Fungi from palms XXXVII. The genus *Astrosphaeriella*,
including ten new species

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Collections of fungi from palms and bamboos in Australasia, South East Asia and South America have resulted in the identification of several species of *Astrosphaeriella*. The generic concepts in *Astrosphaeriella* are discussed and the accepted species in the genus are redescribed. Ten species are new to science and these fungi are also described in this paper. A key and pictorial synopsis to accepted species of *Astrosphaeriella* are provided.


Hawksworth (1981) circumscribed *Astrosphaeriella* as an exclusively tropical genus occurring on palms and bamboo. It was considered to be closely related to *Trematosphaeria* Fuckel, from which it is distinguished by its relatively narrow and often also paler ascospores as well as its palm and bamboo hosts. The genus *Javaria* Boise (1984) is similar and is treated here as congeneric. It was pre-
viously considered to differ in having hyaline ascospores with sheaths (Boise, 1984). There are presently 17 recognised taxa and it is considered timely to bring together the information on this genus. Our studies on the fungi developing on decaying parts of palms and bamboo throughout Australasia, South East Asia and South America (Ecuador) have widened the distribution records of Astrosphaeriella. The genus is therefore reviewed in this paper, including 31 accepted species of which 10 are new to science and five are new combinations.

**Material and methods**

Collections of fungi on palms were made in Australia, Brunei, Ecuador, Hong Kong, Indonesia, Malaysia, Papua New Guinea and the Philippines. Type material of Astrosphaeriella species were loaned from BRIP, FH, IMI, K, NY, PAD and S. All measurements are made in water. The descriptions of each species include characters that are considered to be important at the species level, while standard characteristics are found in the generic diagnosis which is modified from Hawksworth (1981).

**Taxonomy**


For additional synonyms see Hawksworth (1981).


Ascomata arising singly, scattered, or rarely 2–3 joined together at the base, immersed and subepidermal at first, becoming superficial in some, at maturity either covered by epidermis except in the ostiolar region, or the host tissues rupture and in some remain as scales around the base to give them a stellate appearance from above; in section unilocular, hemispherical to conical, base flattened, ostiolate, dark-purplish brown to almost black. – Peridium relatively thick, carbonaceous, composed of thick-walled dark angular pseudoparenchymatous cells, lumen of cells often occluded, base of ascomatal cavity poorly developed, at the periphery often composed of vertical orientated palisade-like cells. – Ostiole black, mammiform or elongate, aperiphysate. – Hamathecium composed of numerous narrow (1 µm wide) trabeculae embedded in a gelatinous matrix. – Asci 8-spored, cylindrical, cylindric-clavate, or narrowly obclavate, bitunicate, pedicellate, with an ocular chamber and some
with a faint ring, arising from the base of the ascomatal cavity. – Ascospores 2–3 seriate, elongate-fusiform, mostly straight, mostly tapering towards the apices, 1–5 septate, hyaline or reddish brown, concolourous, smooth-walled, or with striations, often with a mucilaginous sheath.

Anamorph. – Unknown
Type. – Astrosphaeriella stellata (Pat.) Sacc.
Known hosts. – Palms and bamboo.
Distribution. – Pantropical.

Hawksworth (1981) and Hawksworth & Boise (1985) neatly circumscribed Astrosphaeriella. Astrosphaeriella is included in the Melanommatales, Platystomaceae (sensu Barr, 1990) or Melanommataceae (sensu Hawksworth & al., 1995). The genus Javaria which was introduced by Boise (1984) is very similar to Astrosphaeriella. Javaria was considered to differ from Astrosphaeriella on account of its ascospore pigmentation and structure. Boise (1984) states that "the ascospores in Astrosphaeriella species produce brown pigments and lack sheaths or appendages, whereas, in Javaria the ascospores are hyaline and sheathed". With the addition of 10 new species of Astrosphaeriella this distinction has become blurred. Many brown-spored species of Astrosphaeriella have sheaths and the type species A. stellata rarely develops brown ascospores and also has a sheath. Boise (1984) also found that a ring appeared at the apex of the endotunicae of J. samuelsii Boise when stained in Congo Red, and thought this may be an additional character to distinguish Javaria, but this was not tested in any species of Astrosphaeriella. Because of the minor differences between J. samuelsii and other species in Astrosphaeriella, Javaria is regarded as a synonym of Astrosphaeriella.

