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A NEW SYNNEMATAL HYPHOMYCETE,  
ULOCORYPHUS MASTIGOPHORUS ANAM. GEN. ET SP. NOV.

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## ABSTRACT

Ulocoryphus mastigophorus anam. gen. et sp. nov. is described from leaf and twig litter of Agathis australis Salisb., collected in New Zealand.

## INTRODUCTION

During a sabbatical visit to New Zealand, one of us (BK) made numerous collections of new microfungi on leaf and other types of litter derived from native plants. Some of these fungi have already been described (Nag Raj & Kendrick 1975, Hunter & Kendrick 1977). A new anamorph genus is here proposed for a fungus on leaves and twigs of Agathis australis.

## TAXONOMIC PART

Ulocoryphus anam. gen. nov. (Etymol. Greek: ulos = curly; koryphe = top)

Conidiomata synnematal, simple (rarely branched), scattered, erect, with a small basal stroma (textura globulosa). Main stalk broad where it arises from the stroma, soon narrowing and composed of parallel, dark, septate hyphae (textura porrecta); flared toward the apex, with the outermost hyphae becoming broader and flattened, their thickened anticlinal walls fusing with those of contiguous hyphae to form a sheath enclosing the hymenium. Conidiogenous cells terminal, integrated, hyaline, with one or two inconspicuous percurrent proliferations. Conidia phragmo-scolecosporous, hyaline, broadest near the base, tapering distally and becoming whiplike, reflexed and sinuate or almost coiled.

TYPE SPECIES: Ulocoryphus mastigophorus Michaelides, Hunter and Kendrick. (Etymol. Greek: mastix = whip; pheron = bearing)

Ulocoryphus anam. gen. nov., hyphomycetibus pertinens.

Conidiomata synnemata, dissita, simplicia, raro ramosa, recta; stroma basale tenue ex 'textura globulosa' e cellulis crassiparientis, atrobrunneis composita; parte principali stipite angustiore, ex 'textura porrecta' e hyphis atrobrunneis septatis, parallelis vel implexis composita; pars apicalis stipitis dilatata et stratum hymenii in vagina ex hyphis latioribus e cellulis applanatis, connatis continens. Conidiophorae simplicia vel ramosa, vulgo cellulis conidiogenis redacta, hyalina. Cellulae conidiogenae terminales, hyalinae, semel vel bis observe percurrenter prolificantes. Conidia phragmo-scoleospora, versus basin latum et apicem angustatum, reflexa, sinuata vel crispa, hyalina.

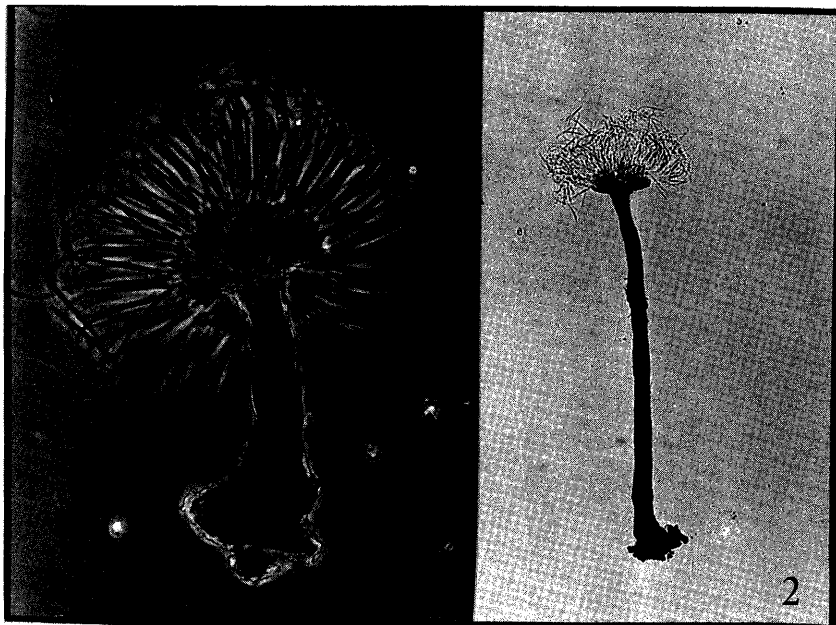
TYPUS GENERIS: Ulocoryphus mastigophorus Michaelides, Hunter et Kendrick.

