

## Fungi from palms. XVIII<sup>1</sup>. *Appendicospora coryphae*, a new name for *Apiosporella coryphae*

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The new ascomycete genus *Appendicospora* is introduced for *Apiosporella coryphae*. Ascospores are provided with basal bifurcate appendages. Asci are clavate, early deliquescing and lacking an apical apparatus. *Appendicospora* is distinguished from *Apiospora*.

Keywords: *Apiospora*, *Apiosporella*, *Appendicospora*, palm fungi, *Pseudomassaria*.

*Apiosporella coryphae* Rehm was described by Rehm (1913b), but Saccardo (1926) placed it in the genus *Apiospora* Sacc., as *A. coryphae* (Rehm) Sacc. I have examined the type material of *Apiosporella coryphae* and consider it to differ from the type species of *Apiospora*, *A. montagnei* Sacc., in several important aspects, summarised in Tab. 1. Because the generic name *Apiosporella* is not available for nomenclature reasons (see below) *Appendicospora* gen. nov. is introduced to accommodate it.

### Taxonomy

***Appendicospora*** K.D. Hyde, gen. nov.

Ascomata substrato immersa, subepidermalia, lenticularia, periphysata, ostiolata. Asci 8-spori, clavati, unitunicati, sine apparatusu apicali, deliquescentes. Ascosporae 2-3-seriatae, clavatae, hyalinae, 1-septatae, cellulis inaequalibus, appendiculatae. Typus generis: *Appendicospora coryphae* (Rehm) K. D. Hyde.

**E t y m o l o g y .** - From the Latin *Appendix* meaning 'appendage', and *spora*.

**A s c o m a t a** immersed in host tissue, clustered under slightly raised areas which are irregular in outline; in vertical section

<sup>1</sup> XVII in *Nova Hedwigia* (in press).

lenticular, immersed, with a central periphysate ostiole. - *Peridium* composed of hyaline, flattened cells. - *Paraphyses* difficult to distinguish, as gelatinous remnants. - *Asci* 8-spored, clavate, peduncle short or lacking, unitunicate, lacking an apical apparatus, deliquescing early and releasing ascospores. - *Ascospores* 2-3-seriate, clavate, hyaline, unequally 2-celled, with appendages at one end.

Type species: *Appendicospora coryphae* (Rehm) K.D. Hyde.

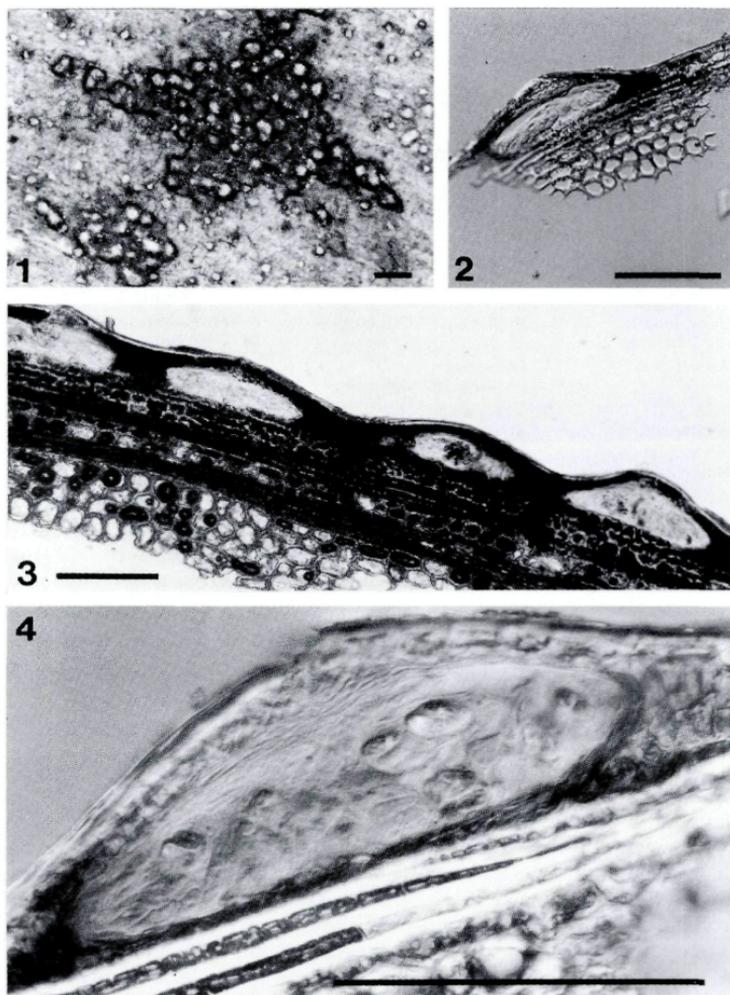
***Appendicospora coryphae*** (Rehm) K. D. Hyde, comb. nov. - Figs. 1-11.

- = *Apiosporella coryphae* Rehm, Phil. J. Science, Sect. C. Botany 8: 399. 1913.
- = *Apiospora coryphae* (Rehm) Sacc., Syll. Fung. 24: 915. 1926.
- = *Microthyrium elatum* Rehm, Phil. J. Science, Sect. C. Botany 8: 254. 1913 (holotypus non vidi).

