

# Mycological explorations of southern United States: a journey of discoveries. Part 2

Gregorio Delgado<sup>a</sup>

Eurofins Built Environment, 5200 Mitchelldale St. # E15, Houston, TX 77092, USA

*Three novel genera and six species of asexual Ascomycota were described as new from south Florida. Additionally, thirty-two other microfungi were newly recorded from the United States.*

The southern United States is home to a wide variety of ecosystems and climatic zones ranging from subtropical to arid or semiarid conditions. In combination with an abundance of suitable substrates, the area offers an excellent arena for biodiversity studies of saprobic microfungi growing on dead plant debris. In the first part of this report, those novel asexual Ascomycota described from the southwestern states of Arizona and New Mexico were presented. In the current overview, fungal taxa collected in the state of Florida are summarized.

The southern tip of the Florida peninsula along with the Keys are unique compared with the remaining continental United States. They share a tropical humid climate with the Caribbean warm temperatures all year-round. Rainfall pattern is also similar and characterized by wet and dry seasons influenced by hurricanes. Many plant communities and their species are native of both regions including tropical hardwood hammocks, mangrove forests or freshwater wetlands. It is therefore expected that the region supports a diverse fungal biota still waiting to be discovered and documented.

As a result of long-term mycological field work carried out in south Florida, three novel genera: *Castanedospora*, *Kalamarospora* and *Veramyrella*, together with new species: *Ellisembia mercadoi*, *Kalamarospora multiflagellata*, *Linkosia longirostrata*, *Stanjehughesia floridensis*, *Taeniolella sabalicola* and *Veramyrella bispora*, were described. Additionally, thirty-two other microfungal taxa were newly recorded from the United States.

Among them, the genus *Castanedospora* was introduced to accommodate a fungus collected on the petiole of a dead leaf of *Sabal palmetto* (Arecaceae), the cabbage palm [1]. It was originally described in neighboring Cuba as *Sporidesmium pachyanthicola* from dead leaves of *Pachyanthus poiretii* (Melastomataceae). DNA sequence data obtained from the Florida specimen suggested a phylogenetic placement of the fungus within the order Capnodiales belonging to the class Dothideomycetes, specifically within the family Extremaceae. This position is distant from *Sporidesmium*, which resides in the Sordariomycetes, and justified its recognition as a separate genus. The generic name was dedicated to Dr. Rafael F. Castañeda-Ruiz, Cuban mycologist who first described

this fungus and who has extensively contributed to the study of tropical microfungi.

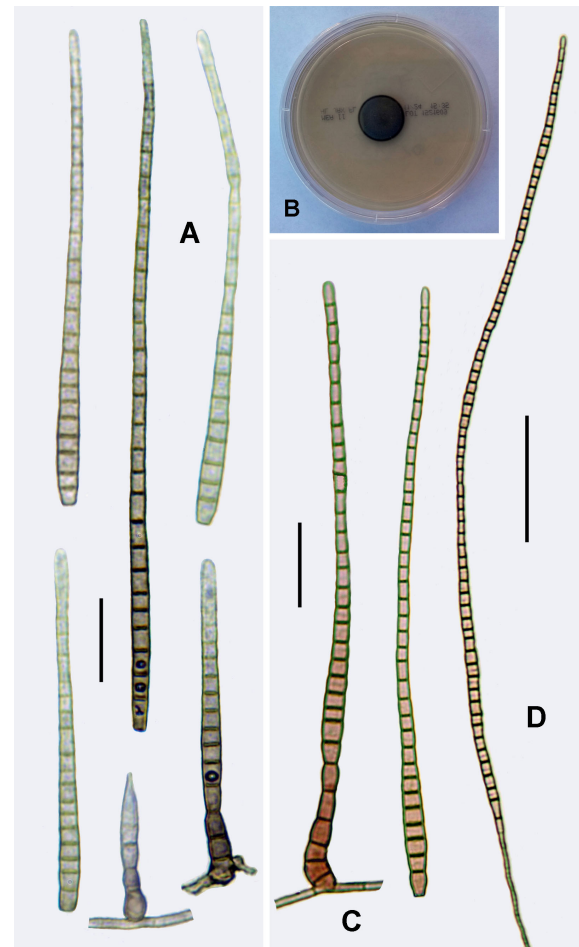


Figure 1: *Castanedospora pachyanthicola*. A. Conidiophores and conidia on natural substrate. B. Colony on MEA after one month at 25°C. C. Conidiophore and conidia on MEA. D. Terminal conidium in a hyphae. Scale bars: A, C = 20  $\mu$ m, D = 50  $\mu$ m. Source [1].