Key to Astrosphaeriella species

1. Ascospores brown .................................................. 2
1. Ascospores hyaline at maturity, or some occasionally becoming light brown .................................................. 19
2. Ascospores 1-septate .................................................. 3
2. Ascospores usually with more than 1-septa ..................... 10
3. Ascospore wall striate .................................................. 4
3. Ascospore wall smooth or verrucose ................................ 6
4. Ascospores longer than 46 μm [46–57(-64) x 5.5–6.5(-8) μm] .......................................................... A. africana
4. Ascospores less than 46 μm long ................................. 5
5. Ascospores 34–42 × 6–6.5 µm, distinctly striate, lacking a sheath .............................................. A. papuana
5. Ascospores 31–45 × 7–8 µm, minutely striate, fusiform, surrounded by an irregular mucilaginous sheath .... A. papillata
6. Ascospore wall verrucose, ascospores 30–34 × 6–8 µm ........
   .................................................. A. malayensis
6. Ascospore wall smooth .......................................................... 7
7. Ascospores 17.5–25 × 6.25–8.75 µm, ellipsoidal, surrounded by a regular mucilaginous sheath, ascomata superficial .... A. frondicola
7. Ascospores lacking a mucilaginous sheath, or with polar appendages ........................................... 8
8. Ascospores lenticular (fusiform with pointed ends) ............ 9
8. Ascospores 26.3–30.5 × 5–5–6 µm, fusiform with rounded ends ........................................ A. livistonicola
9. Ascospores 42–63 × 7.5–10 µm, with distinct mucilaginous appendages at the ends ................................. A. splendida
9. Ascospores 37–48 × 7.5–9.5 µm, with minute mucilage drop at the ends ........................................ A. lenticularis
10. Ascospore wall striate (or with longitudinal ridges) ........... 11
10. Ascospore walls smooth or slightly verrucose ................. 13
11. Ascospores 31–38 × 6–9 µm, 3-septate, with a mucilaginous sheath .............................................. A. striatispora
11. Ascospores (2–)3(–6)-septate, longer than 60 µm, lacking a mucilaginous sheath ........................................ 12
12. Ascospores 60–62.5 × 10–11 µm, with a few longitudinal ridges, ascomata immersed ............................... A. aequatorioriensis
12. Ascospores 65–75 × 7–8 µm, 3–6-septate, ascomata superficial .......................................................... A. striaspora
13. Ascospores (1–)3-septate ...................................................... 14
13. Ascospores (3–)5-septate ...................................................... 15
14. Ascospores (70–)72–80(–83) × (5–)6.5–7.5(–8.5) µm, with beak-like or uncinate ends .......................... A. venezuelensis
14. Ascospores less than 70 µm long, lacking beak-like or uncinate ends ......................................................... 15
15. Ascospores 46–56 × 6–8 µm, reddish brown, with narrow paler end cells, with a thin 1 µm sheath ............. A. tornata
15. Ascospores light brown or brown, with mucilage associated with the ends ........................................ 16
16. Ascospores (33–)36–45(–50) × (5.5–)7–8(–9) µm, light brown or brown, with mucilage associated at the ends .... A. vesuvius
16. Ascospores mostly longer than 45 μm .......................... 17
17. Ascospores (68-)74–88 × 8–10 μm, with inconspicuous mucilag at the ends .......................... *A. exorrhiza*
17. Ascospores mostly less than 68 μm long .......................... 18
18. Ascospores 44–52 × 5–7 μm, brown, surrounded by an evanescent sheath with distinct drawn out appendages at the ends .......................... *A. maquilingiana*
18. Ascospores (44-)48–65(-72) × (5-)6–8(-9) μm, lacking distinct drawn out appendages .......................... *A. trochus*
19. Ascospores mostly longer than 42 μm .......................... 20
19. Ascospores mostly shorter than 42 μm .......................... 25
20. Ascospores mostly wider than 8 μm .......................... 21
20. Ascospores mostly less than 8 μm wide .......................... 22
21. Ascospores 48–57 × 10–12 μm, with a narrow mucilaginous sheath .......................... *A. uberina*
21. Ascospores 48–52 × 8–10 μm, with a wide irregular mucilaginous sheath .......................... *A. lophiostomopsis*
22. Ascospores 50–60 × 5–6 μm, with a thin sheath drawn out at the ends .......................... *A. australiensis*
22. Ascospores mostly wider than 6 μm .......................... 23
23. Ascospores 42–58 × 5.5–7 μm, with a thin sheath which is obtuse at the ends .......................... *A. stellata*
23. Ascospores with a sheath which is drawn out at the ends .......................... 24
24. Ascospores 57–67 × 6–9 μm, with a thin sheath which is drawn out at the ends, asci cylindric-clavate .... *A. nipaecola*
24. Ascospores (43-)46–58(-62) × 6.5–8 μm, with a sheath drawn out at the ends, asci obclavate ......... *A. samuelsii*
25. Ascospores mostly longer than 30 μm .......................... 26
25. Ascospores mostly shorter than 30 μm .......................... 28
26. Ascospores 30–42 × 7–8 μm, surrounded by a wide, distinctive mucilaginous sheath which is drawn out at the ends, an aquatic species .......................... *A. aquatica*
26. Ascospores with or without a mucilaginous sheath, terrestrial species ........................................... 27
27. Ascospores 36–44 × 5–7(–8) μm, with a mucilaginous sheath .......................... *A. bakeriana*
27. Ascospores 30–37 × (4-)5–6 μm, lacking a mucilaginous sheath .......................... *A. floridana*
28. Ascospores 24–29 × 7–8 μm, ascomata immersed, lacking a mucilaginous sheath .......................... *A. minima*
28. Ascospores surrounded by a mucilaginous sheath, or with polar appendages ...................................................... 29

29. Ascospores 25–30 × 2.3–2.8 μm, with appendages at each end ................................................................. A. angustispora

29. Ascospores wider than 3 μm wide, with a mucilaginous sheath ................................................................. 30


30. Ascospores less than 6 μm wide, ascomata superficial or immersed ................................................................. 31

31. Ascospores 25–28.8 × 4–5.3 μm, a terrestrial species, ascomata superficial ................................................... A. mauritiae

31. Ascospores 18.5–27 × 4–5.9 μm, an intertidal species, ascomata immersed ................................................... A. nypae


**Etymology.** – In reference to the equator, Latin *aequator*.

Ascomata arising singly, immersed, erumpent only at the ostiole, or superficial (Fig. 1); in section 490–840 μm diam., 190–280 μm high, lenticular to conical, papillate, neck slightly raised, brown to black. – Asci 150 × 18–22 μm, 8-spored, cylindric-clavate, pedicellate, with an ocular chamber and faint ring (Figs. 2–4). – Ascospores 60–62.5 × 10–11 μm, 2–3-seriate, fusiform, brown, (2–)5-septate, constricted at the central septum, with wide (2.5 μm) longitudinal ridges, surrounded by a thin evanescent mucilaginous sheath (Figs. 5–12).

**Known distribution.** – Ecuador.

**Known hosts.** – *Phytelephas*, palms.


This species has very distinctive ascospores and cannot be confused with other species.


Ascomata arising singly, immersed, erumpent only at the ostiole, slightly raised (Fig. 13); in section 700–1000 µm diam., hemi-

spherical, immersed beneath host tissue (cuticle and some epidermis), black, base applanate, with a central vertical papilla. – Asci 120–160 × 12–17 μm, 8-spored, cylindrical, long pedicellate, with an ocular chamber and faint ring (Fig. 14). – Ascospores 46–57 (–64) × 5.5–6.5 (–8) μm, 2–3-seriate, fusiform, pale-yellowish brown to reddish-brown, 1-septate, constricted at the septum and often swollen above it, with longitudinal wall striations, surrounded by a thin mucilaginous sheath swollen around the central septum (Figs. 15–17).

Known distribution. – Australia, Brunei, Malaysia, Philippines, Tanzania.

Known hosts. – Arenga, Bamboo, Calamus, Daemonorops, IPhragmites, Palm.

Astrosphaeriella africana is previously reported from Tanzania, Africa on Gramineae, Phragmites (Hawksworth & Boise, 1985) and these collections are the first records from Australia and South East Asia.

3. *Astrosphaeriella angustispora* J. Fröh. & K. D. Hyde, sp. nov. – Figs. 18–27.


**Etymology.** from the Latin *angustus*, meaning „narrow“, in reference to the very narrow ascospores.

Ascomata arising singly, initially subepidermal, then superficial (Fig. 18); in section 480–656 μm diam., 320–544 μm high, conical, black, base applanate, with a central ostiole (Figs. 19, 20). - Ascii 85–110 × 5–5.8 μm, 8-spored, cylindrical, pedicellate, with an ocular chamber and faint ring (Figs. 21–23). - Ascospores 25–30 × 2.3–2.8 μm, 2-seriate, elongate-fusiform, hyaline, 1-septate, not constricted at the septum, with a small flame-shaped mucilaginous appendage at each end (Figs. 24–27).

**Known distribution.** – Brunei.

**Known hosts.** – Licuala.


This species has narrower ascospores than any other species of Astrosphaeriella.


Ascomata arising singly, developing under conical, black, raised projections, 520–650 μm diam., 185–260 μm high (Figs. 28, 29); in section 390–520 μm diam., 186–260 μm high, conical, immersed, with a central vertical short papilla. – Asci 130–164 × 14–16 μm, 8-spored, cylindrical, slightly wider at the base, short pedicellate,

with an ocular chamber (Fig. 30). – Ascospores 30–42 × 7–8 μm, biseriate, fusiform, 1-septate, constricted at the septum, hyaline, smooth-walled, with a wide spreading mucilaginous sheath which is drawn out at the poles (Figs. 31–33).