*Ascomata* immersed in the host tissue (subepidermal) under slightly raised areas, irregular in outline, up to 10  $\mu\text{m}$ , comprising clusters of separate, but closely gregarious ascomata which are individually light brown in the middle and dark at the periphery (Fig. 1); in vertical section 140-180  $\mu\text{m}$  diam, 40-60  $\mu\text{m}$  high, lenticular, with a central periphysate ostiole (Figs. 2-4). - *Stromatic tissues* above ascomata comprising epidermal cells and cuticle containing brown intracellular hyphae, below comprising host cells containing brown intracellular hyphae (Fig. 3). A wedge of vertically orientated palisade-like cells occur at the periphery of the ascomata in the hypodermis. - *Peridium* to 6  $\mu\text{m}$  wide, comprising a few layers of hyaline, flattened cells (Fig. 4). - *Paraphyses* difficult to distinguish with only gelatinous remains or strips. - *Asci* 36-45 x 12-14  $\mu\text{m}$ , 8-spored, clavate, peduncle short or lacking, thin-walled, unitunicate, lacking an apical apparatus, deliquescing early and releasing spores, developing from the base and lower sides of the ascomata (Figs. 9-11). - *Ascospores* 10-15 (-18) x 5-8  $\mu\text{m}$ , 2-3-seriate, clavate, hyaline, unequally 2-celled, the smaller cell ca half that of the larger cell, not constricted at the septum, with a bifurcate (moustache-shaped) appendage on the basal smaller cell (Figs. 5-8).

Material examined - PHILIPPINE ISLANDS, Prov. Laguna, Los Baños, on dead rachides of *Corypha elata*, Jan 30 1913, C. F. Baker 769, S (holotype of *Apiosporella coryphae*), also C. F. Baker 53, S (as *Microthyrium elatum*).

*Appendicospora* is introduced as a new genus to accommodate *Apiosporella coryphae* described by Rehm (1913b). The taxon differs from *Apiospora* Sacc. in several respects (Tab. 1), particularly in the ascospores being provided with a bifurcate appendages. There are parallel cases in which appendage morphology has been used in the

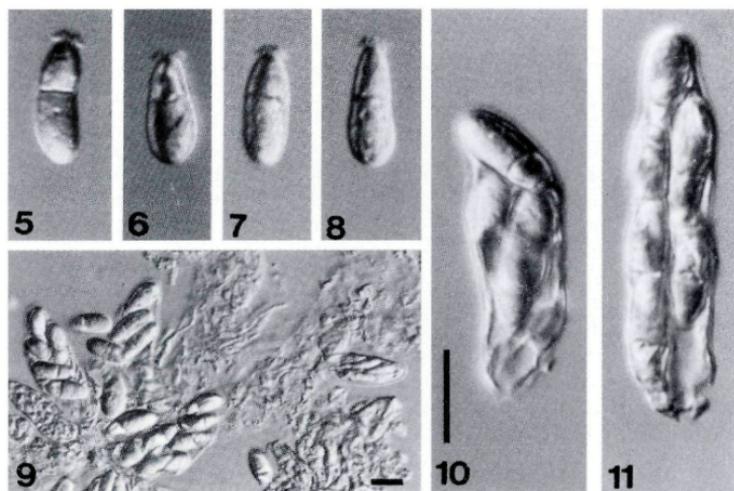


Figs. 1-4. *Appendicospora coryphae*. - 1. Clustered ascomata on surface of host. - 2-4. Sections through ascomata. Note the upper and lower stromata (2, 3) and peridium comprising elongate hyaline cells (4). - Bars: 1 = 1 mm; 2-4 = 100  $\mu$ m.

Tab. 1.— Differences between *Apiospora* and *Appendicospora*.

	<i>Apiospora montagnei</i> Sacc.	<i>Appendicospora coryphae</i> (Rehm) K. D. Hyde
Ascomata	Immersed, darkened, linear Globose Ostiole central, vertical	Immersed in stroma Lenticular Ostiole central, vertical
Peridium	Elongate angular brown-walled cells	Hyaline flattened cells
Asci	Clavate No visible apical apparatus	Clavate No visible apical apparatus
Paraphyses	Hypha-like, filamentous	Gelatinous remains only?
Ascospores	1-2-seriate Lacking appendages	2-3-seriate Basal bifurcate appendage
Anamorph	<i>Arthrinium</i>	Unknown
Host	Gramineae	<i>Corypha</i> (Palmae)
Known distribution	Cosmopolitan	Tropical