Ulocoryphus mastigophorus, anam. sp. nov.

Conidiomata synnemata, dissita, simplicia, raro ramosa, recta, 95-800 [ $\bar{x}$ =330]  $\mu\text{m}$  alt., ad basim 32-110 [ $\bar{x}$ =55]  $\mu\text{m}$  lat., parte principali stipite angustiore et 14-30 [ $\bar{x}$ =20]  $\mu\text{m}$  lat. ex 'textura porrecta' e atro-brunneis, septatis, parallele vel implexis hyphis 1.5-2.0  $\mu\text{m}$  lat. composita; stroma basale tenue, ex 'textura globulosa' e cellulis crassiparientis, atrobrunneis, composita; pars apicalis stipitis dilatata 40-85 [ $\bar{x}$ =58]  $\mu\text{m}$  et stratum hymenii in vagina ex hyphis latioribus e cellulis applanatis, connatis, 2.5-4  $\mu\text{m}$  lat., continens. Conidiophora simplicia vel ramosa, vulgo cellulis conidiogenis redacta, hyalina; cellulae conidiogenae integratae, terminalis, (apicibus rotundatis), hyalinae, 11-15 x 1.5-2 [ $\bar{x}$ =13 x 1.8]  $\mu\text{m}$ , semel vel bis observe percurrenter prolificantes. Conidia phragmo-scoleospora, plerumque 3-septata, hyalina, crispa, versus apicem angustatum, 42-70 [ $\bar{x}$ =54]  $\mu\text{m}$  long., 1-2 [ $\bar{x}$ =1.5]  $\mu\text{m}$  lat. ad basim, 0.5-1.0 [ $\bar{x}$ =0.75]  $\mu\text{m}$  lat. ad apicem; ratio conidii long./lat. = 36:1.

Ulocoryphus mastigophorus anam. sp. nov.

Conidiomata synnematal, simple (rarely branched), scattered, erect, 95-800 [ $\bar{x}$ =330]  $\mu\text{m}$  tall, (Fig. 1-2), arising from limited basal stromatic tissue composed of round, thick-walled, dark cells (textura globulosa); 32-110 [ $\bar{x}$ =55]  $\mu\text{m}$  wide at the base, main portion of stalk narrower, 14-30 [ $\bar{x}$ =20]  $\mu\text{m}$ , composed of dark, septate, parallel to intertwined hyphae (textura porrecta), 1.5-2.0  $\mu\text{m}$  diam. (Fig. 8A). Apical region widely flared, 40-85 [ $\bar{x}$ =58]  $\mu\text{m}$  diam., (Fig. 1,2 and 8A); in this zone the peripheral hyphae become much broader, with flattened, plate-like cells 2.5-4.0  $\mu\text{m}$  wide, their thick anticlinal walls fusing with those of neighbouring cells to form a sheath enclosing the hymenial layer (Figs. 3,8A). Conidiogenous cells simple or branched, hyaline (Fig. 4), integrated, terminal, with



Figs. 1-2: Conidiomata of Ulocoryphus mastigophorus. 1. Short form showing the membranous sheath of fused hyphae, and many conidia arising from the hymenium. 480X. 2. Tall form with mass of conidia at the head. 110X.