**Known distribution.** – Ecuador, Papua New Guinea.

**Known hosts.** – *Livistona*, Palm.


This species was described from submerged *Livistona* fronds in Papua New Guinea (Hyde 1994a). *Astrosphaeriella aquatica* is similar to *A. aosimensis* which is also recorded from *Livistona* sp. (Hawksworth, 1981). The taxa differ in several important characters. In *A. aquatica* the ascospores are shorter and wider and the sheath is drawn out at the ends. The ascospores in *A. aquatica* are also hyaline at maturity (observed in oozing spore masses), while light-brown in *A. aosimensis*. Further, the habitats differ, *A. aquaticus* being found
on rachides submerged in freshwater, while *A. aosimensis* is found on decaying terrestrial rachides. *Astrosphaeriella aquatica* was very commonly collected being present on most submerged rachides of *Livistona* sp. examined in Papua New Guinea (Hyde, 1994a).


**Etymology.** – In reference to the place of collection.

Ascomata arising singly, erumpent early, becoming superficial, immersed only at the base, lacking teeth-like flanges, lower part brown, upper part black, carbonaceous (Figs. 34, 35); in section 650–1200 μm diam., 350–500 μm high, steeply conical, papillate. – Asc i 240 × 12 μm, 8-spored, cylindrical, with an ocular chamber and faint ring (Figs. 36, 37). – Ascospores 50–60 × 5–6 μm, 2–3-seriate, narrowly fusiform, hyaline, 1-septate, some (rare) light-brown with
age, surrounded by a thin mucilaginous sheath with drawn out appendages at the ends (Figs. 38–40).

**Known distribution.** – Australia.

**Known host.** – *Calamus* spp.


This species has narrowly fusiform hyaline ascospores and has only been recorded on *Calamus* sp. in Australia.


Ascomata arising singly, developing under hemispherical projections, up to 650 μm diam., scattered (Figs. 41–43); in section 150–282 μm high, 325–520 μm diam., hemispherical, immersed beneath host tissue (cuticle and some epidermis), black, base applanate, with a central vertical short papilla (Fig. 44). – Asci 110–140 x 12–16 μm, 8-spored, cylindric-clavate, long pedicellate, with an ocular chamber (Figs. 45, 46). – Ascospores 36–44 x 5–7(–8) μm, 2–3-seriate, fusiform, 1-septate, upper cell slightly larger, constricted at the septum, hyaline, old spores brown, smooth-walled, with an inconspicuous mucilaginous sheath (Figs. 47, 48).

**Known distribution.** – Hong Kong, Japan, Singapore, Papua New Guinea.

**Known hosts.** – *Calamus, Livistona*.

**Material examined.** – HONG KONG: Hong Kong Island, Pok Fu Lam, Grounds of The University of Hong Kong, on rachis of *Livistona chinensis*, Sept. 1996, Yanna (HKU(M) 5309); *ibid.* (HKU(M) 5310); *ibid.* (HKU(M) 5311); *ibid.* (HKU(M) 5312); Pok Fu Lam Country Park, Victoria Peak, on dead petiole of *Livistona chinensis*, Aug. 1993, J. Fröhl (HKU(M) JF177); *ibid.* (HKU(M) JF189); Sept. 1993, J. Fröhl & J. R. Fellowes (HKU(M) JF196); *ibid.*, July 1994, J. Fröhl (HKU(M) JF 403); *ibid.*, June 1994, J. E. Taylor & K. D. Hyde (HKU(M) JF400); Deep Water Bay, Forest behind the Royal Hong Kong Golf Club, on dead rattan of *Calamus tetractylus*, July 1995, J. Fröhl (HKU(M) JF790); *ibid.*, on

Ascospores of *Winterina bakeriana* (36–40 × 7–8 μm) are slightly wider than those reported for *A. aosimensis* by Hawksworth (1981) and Hawksworth & Boise (1985): (28–)32–40(–42) × (4.5–)5–7(–8) μm. The ascoma with an erumpent ostiole, and browning of some asco-
spores and the host *Livistona*, however, leave no doubt in our mind that these are the same species. The trabeculae are illustrated in Fig. 49. This species is most similar to *A. floridana*, which may be a synonym. In introducing *A. floridana*, Barr (1990) compares *A. aosiemensis*, and concludes that this species has shorter and wider asci. In the illustration (and description) of *A. floridana* provided by Barr (1990), however, ascospores lack a mucilaginous sheath, while those of *A. bakeriana* have a distinct mucilaginous sheath. *A. floridana* is maintained in this paper, but further collections may prove it to be a synonym.


Ascomata arising singly, erumpent, becoming almost superficial, dark brown to black (Fig. 50); in section 1–1.5 mm diam., conical, minutely papillate. – Asci 230×12 μm, 8-spored, cylindrical, short pedicellate, with an ocular chamber and faint ring (Fig. 51). – Ascospores (68–)74–88×8–10 μm, 2-seriate, long fusiform, cinnamon brown, (3–)5 septate, slightly constricted at the septa, smooth walled, with mucilaginous drawn out at each end (Figs. 52–54).

Known distribution. – Ecuador, Venezuela.

Known hosts. – *Iriartia* sp., Palm.


*A. exorrhiza* is most similar to *A. venezuelensis* but the ascospores are 5-septate at maturity and the tips of the ascospores do not show any tendency to become strongly attenuated or uncinate (Hawksworth & Boise, 1985), but do contain mucilage.


**Known distribution.** - USA (Florida).

**Known hosts.** - Sabal.


Ascomata arising singly, or occasionally 2–3 coalescing at the base, loosely aggregated, erumpent, becoming largely superficial, black; in section 260–754 μm diam., 180–267.5 μm high, conical, dimidiate, with an applanate base. - Asci 70–125 × 12–25 μm, 8-spored, obclavate, pedicellate, with an ocular chamber and faint ring. - Ascospores 17.5–25 × 6.25–8.75 μm, 1–3-seriate, ellipsoidal, dark-brown, 1-septate, slightly constricted at the central septum, guttulate, usually with a single guttule per cell, minutely verrucose, surrounded by a distinct mucilaginous sheath.

**Known distribution.** - Australia, Brunei, Hong Kong.

**Known hosts.** - Calamus, Daemonorops, Oraniopsis, Laccospadix.


A. frondicola was described associated with leaf spots of Oraniopsis from Mt Lewis north Queensland and Calamus stems, also from north Queensland. It is distinct from other Astrosphaeriella species in having obclavate asci and brown ellipsoidal ascospores with a wide spreading sheath.

10. Astrosphaeriella lenticularis K. D. Hyde & J. Fröh., sp. nov. – Figs. 55–75.

Ascomata 840–1120 &mu;m diam., 800–1000 &mu;m alta, mammiformia. Asci 170–250 × 11–16 &mu;m. Ascospores 37–48 × 7.5–9.5 &mu;m, 2-seriatae, lenticulares, brunneae, 1-septatae, verrucosae, attenuatae, appendiculatae.

Etymology. – From the Latin lenticularis in reference to the shape of the ascospores (fusiform with pointed ends).

