny, dome-like areas up to 2 µm diam. on the host surface, with an inconspicuous central ostiole, solitary; in section 750-900 µm diam., up to 300 µm high, subglobose, surrounded by stromatic tissues (Fig. 1). Peridium up to 3 µm wide, comprising several layers of compressed elongate brown-walled cells. Hamathecium trabeculae embedded in a gelatinous matrix (Fig. 2). Asci 200-240 × 14-17 µm ($\overline{x}$ = 210 × 15.5 µm, n = 20), 8-spored, cylindrical, with a knob-like pedicel, relatively thick-walled, bitunicate, with an ocular chamber and faint ring (Figs 3-4). Ascospores 24-28 × 6-8 µm ($\overline{x}$ = 25.5 × 7 µm, n = 50), uniseriate, ellipsoid-fusiform, 1-septate, constricted at the septum, brown, with reticulate wall ornamentations (Figs 5-8).

Etymology: From Latin *angustus* meaning "narrow" and *spora* meaning "spore", referring to the narrow ascospores.

Holotype (designated here): HONG KONG, New Territories, Tai Po Kau Nature Reserve, on senescent culm of *Bambusa changii*, 8 September 1998, Dequn Zhou (HKU(M) 9144).

Other material examined: BRUNEI, Tembong, Kuala Belalong, Field Studies Centre, on bamboo, at edge of river, 12 December 1997, K.D. Hyde (HKU(M) 8313).

Notes: *Roussoëlla scabrispora* is the only one species in the genus having reticulate ascospores, but the ascospores in *R. angustispora* are conspicuously narrower (24-28 × 6-8 µm *vs* 26.5-35 × 10-12.5 µm) (Hyde, 1997). The ornamentation in ascospores of *R. alveolata* is somewhat similar. The ornamentation however, comprises longitudinal ribs and numerous horizontal links between the ribs which give the pits an angular to square appearance. *Roussoëlla alveolata* also has larger ascospores and larger pits (Ju *et al*., 1996).



Figs 1-8. *Roussoëlla angustispora* (from holotype). 1. Appearance of host surface. 2. Pseudoparaphyses. 3-4. Asci. Note the reticulate ornamentation on the ascospores in 3. 5-8. Ascospores (Scale bars: 1 = 500 μm; 3-4 = 20 μm; 2, 5-8 = 10 μm).

Roussoëlla hysterioides (Ces.) Höhn., Sitzungsberichten der Akademie der Wissenschaften in Wien, Mathematischnaturwissenschaftliche Klasse, Abteilung I 128: 563 (1919).

Known distribution: Tropical, subtropical and warm temperate regions (Hyde, 1997), Hong Kong and Yunnan, China (this paper).

Known Hosts: Bamboo spp., *Pennisetum,* Zingiberaceae spp. (Hyde, 1997), *Arundinaria hindsii, Bambusa basihirsuta, B. multabilis, Dendrocalamus pulverulentus, Indocalamus sinicus, Phyllostachys glauca* and *P. pubscens* (this paper).

Material examined: HONG KONG, New Territories, Tai Po Kau Nature Reserve, on dead culm of *Bambusa textilis,* 14 April 1998, Dequn Zhou (HKU(M) 8329); *ibid*., on senescent culm of *B. multabilis,* 15 July 1998, Dequn Zhou (HKU(M) 9026); *ibid.,* Dequn Zhou (HKU(M) 9031); *ibid.,* Dequn Zhou (HKU(M) 8330); *ibid*., on senescent culm of *B. tuldoides*, 17 June 1999, Dequn Zhou (HKU(M) 9252); *ibid*., Dequn Zhou (HKU(M) 9290); *ibid*., on senescent culm of *Phyllostachys glauca*, 6 June 1998 Dequn Zhou (HKU(M) 8360); *ibid*., Dequn Zhou (HKU(M) 8364); *ibid*., on dead culm of *Bambusa vulgaris* var. *vittata*, 25 June 1998, Dequn Zhou (HKU(M) 8381); *ibid*., Sai Kung, on dead culm of *Indocalamus sinicus*, 27 June 1998, Dequn Zhou (HKU(M) 9001); *ibid*., on dead culm of *Dendrocalamus pulverulentus*, 27 June 1998, Dequn Zhou (HKU(M) 8392); *ibid.,* 29 July 1998, Dequn Zhou (HKU(M) 9065); *ibid.,* on dead culm of *Arundinaria hindsii,* 29 July 1998, Dequn Zhou (HKU(M) 9067); *ibid*., Hong Kong Island, Victoria Peak, on dead culm of *Arundinaria hindsii*, 8 June 1998, Dequn Zhou (HKU(M) 8344); *ibid*., on senescent culm of *Bambusa basihirsuta,* 30 June 1998, Dequn Zhou (HKU(M) 9012); CHINA, Yunnan, Kunming, West Hill, on dead culm of *Fargesia yunnanensis*, 4 July 1999, Dequn Zhou (HKU(M) 9265); *ibid*., 29 July 1999, Dequn Zhou (HKU(M) 9315); *ibid*., Dequn Zhou (HKU(M) 9317); *ibid*., Yiliang, on dead culm of *P. bambusoides*, 25 June 1999, Dequn Zhou (HKU(M) 9268); *ibid*., Dequn Zhou (HKU(M) 9273); *ibid*., Dequn Zhou (HKU(M) 9283); *ibid*., Dequn Zhou (HKU(M) 9285); *ibid*., Dequn Zhou

