



## High diversity of *Ocellularia* (Ascomycota: Graphidaceae) in the Colombian Llanos, including two species new to science

ROUCHI N. PELÁEZ<sup>1</sup>, BIBIANA MONCADA<sup>1</sup> & ROBERT LÜCKING<sup>2</sup>

<sup>1</sup>Licenciatura en Biología, Universidad Distrital Francisco José de Caldas, Cra. 4 No. 26D-54, Torre de Laboratorios, Herbario, Bogotá, Colombia; email: bibianamoncada@gmail.com, rouchinadine@hotmail.com

<sup>2</sup>Science & Education, The Field Museum, 1400 South Lake Shore Drive, Chicago, Illinois 60605-2496, U.S.A.; email: rlucking@fieldmuseum.org

### Abstract

An inventory of crustose epiphytic lichens in gallery forests dominated by the Moriche palm, *Mauritia flexuosa*, in the Colombian Llanos revealed a high diversity of species of the genus *Ocellularia* s.str. Thirteen species were identified in the material, some of them previously known from very few collections only. Two species are new to science and ten are new records for Colombia. The two new species are *O. umbilicatoides* Peláez, Moncada & Lücking, differing from *O. umbilicata* in the presence of a (carbonized) columella, and *O. usnicolor* Peláez, Moncada & Lücking, differing from *O. psorbarroensis* in the carbonized columella and dark brown to carbonized excipulum and the mottled white-yellowish green thallus. We also revised the nomenclature of species of *Ocellularia* previously listed for Colombia and propose the new combination *Ocellularia dodecamera* (Nyl.) Peláez, Moncada & Lücking.

**Keywords:** *Ampliotrema*, *Clandestinotrema*, *Fibrillithecis*, *Meta*, *Rhabdodiscus*

### Introduction

The lichen genus *Ocellularia* Meyer (1825: 327) is the largest genus in the Graphidaceae next to *Graphis*, with over 300 currently recognized species (Frisch *et al.* 2006; Rivas Plata *et al.* 2012). The genus was originally introduced by Meyer (1825) based on a few species at that time included in the genera *Thelotrema* Acharius (1803: 130) and *Pyrenula* Acharius (1814: 117). The name was conserved against the earlier name *Ascidium* Fée (1825: xlii), with *Ocellularia obturata* (Ach.) Sprengel (1827: 242) as type, a synonym of *O. cavata* (Ach.) Müller (1882: 499).

Müller (1882) circumscribed *Ocellularia* as species forming transversely septate, hyaline ascospores, but Hale (1980) redefined the genus to comprise species with a carbonized excipulum lacking of periphysoids. Frisch *et al.* (2006) separated from *Ocellularia* sensu Hale (1980) most species with a complex columella or other sets of characters in the genera *Ampliotrema* Kalb ex Kalb in Frisch *et al.* (2006: 81), *Gyrotrema* Frisch in Frisch *et al.* (2006: 379), *Melanotrema* Frisch in Frisch *et al.* (2006: 382), *Redingeria* Frisch in Frisch *et al.* (2006: 382), and *Stegobolus* Montagne (1845: 4). Rivas Plata & Lumbsch (2011) and Rivas Plata *et al.* (2012) showed that even a narrowly defined *Ocellularia* remains a polyphyletic assemblage, with most species forming a large, monophyletic clade (*Ocellularia* s.str.) centered around the type species, *O. cavata*, but a few species falling outside, being more closely related to *Myriotrema* Fée (1825: 34) and even to *Fissurina* Fée (1825: xxxv, cx); they also reintroduced the genus *Rhabdodiscus* Vainio (1921: 184).

Species of *Ocellularia* sensu Hale (1980), including *Ampliotrema*, *Clandestinotrema*, *Gyrotrema*, *Melanotrema*, *Rhabdodiscus*, *Redingeria*, and *Stegobolus*, are most diverse on trunks of larger trees in closed forest between sea level and 2000 m and are excellent indicators of ecological continuity or forest health (Rivas Plata *et al.* 2008). The higher the number of species, the more conserved a particular forest stand is. The highest numbers reported for this group are thus far from the eastern Amazonian rain forest in Venezuela, Brazil and Peru (Komposch & Hafellner 1999; Rivas Plata & Lücking 2012; Cáceres *et al.* 2014). Here we report a high diversity

**TABLE 1.** (Continued)

Species reported by Sipman <i>et al.</i> (2008)	Current taxonomic status
<i>Ocellularia leucomeleana</i> (Nyl.) Hale	<i>Clandestinotrema leucomelaenum</i> (Nyl.) Rivas Plata, Lücking & Lumbsch
<i>Ocellularia maxima</i> (Hale) Hale	<i>Ocellularia maxima</i> (Hale) Lumbsch & Mangold
<i>Ocellularia metaphorica</i> (Nyl.) Zahlbr.	<i>Rhabdodiscus metaphoricus</i> (Nyl.) Vain.
<i>Ocellularia microspora</i> (Zahlbr.) Hale	<i>Redingeria microspora</i> (Zahlbr.) M. Cáceres & Lücking
<i>Ocellularia olivacea</i> (Fée) Müll. Arg.	<i>Myriotrema olivaceum</i> Fée
<i>Ocellularia papillata</i> (Leight.) Zahlbr.	<i>Ocellularia papillata</i> (Leight.) Zahlbr.
<i>Ocellularia percolumellata</i> Sipman	<i>Ocellularia percolumellata</i> Sipman
<i>Ocellularia perforata</i> (Leight.) Müll. Arg.	<i>Ocellularia perforata</i> (Leight.) Müll. Arg.
<i>Ocellularia praestans</i> (Müll. Arg.) Hale	<i>Ocellularia praestans</i> (Müll. Arg.) Hale
<i>Ocellularia recondita</i> (Stirt.) Zahlbr.	<i>Rhabdodiscus reconditus</i> (Stirt.) Rivas Plata, Lücking & Lumbsch
<i>Ocellularia rhabdospora</i> (Nyl.) Redinger	<i>Ocellularia rhabdospora</i> (Nyl.) Redinger
<i>Ocellularia rhodostroma</i> (Mont.) A. Zahlbr.	<i>Ocellularia rhodostroma</i> (Mont.) A. Zahlbr.
<i>Ocellularia ripleyi</i> Hale	<i>Ocellularia ripleyi</i> Hale
<i>Ocellularia sinuosa</i> Sipman	<i>Gyrotrema sinuosum</i> (Sipman) Frisch
<i>Ocellularia subemersa</i> Müll. Arg.	<i>Rhabdodiscus subemersus</i> (Müll. Arg.) Rivas Plata, Lücking & Lumbsch
<i>Ocellularia xanthostroma</i> (Nyl.) Zahlbr.	<i>Ocellularia xanthostroma</i> (Nyl.) Zahlbr.