Ascomata arising singly or in small groups, erumpent when mature, immersed only at the base, brown or black, carbonaceous (Figs. 55, 63, 71, 72); in section 840–1120 &mu;m diam., 800–1000 &mu;m high, mammiform, papillate. – Asci 170–250 × 11–16 &mu;m, 8-spored, cylindrical, pedicellate, with an ocular chamber and faint ring (Figs. 56, 69, 70, 73). – Ascospores 37–48 × 7.5–9.5 &mu;m, 2-seriate, fusiform with pointed ends, brown, 1-septate, slightly constricted at the septum, minutely verrucose, pointed towards the ends which are provided with a minute drop of mucilage (Figs. 57–62, 64–68, 74, 75).

Known distribution. – Brunei, Ecuador.
Known hosts. – Geonoma, Mauritia.

Material examined. – BRUNEI: Temburong, Batu Apio Forest Reserve, Sungai Belalong, Kuala Belalong Field Studies Centre, Ruth Levy’s plot, on dead petiole of Licuala sp., July 1993, J. Fröhlich (HKU(M) JF 109). – ECUADOR: Oriente, Reserva de Producción Faunística Cuyabeno, Río Cuyabeno, forest near Laguna Grande, canangucho, on dead petiole of Mauritia flexuosa, Aug. 1993, K. D. Hyde E147 (HKU(M) 2723); forest on Tropitour’s side of Laguna Grande, Terra

Firme, on dead petiole of *Geonoma*, Aug. 1993, K. D. Hyde E166 (HKU(M) 2733, holotype; syntype at QCA).

This species differs from other *Astrosphaeriella* species as its ascospores have pointed ends.

11. *Astrosphaeriella livistonicola* K. D. Hyde & J. Fröhl., sp. nov. – Figs. 76–82.


**Etymology.** – In reference to the host genus.

Ascomata arising singly, erumpent early and becoming entirely superficial, black, carbonaceous; in section 273–363 μm diam.,

ca 142 μm high, lenticular, with a central ostiole (Fig. 76). – Asci 75–97.5 × 15–22.5 μm, 8-spored, obclavate, short pedicellate, with an ocular chamber and faint ring (Figs. 77–79). – Ascospores 26.3–30.5 × 5–5.8 μm, 1–3-seriate, elongate-fusiform, with tapering ends, dark brown, 1-septate, smooth-walled, lacking a mucilaginous sheath (Figs. 80–82).
Known distribution. – Hong Kong.
Known hosts. – Livistona chinensis.

Material examined. – HONG KONG: Hong Kong Island, Pok Fu Lam, Pok Fu Lam Country Park, Victoria Peak, on dead petiole base of Livistona chinensis, Aug. 1993, J. Fröhlich (HKU(M) JF176, holotype).

This species is unusual in having obclavate asci.


Etymology. – In reference to the likeness of its ascospores to some Lophiostoma species.

Ascomata arising singly, erumpent early and becoming superficial, immersed only at the base, lacking teeth-like flanges, brown-
black, carbonaceous (Figs. 83, 84); in section 650–860 μm diam., 340–510 μm high, hemispherical, with a rounded papilla. – Asci 140–180 × 22–30 μm, 8-spored, cylidric-clavate, short pedicellate, with an ocular chamber and faint ring (Fig. 85). – Ascospores 48–52 × 8–10 μm, 2–3-seriate, fusiform with acute ends, hyaline, some pale brown at maturity, 1-septate, surrounded by a complex mucilaginous sheath (Figs. 86–89).
**Known distribution.** – Brunei.

**Known hosts.** – Arenga.

**Material examined.** – BRUNEI: Bandar Seri Begawan, Jalan Akar, on rachis of *Arenga undulatifolia*, Nov. 1992, K. D. Hyde [HKU(M) 1835, holotype – on same samples as *Astrosphaeriella africana*]; Temburong, Batu Apio Forest Reserve, Sungai Belalong, Kuala Belalong Field Studies Centre, on dead rachis of *Arenga undulatifolia*, July 1993, K. D. Hyde (HKU(M) 1708a); ibid., (HKU(M)2763).

This species has an elaborate sheath (Figs. 86–89).


**Etymology.** – In reference to the location of the collection.
Ascomata arising singly, erumpent when mature, immersed only at the base, with remnants of host remaining at the base and often attached to the ascomata, lacking teeth-like flanges, brown to black, carbonaceous (Fig. 90); in section 600–850 µm diam., 510–680 µm high, subhemisphaerical, papillate, beaked. – Asci 90–120 × 14–18 µm, 8-spored, cylindric-clavate, short pedicellate, with an ocular chamber and faint ring (Figs. 91, 92). – Ascospores 30–34 × 6–8 µm, 2–3-seriate, fusiform, brown, 1-septate, slightly constricted at the septum, wall verrucose and surrounded by a mucilaginous sheath (Figs. 93–98).

Known distribution. – Malaysia.
Known hosts. – Daemonorops.

Material examined. – MALAYSIA: Pasoh Forest Reserve, on dead stem of Daemonorops sp., Nov. 1992, K. D. Hyde [HKU(M) 1828, holotype].

This species is unique in having ascomata with relatively long necks, and brown verrucose ascospores.


Ascomata arising singly, superficial, immersed only at the base, lacking teeth-like flanges, black, carbonaceous (Figs. 99, 100, 108); in section 500–750 µm diam., 375–500 µm high, subhemisphaerical to conical, ostiolate. – Asci 138–160 × 11–14 µm, 8-spored, cylindrical, short pedicellate, with an ocular chamber and surrounded by a ring (Figs. 101–104, 109, 110). – Ascospores 44–52 × 5–7 µm, 2-seriate, fusiform, brown, 1–3 septate, slightly constricted at the septum, some slightly verrucose, surrounded by a evanescent narrow sheath with drawn out appendages at the ends (Figs. 105–107, 111–114).

Known distribution. – Australia, Ecuador, Philippines.
Known hosts. – Calamus, Iriartia.

Material examined. – AUSTRALIA: north Queensland, Cairns, Kuranda, on stem of Calamus sp., July 1991, K. D. Hyde (HKU(M) 815); Saddle Mountain, near stream near Salome Road, Gregory Terrace intersection, on dead rattan of Calamus moti, Mar. 1995, J. Fröhlich (HKU(M) JF677); Palmerston, Palmerston National Park, on dead rattan of C. moti, Mar. 1994, J. Fröhlich (HKU(M) JF334); Palmerston Highway, Goolagan Creek, on dead rattan of Calamus caryotoides, Apr. 1995, J. Fröhlich (HKU(M) JF662); near Topaz, Bellenden Ker National Park, Mt. Bartle Frere walking track, on dead rattan sheath of Calamus moti, Apr. 1995, J. Fröhlich (HKU(M) JF648); ibid., (HKU(M) JF673); ibid., on dead petiole and rattan of Calamus australis, Apr. 1995, J. Fröhlich (HKU(M) JF660); ibid.,

(HKU(M) JF698. – ECUADOR: Oriente, Reserva de Producción Faunística Cuyabeno, Rio Cuyabeno, forest near Laguna Grande, canangucho, on dead petiole of *Iriartia* sp., Aug. 1993, K. D. Hyde E20 (HKU(M) 2644); *ibid.*, (HKU(M) 2731). – PHILIPPINES: Mt. Maquiling, on dead stem of *Calamus* sp., June 1914, C. F. Baker 3420 (S, holotype of *Trematosphaeria maquilingiana*).