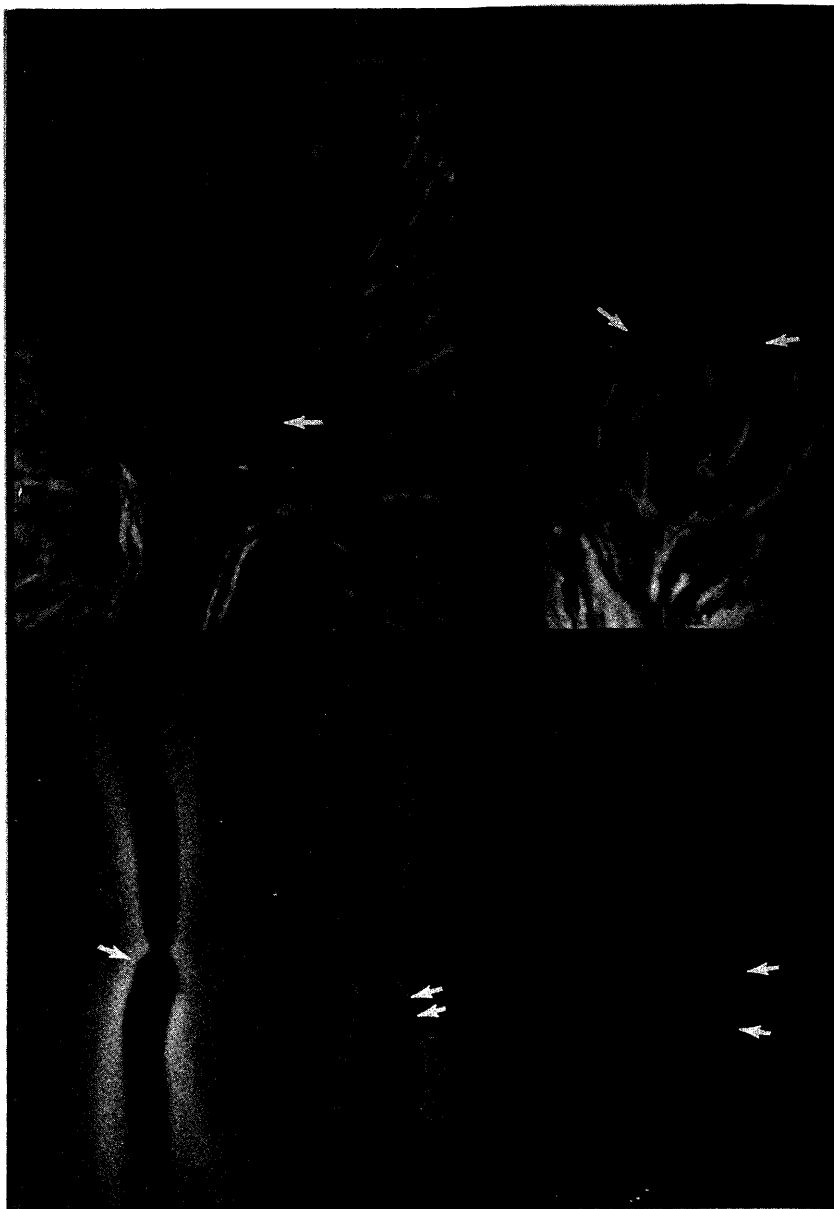
rounded apex, 11-15 x 1.5-2 [ $\bar{x}$ =13 x 1.8]  $\mu\text{m}$  with one or two inconspicuous percurrent proliferations (Figs. 5-6 and 8B). Conidia phragmo-scolecosporous, 42-70 [ $\bar{x}$ =54]  $\mu\text{m}$  long, 1-2 [ $\bar{x}$ ]  $\mu\text{m}$  wide near the base, tapering distally and 0.5-1.0 [ $\bar{x}$ =0.75]  $\mu\text{m}$  wide at the tip, hyaline, usually 3-septate; mean length/width ratio = 36:1 (Figs. 7 and 8C).

HABITAT: On leaf and twig litter of Agathis australis Salisb.

SPECIMENS EXAMINED (All in Herb. Plant Diseases Div. (PDD), DSIR, Auckland, N.Z.): HOLOTYPE: PDD 34193, B. Kendrick KNZ 418, Unmarked Tr. off Scenic Drive, Waitakere Ranges, Auckland, N.Z. 1974.2.27. PARATYPES: PDD 34192, B. Kendrick KNZ 492, Summit Tr., Little Barrier Is., N.Z. 1974.3.7: PDD 34194, B. Kendrick KNZ 378, Cutty Grass Tr., Waitakere Ranges, Auckland, N.Z. 1974.2.9: PDD 34195, B. Kendrick KNZ 223, Waipoua St. For., Hobson Co., N.Z. 1973.11.22.