(HKU(M) 9287); 27 July 1999, Dequn Zhou (HKU(M) 9305); Dequn Zhou (HKU(M) 9324); *ibid*., Dequn Zhou (HKU(M) 9325); *ibid*., Dequn Zhou (HKU(M) 9327); *ibid*., Dequn Zhou (HKU(M) 9329); *ibid*., Dequn Zhou (HKU(M) 9331); *ibid*., Dequn Zhou (HKU(M) 9333); *ibid*., Dequn Zhou (HKU(M) 9308); *ibid*., Dequn Zhou (HKU(M) 9309); *ibid*., 13 September 1999, Dequn Zhou (HKU(M) 9360); *ibid*., An ning, Qiu Mu Yuan, on senescent culm of *Phyllostachys pubscens*, 5 October 1998, Dequn Zhou (HKU(M) 9197); *ibid*., on dead culm of *Neosinocalamus affinis*, 4 July 1999, Dequn Zhou (HKU(M) 9288).

Roussoëlla intermedia Y.M. Ju, J.D. Rogers & Huhndorf, Mycotaxon 58: 447 (1996).

Known hosts: on culm of *Bambusa* and *Dendrocalamus latiflorus* (Ju & Rogers, 1996), *Bambusa beecheyana, B. vulgaris* var. *vittata* (this paper).

Known distribution: Philippines, Taiwan (Ju & Rogers, 1996) and Hong Kong (this paper).

Material examined: HONG KONG, New Territories, Tai Po Kau Nature Reserve, on senescent culm of *Bambusa vulgaris* var. *vittata*, 24 June 1998, Dequn Zhou (HKU(M) 8382); *ibid*., on dead culm of *Bambusa beecheyana,* 15 July 1998, Dequn Zhou (HKU(M) 9039); *ibid*., on senescent culm of *Phyllostachys bambusoides*, 5 August 1999, Dequn Zhou (HKU(M) 9341); *ibid*., Dequn Zhou (HKU(M) 9343); *ibid*., Hong Kong Island, Pokfulam Country Park, on senescent culm of *B. tuldoides*, 5 June 1999, Dequn Zhou (HKU(M) 9245).

Roussoëlla pustulans (Ellis & Everh.) Y.M. Ju, J.D. Rogers & Huhndorf, Mycotaxon 58: 448 (1996).

Culture characters: Colony reach 6.5 cm diam. after two weeks on PDA, blackish brown, raised and fluffy, with rich aerial hyphae. No conidial structure produced after one month (HKUCC3016).

Known hosts: Bamboo, Palms (Hyde, 1997), *Bambusa* sp., *B. mutabilis, B. textilis, B. sinospinrosa, Dendrocalamus pulverulentus, Neosinocalamus affinis, Phyllostachys glauca* and *P. nidularia* (this paper).

Known distribution: Brunei, Indonesia, Taiwan, U.S.A. (Hyde, 1997), Hong Kong and Yunnan (this paper).