*Astrosphaeriella maquilingiana* is somewhat similar to *A. trochus* and *A. tornata*. In *A. trochus* the ascospores are 3–5 septate, 48–65 × 6–8 μm and lack a gelatinous sheath. In *A. tornata* ascospores are 50–55 × 8–9 μm, reddish-brown with paler ends, with a thin (ca.

1 μm) mucilaginous sheath that is not drawn out at the ends to form appendages (Hawksworth, 1985). The collections from Ecuador have smaller asci (110-140 × 8-11 μm) and ascospores (33-40 × 4.5-5 μm) than the type collections from the Philippines and may require to erect a new species when further collections are made.


Ascomata 550-820 μm diam., 200-400 μm alta, conica. Asci 100-122.5 × 9.5-11.3 μm. Ascosporae 25-28.8 × 4-5.3 μm, 2-seriatae, elongatae-fusiformes, attenuatae, hyalinae, 1-septatae, tunica gelatinosa praeditae.

Etymology. – In reference to the host.

Ascomata arising singly, superficial, immersed only at the base, brown or black, carbonaceous (Fig. 115); in section 550-820 μm diam., 200-400 μm high, conical, ostiolate (Fig. 116). – Asc 100-122.5 × 9.5-11.3 μm, 8-spored, cylindrical, pedicellate, with an ocular chamber and surrounded by a ring (Figs. 118-120). – Ascospores 25-28.8 × 4-5.3 μm, 2-seriate, elongate-fusiform, tapering towards the ends, hyaline, 1-septate, constricted at the septum, surrounded by a large spreading mucilaginous sheath (in India Ink) (Figs. 121-124).

**Known distribution.** – Ecuador.

**Known hosts.** – *Mauritia*.

**Material examined.** – ECUADOR: Oriente, Reserva de Producción Faunística Cuyabeno, Rio Cuyabeno, forest near Laguna Grande, Path A, Canangucho, on dead petiole of *Mauritia flexuosa*, Aug. 1993, J. A. I. Chapman (HKU(M) JF151, holotype; syntype at QCA); *ibid.*, K. D. Hyde E150 (HKU(M) 2725).
This species has small hyaline ascospores with a wide spreading mucilaginous sheath.


Ascomata immersed, 400–700 μm diam., conical. – Asco-
spores 24–29 × 7–8 μm, fusiform, 1-septate, slightly constricted at
the septum, very pale brown, smooth walled, no sheath reported.

Known distribution. – China, Indonesia.
Known hosts. – *Bambusa*.

We have not seen material of this species which occurs on bam-
boo. The above description is taken from the brief description pro-


Ascomata arising singly, developing under hemispherical pro-
jections, scattered; in section 150–220 μm high, 400–600 μm diam.,
hemispherical, immersed beneath host tissue (cuticle and some epi-
dermis), black, base appplanate, with a central vertical short papilla.
– Asci 80–95 × 12–14 μm, 8-spored, cylindrical, pedicellate, with an
ocular chamber. – Ascospores 25–28 × 6–7 μm, 2-seriate, broadly
fusiform, somewhat attenuated at the ends, (1–)3–(5)–septate, mark-
edly constricted at the septum, hyaline, rarely pale brown, smooth-
walled, rarely granular, with a mucilaginous sheath.

Known distribution. – Australia, French Guiana, Japan.
Known hosts. – *Licuala, Phyllostachys*.

Material examined. – AUSTRALIA: north Queensland, Kuranda, Saddle
Mountain, on dead petiole of *Licuala ramseyi*, Mar. 1994, J. Fröhlich (HKU(M)
JF331); near corner block at intersection between Salome Road and Gregory Ter-
race, on dead petiole of *L. ramseyi*, Mar. 1994, J. Fröhlich (HKU(M) JFLVI 17).

We have not seen type material, but the above description is
Courtecuisse & al. (1996) have collected this species in French Gui-

≡ *Melanopsamma nipaecola* Cooke & Massee, Grevillea 16: 92. 1888.

Ascomata arising singly, superficial, immersed only at the base, lacking teeth-like flanges, black, carbonaceous (Figs. 125, 126); in section 750–1250 μm diam., 500–750 μm high, subhemisphaerical to conical, ostiolate. – *Asci* 200–220 × 17–18 μm, 8-spored, cylindrical or cylindric-clavate, short pedicellate, with an ocular chamber and faint ring (Figs. 127, 128). – *Ascospores* 52–67 × 6–9 μm, 2–3-seriate, fusiform with tapering ends, curved, hyaline, 1-septate, surrounded by a distinct thin mucilaginous sheath (Figs. 129–133).

Known distribution. – Brunei, Indonesia, Malaysia.

Known hosts. – Elaeis, Licuala, Nypa.


The type species from Indonesia is not in good condition and therefore the specimen from Malaysia is illustrated.


Ascomata arising singly or clustered, erumpent only at the ostiole; in section 240–400 µm diam., 215–310 µm high, subglobose, or conical with a rounded base. – Asci 110–147 × 7–11.5 µm, 8-spored, cylindrical, short pedicellate, with an ocular chamber. – Ascospores 18.5–27 × 4–5.9 µm, overlapping uniseriate or 2-seri- ate, fusiform with tapering apices, 1-septate, strongly constricted at the septum, hyaline or pale-yellow and surrounded by a mucilaginous sheath.

Known distribution. – Brunei.

Known hosts. – Nypa.


Astrosphaeriella nypae has distinctively shaped hyaline ascospores and its host is intertidal Nypa palm.


Etymology. – From the Latin papillata, in reference to the long necks.
Ascomata immersed, with long necks, black, carbonaceous (Figs. 134, 135); in section 300–700 μm diam., 200–300 μm high, lenticular, long papillate. – Asci 90–120 × 10–12 μm, 8-spored, cylindrical, pedicellate, with an ocular chamber and faint ring (Figs. 136, 137). – Ascospores 31–45 × 7–8 μm, 2–3-seriate, fusiform, brown, 1-septate, constricted at the central septum, minutely striate, with a wide irregular mucilaginous sheath (Figs. 139–144).

**Known distribution.** – Brunei.

**Known hosts.** – Bamboo.


This species has immersed ascomata and ascospores with a wide spreading sheath, which distinguishes it from other species.


Ascomata immersed, 500–1000 μm diam., conical. – Ascospores 34–42 × 6–6.5 μm, fusiform, 1-septate, constricted at the septum, pale brown, with broad longitudinal striations.

**Known distribution.** – Papua New Guinea.

**Known hosts.** – Bamboo.

We have not seen material of this species which occurs on bamboo. The above description is taken from the brief description provided by Aptroot (1995). It represents the smallest striated spored species of *Astrosphaeriella*.


Ascomata arising singly, erumpent, becoming superficial, immersed at the base, with teeth-like flanges, dark-brown, black around the ostiole, carbonaceous; in section 750–1000 μm diam., conical, papillate. – Asci 170 × 20 μm, 8-spored, obclavate, short pedicellate, with an ocular chamber and faint ring. – Ascospores (43–)46–58(–62) × 6.5–8 μm, 2–3-seriate, fusiform, hyaline, 1(–3)-sep-
tate, constricted at the central septum, surrounded by a mucilaginous sheath which is drawn out at the ends.