delimitation of genera. In the Halosphaeriaceae ascomata are similar, asci are thin-walled and deliquesce early, while in most species ascospores are hyaline and two-celled. However, species in the Halosphaeriaceae are assigned to different genera on the basis of their appendage structure (Jones & al., 1986; Jones & Moss, 1987). On the other hand, both appendaged and non-appendaged ascospores are scattered throughout the Xylariaceae. For instance, in *Anthostomella zongluensis* K. D. Hyde, the ascospores are surrounded by a layered mucilaginous sheath, in *A. sulcigena* (Mont.) Sacc. they are provided with ends caps of mucilage, whilst in *A. baileyi* S. Francis ascospores lack mucilage or appendages (Hyde, 1995). The basal bifurcate appendages on the ascospores of *Apiosporrella coryphae* are unique in comparison to species in *Apiospora*, which lack appendages or may be surrounded by a mucilaginous sheath (Hino, 1961; Samuels & al., 1981; Kirk, 1991). Other differences include the linear organisation of the globose ascomata which are immersed under darkened regions in *Apiospora montagnei*, as compared to the lenticular ascomata which are clustered under slightly raised darkened areas, irregular in outline, in *Apiosporrella coryphae* (Fig. 1). A comparison between *Appendicospora coryphae* and *Apiospora montagnei* is given in Tab. 1. *Arthrinium* anamorphs are reported for *Apiospora* species on bamboo in New Zealand (Samuels & al., 1981), however, the



Figs. 5–11. Interference contrast micrographs of *Appendicospora coryphae*. – 5–8. Apiospores with basal moustache-shaped appendage. – 9. Squash illustrating asci and gelatinous remains of possible paraphyses. – 10, 11. Clavate asci with thin unitunicate walls and lacking a pedicel and apical apparatus. – Bars = 10  $\mu$ m (Figs. 5–8 and 11 same scale as 10).

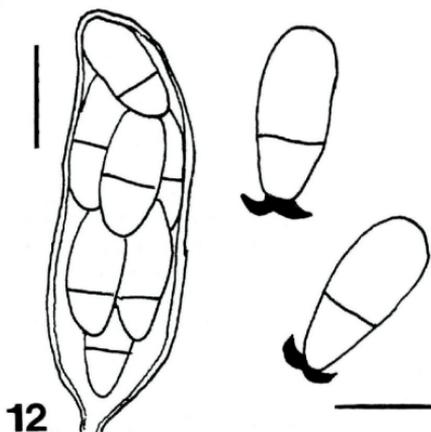


Fig. 12. Diagrammatic representation of ascus and ascospores of *Appendicospora coryphae*. – Bars = 10  $\mu$ m.

bamboo in New Zealand (Samuels & al., 1981), however, the anamorph of *Appendicospora* is presently unknown.

*Microthyrium elatum* Rehm (1913a) was also collected in Los Baños on *Corypha elata* by Baker at the same time and is identical to *Appendicospora coryphae*. Rehm (1913a) lists Baker No 28 as the holotype of *Microthyrium elatum*, but the only material available at S under this name is numbered Baker 53. The description of *Microthyrium elatum* was published before that of *Apiospora coryphae*. The material of *M. elatum* that I have examined is not the holotype. The holotype of *Apiospora coryphae* is therefore chosen to represent *Appendicospora coryphae*. The holotype of *M. elatum* is not at S and appears to be lost or mislabelled.

The first use of *Apiospora* was by Höhnelt (1909) who introduced it without diagnosis to accommodate apiosporous species of *Didymella* Sacc. It was later validated by Theissen (1917), but is a homonym of *Apiospora* Speg. which was introduced by Spegazzini (1910) for a Coelomycete (*A. macrospora* Speg.) now placed in *Apiocarpella* Syd. & P. Syd. (Sutton, 1980). *Apiospora* was introduced for a third time by Spegazzini (1912), also for a coelomycete which is now assigned to *Asteromella* Pass. & Thüm. (Sutton, 1980).

*Apiospora* was proposed by Höhnelt (1909) to accommodate apiosporous species of *Didymella*. Of the six names mentioned by Höhnelt (1909), two (*A. rhodophila* Sacc., *A. rosae* Oudemans) are facultative synonyms of *Pseudomassaria sepincolaeformis* (De Not.) Arx. Theissen (1917) validated the name *Apiospora* and chose *A. sepincolaeformis* (De Not.) Theissen as the type. This species is now considered a species of *Pseudomassaria* Jacz. and the generic name *Apiospora* is also considered a synonym of *Pseudomassaria* (Barr, 1976).

*Apiospora* Sacc. (Lasiosphaeriaceae), *Apiothyrium* Petr. and *Pseudomassaria* (Hyponectriaceae) should be compared with *Appendicospora*. The three genera are characterised by the presence or absence of a stroma, or clypeus, and by ascomatal orientation. Ascumata of species of *Apiospora* and *Pseudomassaria* are orientated perpendicular to the host epidermis. *Apiospora* species produce elongate stromata, while *Pseudomassaria* species lack a stroma, instead forming a clypeus at times (Barr, 1976). *Apiothyrium* have ascumata with their axes horizontal to that of the host surface, and with lateral beaks.

Of the ascomycetes described from palms with apiospores, only *Apiosphaeria indica* Bose (1975) is well illustrated. Other taxa as *Apiospora coryphae* Rehm (1913b), are provided with short Latin descriptions and give little indication of the true identity of the fungus.

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