Another genus collected in south Florida was *Kalamarospora*, based on its type species *K. multiflagellata*, and described from rachides of dead leaves of *S. palmetto* [2]. The fungus is distinct in having obclavate to ellipsoidal conidia internally filled with a mass of subhyaline filaments growing upward from suprabasal cells at the bottom of the conidia. They protrude apically or subapically as long, filiform, subhyaline or hyaline ap-

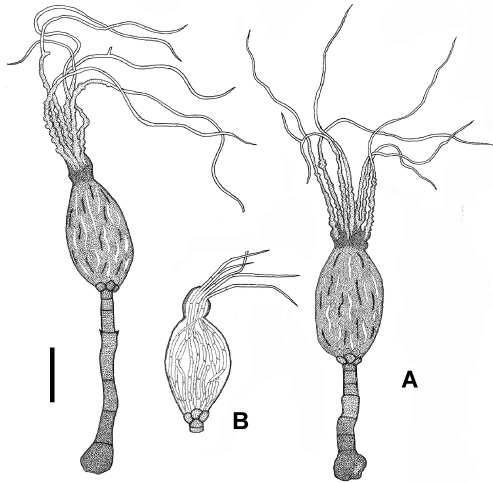


Figure 2: *Kalamarospora multiflagellata*. A. Conidiophores, conidiogenous cells and conidia. B. Younger conidia showing internal structure. Scale bar = 30 µm. Source [2].

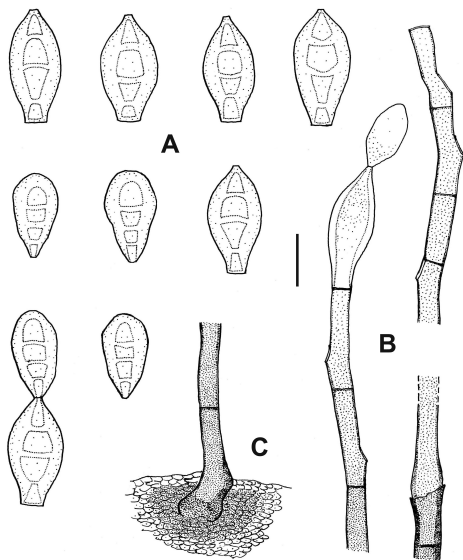


Figure 3: *Veramyrella bispora*. A. Conidia. B. Conidiophores, conidiogenous cells and developing conidia. C. Detail of the stroma. Scale bar = 10 µm. Source [3].

pendages, giving the conidia a squid-like appearance. Accordingly, the name of the fungus is derived from *καλαμάρι* (kalamári) or squid in Greek. At the time it

was not possible to isolate *K. multiflagellata* in pure culture to further obtain molecular data so its placement within Ascomycota still remains uncertain.

A third genus, also described from rachides of dead leaves of *S. palmetto*, was *Veramyrella* [3]. The type species, *V. bispora*, is characterized by 3-distoseptate, polymorphic conidia produced in simple, acropetal chains of two. The first conidium is mitrate to broadly fusiform in shape with the base truncate, whereas the second or apical conidium is clavate to pyriform and develops blastically from the apex of the first one. *Veramyrella* currently lacks DNA sequence data and therefore its phylogenetic relationships with other members of Ascomycota are yet to be determined.

## Notes

a. Email: gregorio.delgado@et.eurofinsus.com

## References

- [1] Delgado, G., Miller, A.N. and Piepenbring, M. (2018). South Florida microfungi: *Castanedospora*, a new genus to accommodate *Sporidesmium pachyanthicola* (Capnodiales, Ascomycota). *Cryptogamie, Mycologie*, 39: 109–127.
- [2] Delgado, G. (2010). South Florida microfungi: *Kalamarospora multiflagellata* gen. et sp. nov. (hyphomycetes), with additional new records from USA. *Mycotaxon*, 114: 231–246.
- [3] Delgado, G. (2009). South Florida microfungi: *Veramyrella bispora*, a new palmicolous anamorphic genus and species, with some new records for the continental USA. *Mycotaxon*, 107: 357–373.