**Known distribution.** – Brazil.

**Known host.** – Palm.

**Material examined.** – BRAZIL: Amazonas, Serra Araca, 60 m, open forest, deep litter, on decaying palm petiole, 10–13 Mar. 1994, G. J. Samuels 797 (NY, isotype).

The above description is modified from Boise (1984). This species was described in the new genus *Javaria* which was considered to differ from *Astrosphaeriella* based on the lack of pigmentation and sheath in the ascospores of the former. With the description of several new species and the widening of the generic concepts in *Astrosphaeriella* collected we do not feel that *Javaria* warrants its own genus.


![Figs. 145–150. *Astrosphaeriella splendida* (from holotype). – 145. Appearance of ascomata on host surface. – 146, 149. Asci. – 147, 148, 150. Ascospores. – Bars: 145 = 1 mm, 146–150 = 10 μm.](image)
Etymology. – In reference to the splendid appendages at each end of the ascospore.

Ascomata arising singly, erumpent when mature, immersed only at the base, with teeth-like flanges, black, carbonaceous (Fig. 145); in section 850–1200 μm diam., 350–420 μm high, conical, papillate. – Asci 158–263 × 10–12 μm, 8-spored, cylindrical, short pedicellate, with an ocular chamber and faint ring (Figs. 146, 149). – Ascospores 42–63 × 7.5–10 μm, 2–3-seriate, fusiform, brown, 1(–3)-septate, constricted at the central septum, smooth-walled, with an appendage at each end. Appendage a short hyaline cylindrical tube c. 2.5 μm long × 2 μm diam., with a drop of mucilage released from the tip (Figs. 147, 148, 150).

Known distribution. – Ecuador.

Known hosts. – Astrocaryum, Iriartia, Jessenia, Mauritia, Palm.

Material examined. – ECUADOR: Oriente, Reserva de Producción Faunística Cuyabeno, Rio Cuyabeno, forest near Laguna Grande, Path A, Canangucho, Path B, on dead petiole of unidentified palm, Aug. 1993, K. D. Hyde E160 (HKU(M) 2732, holotype; syntype at QCA); Terra Firme, on petiole of Astrocaryum sp., K. D. Hyde E102 (HKU(M) E2702); ibid., E54 (HKU(M) 2666); ibid., E54 (HKU(M) 2669); on petiole of Iriartia sp., K. D. Hyde E3, (HKU(M) 2632); Canangucho, on dead petiole of Mauritia flexuosa, Aug. 1993, J. Fröhlich (HKU(M) JF110); on dead petiole of Jessenia bataua, Aug. 1993, J. Fröhlich (HKU(M) JF166).

This species differs from other Astrosphaeriella species as its ascospores have unusual appendages at each end.


Figs. 151–157. *Astrophaeriella stellata* (from holotype of *Amphisphaeria stellata*).

**Known distribution.** – Australia, China, French Guiana, India, Indonesia (Java), Japan, Papua New Guinea, Philippines, Vietnam.

**Known hosts.** – Bamboo, *Calamus*.

Astrosphaeriella stellata is described from bamboo in India, Japan, Java, Philippine Islands and Vietnam (Hawksworth, 1981) and is rather common in western Japan (Hino & Katumoto, 1956). This is the first record from palms. Some additional collections are provided by Eriksson & Yue (1988), Aptroot (1995) and Courtecuisse & al. (1996). For synonyms see Hawksworth (1981). There is a wide range of ascospore size in this species.


Ascomata arising singly or in small groups, superficial, immersed only at the base, ostiole slightly raised; in section 400–500 μm diam., conical. – **Asci** 150–180 × 15–20 μm, 8-spored, cylindrical,
pedicellated, with an ocular chamber and surrounded by faint ring. – Ascospores 65–75 × 7–8 μm, 1–3-seriate, fusiform, light brown, 3(–6)-septate, constricted at the central septum, with 5–6 longitudinal wall striations.

**Known distribution.** – Venezuela.

**Known hosts.** – On dead grass [*Valota insularis*].

**Type.** – VENEZUELA: roadside in the Guatopo forest between Ocumare del Tuy and Altugracia de Orituco, Edo Miranda, on dead grass [*Valota insularis*], 25 June 1958, R. W. G. Dennis 1306 (K, holotype, non vide).

The description is modified from Müller & Dennis (1965). This collection is reported to be in rather poor condition, but excellent illustrations are provided by Müller & Dennis (1965).


Ascomata arising singly, immersed, erumpent only at the ostiole, slightly raised; in section 352–528 μm diam., 176–355 μm high, lenticular. – Asci 99–173 × 11–23 μm, 8-spored, cylindrical, pedicellate, with an ocular chamber and surrounded by faint ring. – Ascospores 31–38 × 6–9 μm, 1–2-seriate, fusiform, pale-yellowish brown, 3(–6)-septate, constricted at the septa, with longitudinal wall striations and surrounded by a mucilaginous sheath.

**Known distribution.** – Brunei, Indonesia (North Sumatra), Malaysia.

**Known hosts.** – *Nypa*.


*Astrosphaeriella striataspora* was described from intertidal fronds of *Nypa fruticans*. It is distinct from *A. africana* which has 1-septate ascospores.


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Ascomata arising singly, erumpent when young, immersed only at the base, with teeth-like flanges, brown or black, carbonaceous, in section 1000–1600 µm diam., 1000 µm high, mammiform to conical, ostiolate. – Asci 8-spored, cylindrical, pedicellate, with an ocular chamber and ring. – Ascospores 46–56 × 6–8 µm, 1–2-seriate, broadly fusiform, reddish-brown, paler end cells, 3–(5)-septate, slightly constricted at the septa, narrow at the ends, smooth-walled, with a thin (ca 1 µm thick) gelatinous sheath (Figs. 168–171).

**Known distribution.** – French Guiana, Surinam.

**Known hosts.** – Palm.

**Material examined.** – SURINAM: on palm petiole, Herb. Schwein., (K, holotype, as *S. stellulata* Schwein.).

The type material of this species is not in good condition. The description is partly modified from Hawksworth & Boise (1985). The ascospores differ from other *Astrosphaeriella* species, as the ends of the spores are narrow and lighter in colour. For a discussion of the differences between this species and *A. vesuvius* see under the latter species. Courtecuisse & al. (1996) have collected this species in French Guiana.


**References.** – Hawksworth (1981); Hawksworth & Boise (1985); Chen & Hsieh (1994); Hyde & al. (1997).
Ascomata arising singly, 2–3 rarely united at the base, erumpent when young, immersed only at the base, some with teeth-like flanges, brown or black, carbonaceous, in section (225–)600–800(–1000) μm diam., (295–)500–800(–1000) μm high, conical, ostiolate. - Asci 160–220 × 10–20 μm, 8-spored, cylindrical, short pedicellate, with an ocular chamber and ring. - Ascospores (44–)48–65(–72) × (5–)6–8(–9) μm, 2-seriate, elongate fusiform, sometimes tending to be arcuate, gradually tapering towards the apices, reddish-brown, sometimes with paler end cells, 3–5-septate, constricted at the septa, smooth-walled, with inconspicuous mucilage at the tips.