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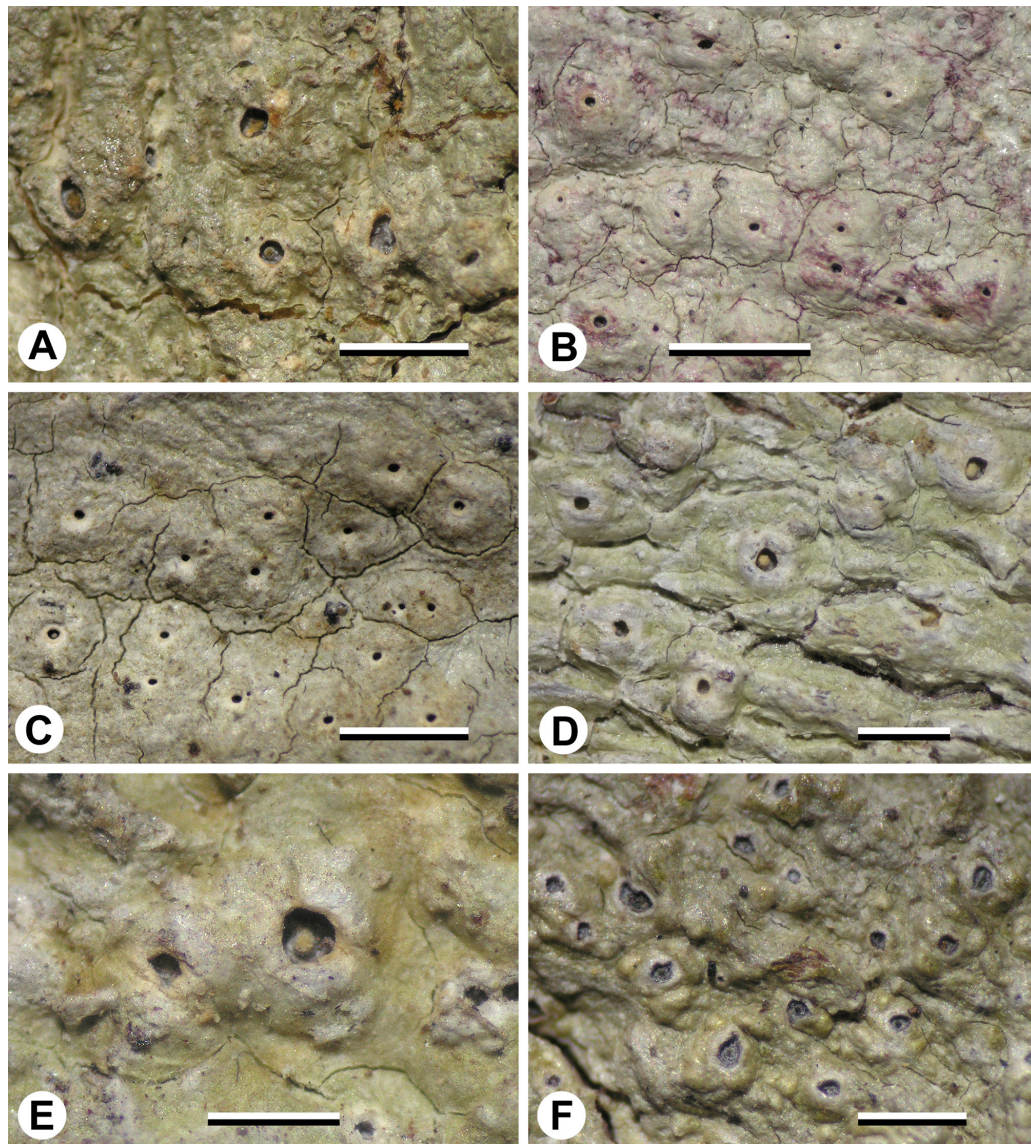
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**FIGURE 3.** A. *Ocellularia psorbarroensis*, thallus with ascomata (Moncada & Gonzáles 3476). B. *Ocellularia umbilicata*, thallus with ascomata (Moncada & Gonzáles 3523). C. *Ocellularia umbilicatoides*, thallus with ascomata (holotype). D–E. *Ocellularia usnicolor*, thallus with ascomata and ascomata enlarged (D Moncada & Gonzáles 3550b, E Moncada & Gonzáles 3548). F. *Ocellularia xantholeuca*, thallus with ascomata (Moncada & Gonzáles 3451). Scale = 1 mm.