#### DISCUSSION

Ulocoryphus mastigophorus bears some resemblance to Microlychnus epicorticis Funk (Funk 1973), but Microlychnus is a lichenized synnematous hyphomycete with an eccentric, laterally directed head lacking the membranous sheath which encloses the hymenium in Ulocoryphus.



Figs. 3-7. Ulocoryphus mastigophorus. Details of conidiomatal head, conidiogenesis and conidia. 3. Head showing peripheral sheath of platelike fused hyphae (white arrow) and arrangement of conidia within cavity enclosed by sheath. 1100X. 4. Conidiogenous cells. 1830X. 5 and 6. Details of conidiogenesis; arrows indicate percurrent proliferations. 3100X and 4500X respectively. 7. Detached conidium, characteristically curled; arrows show septa. 1100X.

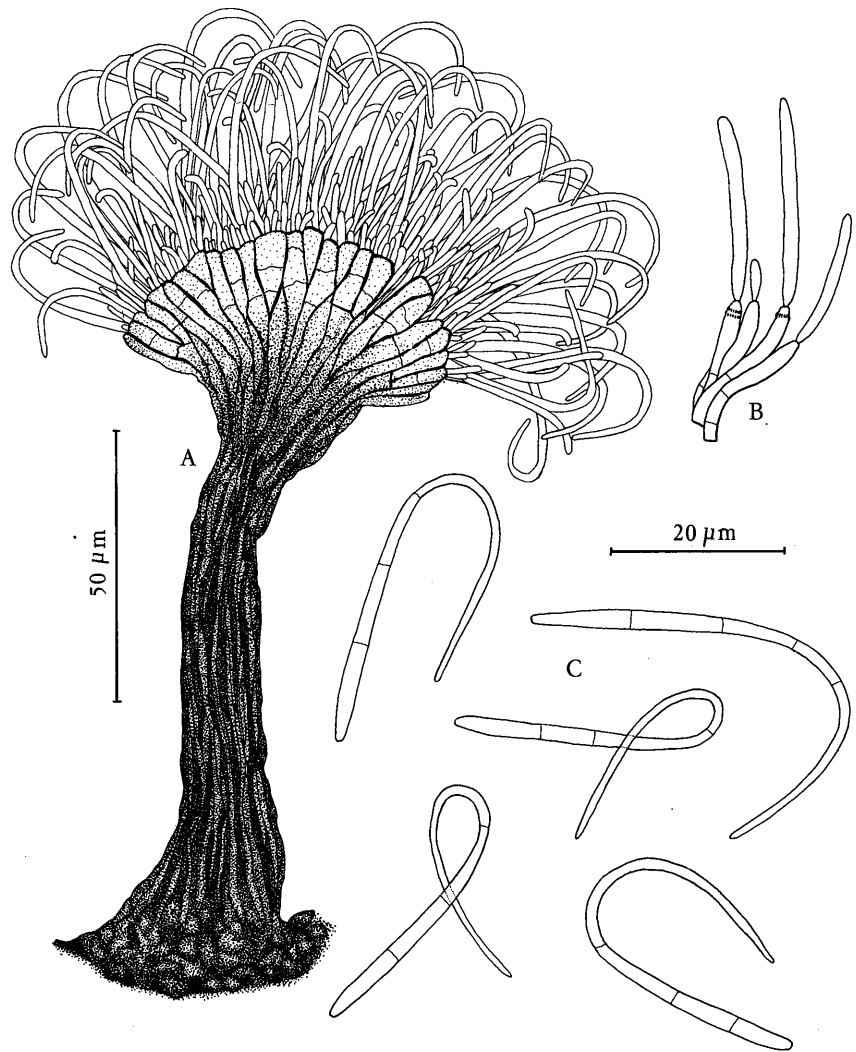


Fig. 8. *Ulocoryphus mastigophorus*. A. Conidioma showing basal stroma, membranous sheath and attached conidia. B. Conidiogenous cells with percurrent proliferations. C. Phragmosclecosporous conidia.