Known distribution. – Chile, China, Colombia, Ecuador, French Guiana, Japan, Indonesia (Java), South Africa, Taiwan, Uganda.

Known hosts. – Old bamboo stems and stout grasses.


The above description is modified from Hawksworth (1981). This species is most similar to A. tornata, but differs in having longer ascospores with more septa. Eriksson & Yue (1988) lists this species as having been recorded in China, and Courtecuisse & al. (1996) have collected it in French Guiana. For further synonyms see Hawksworth (1981), Hawksworth & Boise (1985), Eriksson & Yue (1988) and Chen & Hsieh (1994).


Reference. – Barr (1990).

Ascomata arising singly, erumpent, becoming superficial, immersed at the base, without teeth-like flanges, dark-brown, black around the ostiole, carbonaceous (Figs. 172–174); in section 700–840 μm diam., 450–560 μm high, hemispherical to conical (Fig. 175). - Asci 150–180 × 12–15 μm, 8-spored, cylindric-clavate, pedicellate, with an ocular chamber and faint ring (Figs. 176, 177). - Ascospores 48–57 × 10–12 μm, 2–3-seriate, fusiform, straight or slightly curved, hyaline or becoming pale yellow with age, 1-septate, constricted at the central septum, lacking a sheath (Figs. 179–182).
**Known distribution.** – French Guiana, Nicaragua.

**Known host.** – Wood.

**Material examined.** – FRENCH GUIANA: Cayenne, on petiole of palm, Leprieur 571 (P, holotype of *Sphaeria uberina*). – NICARAGUA: Ometepe, on old wood, Jan.–Feb. 1893, B. Shimek, C.L. Smith Central Amer. Fungi 12 (NY, holotype of *Melanopsamma shimekii*).

Courtecuisse & al. (1996) have collected this species in French Guiana.


Ascomata arising singly or in small groups, erumpent, finally superficial, with or without teeth-like flanges, dark purplish brown to black, carbonaceous; in section 600–800(–1000) μm diam., 500–1000(1500) μm high, conical, papillate. – Asci 160–200 × 14–16 μm, 8-spored, cylindrical. – Ascospores (70–)72–80(–83) × (5–)6.5–7.5(–8.5) μm, 2-seriate, elongate-fusiform, abruptly tapered at the apices which are beak-like or uncinate, pale brown, 3-septate, slightly constricted at the septa, smooth-walled, lacking a mucilaginous sheath.

**Known distribution.** – Venezuela.

**Known hosts.** – Bamboo?.


The above description is modified from Hawksworth & Boise (1985). *A. venezuelensis* differs from other *Astrosphaeriella* species as it has long ascospores with beak-like or uncinate tips.


Ascomata arising singly or in small groups, erumpent when mature, immersed only at the base, with or without teeth-like flanges, black, carbonaceous (Figs. 183, 184, 193, 194); in section 750–120

1800 μm diam., 800–1200 μm high, conical to mammiform, papillate, beaked. – Asci 180–210 × 14–17 μm, 8-spored, cylindrical, pedicellate, with an ocular chamber and faint ring (Figs. 185, 186, 195–197). – Ascospores (33–)36–45(-50) × (5.5–)7–8(-9) μm, 2–3-seriate, fusiform, light brown or brown, 3-septate, slightly constricted at the septa, smooth-walled, with a sticky layer which appears to be swollen at the spore ends (Figs. 187–192, 198–201).

Known distribution. – Australia, Brunei, China, French Guiana, Indonesia, Malaysia, Papua New Guinea, Philippines, Sri Lanka.

Known hosts. – Bamboo, Calamus, Daemonorops, Korthalsia, Licuala, Palm.

Material examined. – AUSTRALIA: north Queensland, Palmerston, Palmerston National Park, on dead rattan sheath of Calamus australis, Mar. 1994, J. Fröhlich (HKU(M) JF320; Palmerston Highway, Goolagan Creek, on dead rattan

Three species _A. tornata_, _A. trochus_ and _A. vesuvius_ are similar and there is confusion surrounding their characters. Hawksworth & Boise (1985) separate these species in their key based on _A. vesuvius_ having smaller ascospores. In _A. tornata_ and _A. trochus_ ascospores mainly exceed 50 μm, whereas ascospores in the former are 5, as compared to 3-septate in the latter. The situation is confounded by the fact that the type material of _A. tornata_ and _A. Vesuvius_ are both in poor condition. In this paper _A. vesuvius_ is treated as different from _A. tornata_, the latter having ascospores with more pointed ends and lighter coloured end cells. However, as Hawksworth & Boise (1985) state, these species „may prove to be conspecific ... when more information is available on its range of variation”. Eriksson & Yue (1988) list this species from China and Courtecuisse & al. (1996) have collected _A. tornata_ in French Guiana. For other synonyms see Hawksworth & Boise (1985).

**Trematosphaeria species from palms**


Reference. – Panwar & al. (1972).

Ascomata arising singly, erumpent when mature, immersed only at the base, with remnants of host remaining at the base, black, carbonaceous (Figs. 202, 203); in section conical, papillate. – Asci 8-spored, cylindrical, with an ocular chamber and ring (Figs. 204–207). – Ascospores 72–94×14–18.5 μm, 2–3-seriate, clavate or broad-fusiform, brown, (3–)6–7-septate, not constricted at the septa, with a fine verrucous ornamentation, lacking a sheath (Figs. 208–212).

Known distribution. – India.

Known hosts. – *Phoenix*.

Material examined. – INDIA: Jodhpur, on *Phoenix sylvestris*, 31 Aug. 1971, K. S. Panwar (IMI 159622, holotype of *Trematosphaeria abuensis*).

Although this *Trematosphaeria* species is described from palms, it has many characters typical of *Trematosphaeria* and is therefore retained in this genus.

Species excluded from Astrosphaeriella

= Rhynchostoma lageniforme Teng, Sinesia 7: 508. 1936.

For further information on this synonymy see Hyde & Aptroot (1997).
<table>
<thead>
<tr>
<th>Species</th>
<th>Habit</th>
<th>Ascospore size (μm)</th>
<th>Ascospore shape</th>
<th>Host</th>
<th>Reference</th>
</tr>
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<tbody>
<tr>
<td>Astrosphaeriella aequatoriensis K. D. Hyde &amp; J. Fröhl.</td>
<td>![Habit Image]</td>
<td>60–62.5 × 10–11</td>
<td>![Ascospore Image]</td>
<td>Palm</td>
<td>This paper</td>
</tr>
<tr>
<td>Astrosphaeriella africana D. Hawksw.</td>
<td>![Habit Image]</td>
<td>46–57 × 5.5–6.5 (−8)</td>
<td>![Ascospore Image]</td>
<td>Palm &amp; Grass</td>
<td>Hawksworth &amp; Boise (1985), this paper</td>
</tr>
<tr>
<td>Astrosphaeriella angustispora K. D. Hyde &amp; J. Fröhl.</td>
<td>![Habit Image]</td>
<td>25–30 × 2.3–2.8</td>
<td>![Ascospore Image]</td>
<td>Palm</td>
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<tr>
<td>Astrosphaeriella australiensis K. D. Hyde &amp; J. Fröhl.</td>
<td>![Habit Image]</td>
<td>50–60 × 5–6</td>
<td>![Ascospore Image]</td>
<td>Palm</td>
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Tab. 1 (cont.) Pictorial synopsis of *Astrosphaeriella* species.