Material examined: CHINA, Yunnan, Kunming, An ning, Qiu Mu Yuan, on senescent culm of *Neosinocalamus affinis*, 5 October 1998, Dequn Zhou (HKU(M) 9163); *ibid*., West Hill, on dead culm of *Fargesia yunnanensis*, 4 July 1999, Dequn Zhou (HKU(M) 9266); *ibid*., 29 July 1999, Dequn Zhou (HKU(M) 9313); *ibid*., Yiliang, on senescent culm of *Phyllostachys bambusoides*, 25 June 1999, Dequn Zhou (HKU(M) 9270); *ibid*., Dequn Zhou (HKU(M) 9189); *ibid*., Hong Kong, New Territories, Tai Po Kau Natural Reserve, on dead culm of *P. glauca*, 6 June 1998, Dequn Zhou (HKU(M) 8359); *ibid*., on senescent culm of *P. bambusoides*, 5 August 1999, Dequn Zhou (HKU(M) 9344); *ibid*., on dead culm of *Bambusa textilis*, 24 June 1998, Dequn Zhou (HKU(M) 8386); *ibid*., on dead culm of *Bambusa* sp., Dequn Zhou (HKU(M) 9022); *ibid*., on senescent culm of *B. mutabilis,* 15 July 1998, Dequn Zhou (HKU(M) 9025); *ibid*., Sai kung, on senescent culm of *B. sinospinrosa,* 2 July 1998, Dequn Zhou (HKU(M) 8399); *ibid*., on senescent culm of *Dendrocalamus pulverulentus*, 27 June 1998, Dequn Zhou (HKU(M) 8393); *ibid*., Dequn Zhou (HKU(M) 9008); *ibid*., on senescent culm of *B. sinospinrosa,* 2 July 1998, Dequn Zhou (HKU(M) 8399); *ibid*., Dao Moushan, on dead culm of *P. nidularia*, 19 May 1999, Dequn Zhou (HKU(M) 9238).

Notes: This species is similar to *Didymosphaeria futilis* (Berk. & Broome) Rehm., as both species have similar asci and ascospores. In *Didymosphaeria*

futilis the hamathecium is trabeculate and ascospores are thinly pseudosepta (Aptroot, 1995).

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REFERENCES

APTROOT A., 1995 – Redisposition of some species excluded from *Didymosphaeria* (Ascomycotina). *Nova Hedwigia* 60: 325-379.

CANDOUSSAU F., KATUMOTO K. & SHERWOOD-PIKE M., 1985 – Bambusicolous fungi from the southwest of France I. Two new species of Pyrenomycetes and a new genus of the Phacidiaceae. *Sydowia* 38: 28-34.

ERIKSSON O.E. & YUE J.Z., 1998 – Bambusicolous pyrenomycetes, an annotated check-list. *Myconet* 1: 25-78.

HAWKSWORTH D.L., 1981 – *Astrosphaeriella* Sydow, a misunderstood genus of melanommataceous pyrenomycetes. *Botanical Journal of the Linnean Society* 82: 35-59.

HAWKSWORTH D.L. & BOISE J.R., 1985 – Some additional species of *Astrosphaeriella*, with a key to the members of the genus. *Sydowia* 38: 114-124.

HINO I., 1961 – *Icones Fungorum Bambusicolorum Japonicorum*. The Fuji Bamboo Garden, Japan.

HYDE K.D., 1997 – The genus *Roussoëlla*, including two new species from palms in Cuyabeno, Ecuador. *Mycological Research* 101: 609-616.

HYDE K.D. & FRÖHLICH J., 1997 – Fungi from palms XXXVII. The genus *Astrosphaeriella,* including ten new species. *Sydowia* 50: 81-132.

HYDE K.D., ERIKSSON O.E. & YUE J.Z. 1996 – *Roussoëlla*, an ascomycete genus of uncertain relationships with a *Cytoplea* anamorph. *Mycological Research* 100: 1522-1528.

HYDE K.D., APTROOT A., FRÖHLICH J. & TAYLOR J.E., 2000 – Fungi from palms. XLIII. *Lophiostoma* and *Astrosphaeriella* species with slit-like ostioles. *Nova Hedwigia* 70: 143-160.

HYDE K.D., ZHOU D.Q. & DALISAY T., 2002a – Bambusicolous fungi: A review. *Fungal Diversity* 9: 1-14.

HYDE K.D., ZHOU D.Q., MCKENZIE E.H.C., HO W.H. & DALISAY T., 2002b – Vertical distribution of saprobic fungi on bamboo culms. *Fungal Diversity* 11: 109-118.

JU Y.M., ROGERS J.D. & HUHNDORF S.M., 1996 – *Valsaria* and notes on *Endoxylina, Pseudothyridaria, Pseudovalsaria* and *Roussoëlla*. *Mycotaxon* 58: 419-481.

TEODORO N.G., 1937 – An Enumeration of Philippine Fungi. *Technical Bulletin of the Department of Agriculture and Commerce, Manila* 4: 1-585.

SACCARDO P.A. & PAOLETTI G., 1888 – Mycetes Malaccenses. *Atti Academia Scientitica Veneto-Trentino-Istriana,* 6: 387-428.

YANNA, HO W.H. & HYDE K.D., 2002 – Fungal succession on fronds of *Phoenix hanceana* in Hong Kong. *Fungal Diversity* 10: 185-211.

ZHOU D.Q. & HYDE K.D., 2002 – Fungal succession on bamboo in Hong Kong. *Fungal Diversity* 10: 213-227.