The conidioma of Ulocoryphus is rather unusual. At first sight it appears to be straightforwardly synnematal; however, the sheath of fused hyphae around the conidiomatal apex encloses what seems to be a cupulate cavity within which lies the hymenium. It is possible that this conidioma is evolving toward the pycnidial condition: examples of stalked pycnidial conidiomata which come to mind are those of Cornucopiella Höhnelt (Nag Raj & DiCosmo 1980) and Corniculariella Karsten emend. DiCosmo (DiCosmo 1978). The hyphal sheath may represent an excipulum, and the concave hymenium a future pycnidial cavity. Conceivably, evolution is proceeding in the other direction. For the present we consider Ulocoryphus as producing a synnematal conidioma similar to that of Leptoxypium Speg. and possibly therefore related to the sooty molds (see Hughes 1976).

We observed considerable variation in the size of the conidioma among the collections. The height of the conidioma ranges from 95-800  $\mu\text{m}$ . This can be divided into sub-ranges, as follows:

- A: KNZ 223 (510-800  $\mu\text{m}$ )
- B: KNZ 378 (395-460  $\mu\text{m}$ )
- C: KNZ 418 and KNZ 492 (95-180  $\mu\text{m}$ )

From a consideration of Table 1, where the measurements for the remainder of the characters are summarized, the differences in stalk length do not impress us as being significant enough to separate the collections into different species. We suggest that the differences in the height of the conidioma can be attributed to environmental influences during development.

The percurrent proliferations on conidiogenous cells of U. mastigophorus are very inconspicuous, and since we do not know how many conidia are produced between proliferations, we are unable to characterize these conidiogenous cells as annellides or proliferating phialides. There is also the possibility that they may function like those of Circinotrichum, illustrated by Pirozynski (1962), whose mode of conidiogenesis is still imperfectly understood. We note, however, that while conidia of Circinotrichum are attached to the side of their parent cell by a minimal connection, conidia of Ulocoryphus have a broad, central attachment (Figs. 5,6,8B).

TABLE 1

Measurements of conidiomata and conidia of *Ulocoryphus* from the various collections. Ranges and means in  $\mu\text{m}$ .

| Collection             | Conidiomata                  |                            |                           |                           |                           | Conidia                      |                               |       | L/W ratio |
|------------------------|------------------------------|----------------------------|---------------------------|---------------------------|---------------------------|------------------------------|-------------------------------|-------|-----------|
|                        | Height                       | Width base                 | Width stipe               | Width head                | Length                    | Width base                   | Width tip                     | Width |           |
| PDD 34195<br>(KNZ 223) | 510-800<br>( $\bar{x}$ =634) | 45-110<br>( $\bar{x}$ =76) | 14-24<br>( $\bar{x}$ =23) | 40-75<br>( $\bar{x}$ =55) | 42-56<br>( $\bar{x}$ =49) | 1.0-1.8<br>( $\bar{x}$ =1.3) | 0.5-1.0<br>( $\bar{x}$ =0.71) |       | 38:1      |
| PDD 34194<br>(KNZ 378) | 395-460<br>( $\bar{x}$ =426) | 50-60<br>( $\bar{x}$ =58)  | 15-20<br>( $\bar{x}$ =17) | 60-75<br>( $\bar{x}$ =65) | 44-53<br>( $\bar{x}$ =47) | 1.5-2.0<br>( $\bar{x}$ =1.8) | 0.5-1.0<br>( $\bar{x}$ =0.73) |       | 26:1      |
| PDD 34193<br>(KNZ 418) | 95-180<br>( $\bar{x}$ =138)  | 32-51<br>( $\bar{x}$ =39)  | 14-30<br>( $\bar{x}$ =19) | 50-85<br>( $\bar{x}$ =67) | 50-70<br>( $\bar{x}$ =60) | 1.5-2.0<br>( $\bar{x}$ =1.6) | 0.5-1.0<br>( $\bar{x}$ =0.70) |       | 38:1      |
| PDD 34192<br>(KNZ 492) | 120-145<br>( $\bar{x}$ =131) | 40-55<br>( $\bar{x}$ =46)  | 14-21<br>( $\bar{x}$ =17) | 60-75<br>( $\bar{x}$ =65) | 55-65<br>( $\bar{x}$ =60) | 1.2-2.0<br>( $\bar{x}$ =1.8) | 0.5-1.0<br>( $\bar{x}$ =0.75) |       | 33:1      |

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