<table>
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<th>Species</th>
<th>Habit</th>
<th>Ascospore size (µm)</th>
<th>Ascospore shape</th>
<th>Host</th>
<th>Reference</th>
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<tr>
<td><em>Astrosphaeriella bakeriana</em> (Sacc.) K. D. Hyde &amp; J. Fröhl.</td>
<td><img src="image1.png" alt="Habit" /></td>
<td>36-44 x 5-7(-8)</td>
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<td><em>Astrosphaeriella exorrhiza</em> Boise</td>
<td><img src="image2.png" alt="Habit" /></td>
<td>(68-)74-88 x 8-10</td>
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<td>Palm</td>
<td>Hawksworth &amp; Boise (1985)</td>
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<td><em>Astrosphaeriella floridana</em> M. E. Barr</td>
<td><img src="image3.png" alt="Habit" /></td>
<td>30-37 x (4-)5-6</td>
<td></td>
<td>Palm</td>
<td>Barr (1990)</td>
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<td><em>Astrosphaeriella frondicola</em> J. Fröhl. &amp; K. D. Hyde</td>
<td><img src="image4.png" alt="Habit" /></td>
<td>17.5-25 x 6.25-8.75</td>
<td></td>
<td>Palm</td>
<td>Fröhlich &amp; Hyde (1995)</td>
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<td><em>Astrosphaeriella lenticularis</em> K. D. Hyde &amp; J. Fröhl.</td>
<td><img src="image5.png" alt="Habit" /></td>
<td>37-48 x 7.5-9.5</td>
<td></td>
<td>Palm</td>
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Tab. 1 (cont.) Pictorial synopsis of *Astrosphaeriella* species.

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<th>Reference</th>
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<td><em>Astrosphaeriella livistonicola</em> K. D. Hyde &amp; J. Fröhl.</td>
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<td>26.3–30.5 × 5–6</td>
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<td>Palm</td>
<td>This paper</td>
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<tr>
<td><em>Astrosphaeriella lophiostomopsis</em> K. D. Hyde &amp; J. Fröhl.</td>
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<td>48–52 × 8–10</td>
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<td>Palm, bamboo</td>
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<td><em>Astrosphaeriella malayensis</em> K. D. Hyde &amp; J. Fröhl.</td>
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<td>30–34 × 6–8</td>
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<td>Palm</td>
<td>This paper</td>
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<tr>
<td><em>Astrosphaeriella maquilingiana</em> (Rehm) K. D. Hyde &amp; J. Fröhl.</td>
<td></td>
<td>44–52 × 5–7</td>
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<td>Palm</td>
<td>This paper</td>
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<td><em>Astrosphaeriella mauritiae</em> K. D. Hyde &amp; J. Fröhl.</td>
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<td>25–28.8 × 4–5.3</td>
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<td>Palm</td>
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<td><em>Astrosphaeriella nipaecola</em> (Cooke &amp; Massee) K. D. Hyde &amp; J. Fröh.</td>
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<td><em>Astrosphaeriella papillata</em> K. D. Hyde &amp; J. Fröh.</td>
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<td>31–45 × 7–8</td>
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<td>Palm</td>
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<td><em>Astrosphaeriella papuana</em></td>
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<td>34–42 × 6–6.5</td>
<td></td>
<td>Bamboo</td>
<td>Aptroot (1995)</td>
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<td>Aptroot</td>
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<tr>
<td><em>Astrosphaeriella samuelsii</em></td>
<td></td>
<td>(43–)46–58(–62) × 6.5–8</td>
<td></td>
<td>Palm</td>
<td>Boise (1984)</td>
</tr>
<tr>
<td>(Boise) K. D. Hyde &amp; J. Fröh.</td>
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<tr>
<td><em>Astrosphaeriella splendida</em></td>
<td></td>
<td>42–63 × 7.5–10</td>
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<tr>
<td>K. D. Hyde &amp; J. Fröh.</td>
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<td><em>Astrosphaeriella stellata</em></td>
<td></td>
<td>42–58 × 5.5–7</td>
<td></td>
<td>Bamboo, palm</td>
<td>Hawksworth (1981)</td>
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<td>(Pat.) Sacc.</td>
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<tr>
<td><em>Astrosphaeriella striaspora</em></td>
<td></td>
<td>65–75 × 7–8</td>
<td></td>
<td>Grass</td>
<td>Müller &amp; Dennis (1965)</td>
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<td>(E. Müll.) D. Hawksw. &amp; Boise</td>
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<tr>
<td>Species</td>
<td>Habit</td>
<td>Ascospore size (µm)</td>
<td>Ascospore shape</td>
<td>Host</td>
<td>Reference</td>
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<td><em>Astrosphaeriella striataspora</em></td>
<td></td>
<td>31-38 × 6-9</td>
<td></td>
<td>Intertidal palm</td>
<td>Hyde (1988)</td>
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<td><em>(K. D. Hyde) K. D. Hyde</em></td>
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<td><em>Astrosphaeriella tornata</em></td>
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<td>46-56 × 6-8</td>
<td></td>
<td>Bamboo, palm</td>
<td>Hawksworth &amp; Boise (1985)</td>
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<tr>
<td><em>(Berk. &amp; Curtis) D. Hawksw &amp; Boise</em></td>
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<td><em>Astrosphaeriella trochus</em></td>
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<td>(44-)48-65 (-72) × (5-)6-8 (-9)</td>
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<td>Bamboo</td>
<td>Hawksworth (1981)</td>
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<td><em>(Penz. &amp; Sacc.) D. Hawksw.</em></td>
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<td><em>Astrosphaeriella uberina</em></td>
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<td>48-57 × 10-12</td>
<td></td>
<td>Wood</td>
<td>Barr (1990)</td>
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<tr>
<td><em>(Ellis &amp; Everh.) K. D. Hyde &amp; J. Fröhli.</em></td>
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<tr>
<td><em>Astrosphaeriella venezuelensis</em></td>
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<td>(70-)72-80 (-83) × (5-)6.5-7.5(-8.5)</td>
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<td>Bamboo?</td>
<td>Hawksworth &amp; Boise (1985)</td>
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<td><em>(M. E. Barr &amp; D. Hawksw.</em></td>
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<td><em>Astrosphaeriella vesuvius</em></td>
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<td>(33-)36-45 (-50) × 5.5-)7-8(-9)</td>
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<td>Bamboo</td>
<td>Hawksworth &amp; Boise (1985)</td>
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<td><em>(Berk. &amp; Broome) D. Hawksw.</em></td>
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Acknowledgments

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