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Rick's species revision 2: *Lycoperdon benjaminii* recombined in *Morganella*

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Abstract — Continuing the study of J. Rick's species, we consider *Lycoperdon benjaminii* as an authentic member of *Lycoperdaceae* and propose its transference to the genus *Morganella*. Description and illustrations of the holotype and SEM images of the basidiospores are given, as well as an updated key for the South American species of the genus.

Key words — gasteromycetes, neotropical fungi, nomenclature, taxonomy

Introduction

Morganella Zeller is a gasteroid genus of *Lycoperdaceae* Chevall. recognized by its epigeous basidiomes that generally do not exceed 3 cm in diam., have a double peridium with a velutinous, furfuraceous, granular-verrucose, or spinose exoperidium, dehisce by an apical irregular mouth, and produce a gleba with or without a true capillitium but with an abundant paracapillitium (Kreisel & Dring 1967, Suárez & Wright 1996, Krüger & Kreisel 2003).

Zeller (1948) separated *Morganella* from *Lycoperdon* Pers. based mainly on the nature of the capillitium. However, the generic concept of *Morganella* was modified by Kreisel & Dring (1967), Ponce de Leon (1971), and more recently by Krüger & Kreisel (2003). Krüger & Kreisel (2003) detailed the morphological and molecular basis for the current concept of the genus and recognized two

subgenera: *Apioperdon* Kreisel & D. Krüger and *Morganella* Zeller – the latter with two sections, *Morganella* Zeller and *Subincarnata* P. Ponce de León.

Continuing the revision of the gasteroid fungi described by J. Rick (Baseia et al. 2006), we found under the name *Lycoperdon benjaminii* an authentic member of the genus *Morganella* in the current concept. The formal transference of this name to *Morganella* is the subject of the present paper.

Materials and methods

Macroscopic characters were examined following usual techniques utilized in taxonomic studies of gasteroid fungi, as well as the original description of the holotype by Rick (1961). Color codes are those of Kornerup & Wanscher (1978). Microscopic characters were determined according to Miller & Miller (1988). Basidiospores were examined using a Philips XL 20 Scanning Electron Microscope (SEM).

Taxonomy

Morganella benjaminii (Rick) Cortez, Calonge & Baseia, **comb. nov.** FIGS. 1-3

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BASONYM: *Lycoperdon benjaminii* Rick, Iheringia Sér. Bot. 9: 462, 1961, as '*benjamin*'.

Basidiomes grayish orange (KW 5B4), globose, sessile, 0.5-1 cm diam.; sterile base rudimentary; exoperidium composed of minute spines, adhered to the endoperidium; endoperidium smooth, formed by thick-walled hyphae, fragile, dehiscing by an apical stoma; paracapillitium colorless, 2-4 µm diam., thin-walled, more or less branched, smooth, septate; eucapillitium absent; spores 2.5-3.5 µm diam., globose, verrucose, with a pedicel < 1.5 µm long.

Material studied: BRAZIL. Rio Grande do Sul State: municipality of São Salvador, 1943, *leg. J. Rick* (PACA 13.806, **holotype**).

Remarks: This species was described in Rick (1961), a posthumous work compiled by Father B. Rambo. In the protologue it appears graphed as *Lycoperdon 'Beniamin'*. As Rick do not explained the etymology of this new species, we suppose that he dedicated it to somebody called Benjamin, however this name is not familiar to the present authors. The specific epithet has been corrected to *benjaminii* in accordance with current nomenclatural rules.

The holotype of *M. benjaminii* was collected growing among fallen leaves, as indicated by Rick (1961), "inter folia gregarium", which is another distinct feature of the species, given that most species of the genus are lignicolous.

There are four *Morganella* species from South America: *M. costaricensis* M.I. Morales, *M. fuliginea* (Berk. & M.A. Curtis) Kreisel & Dring [= *M. puiggarii* (Speg.) Kreisel & Dring; *M. mexicana* Zeller], *M. pyriformis* (Schaeff.: Pers.) Kreisel & D. Krüger and *M. velutina* (Berk. ex Massee) Kreisel & Dring (Suárez

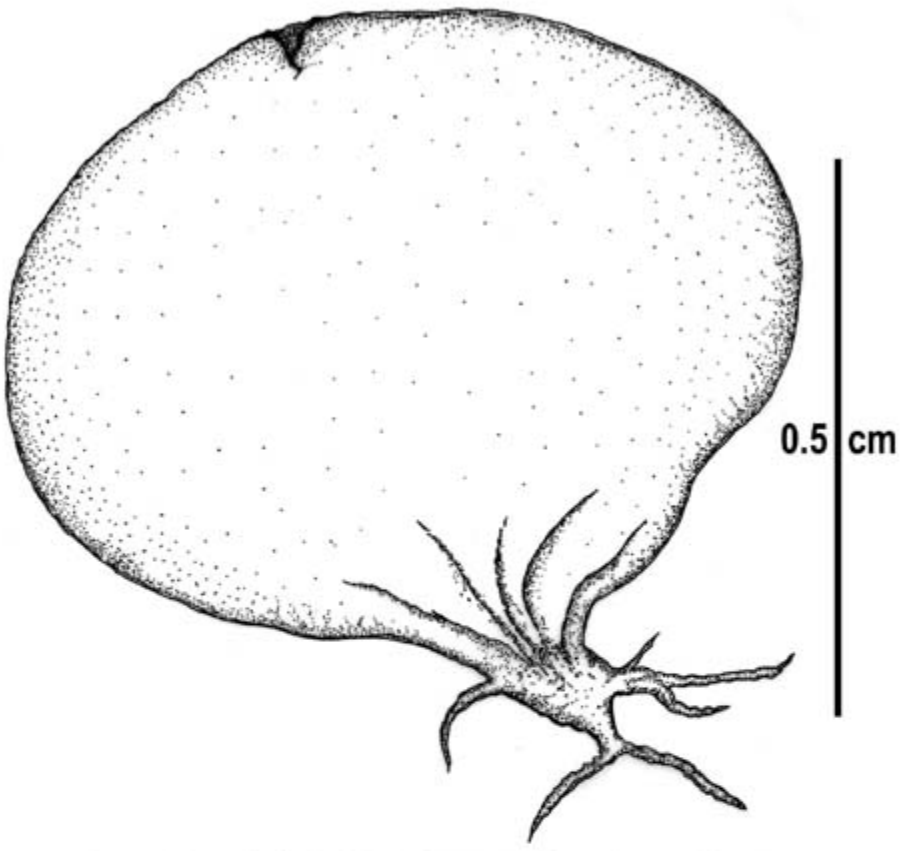
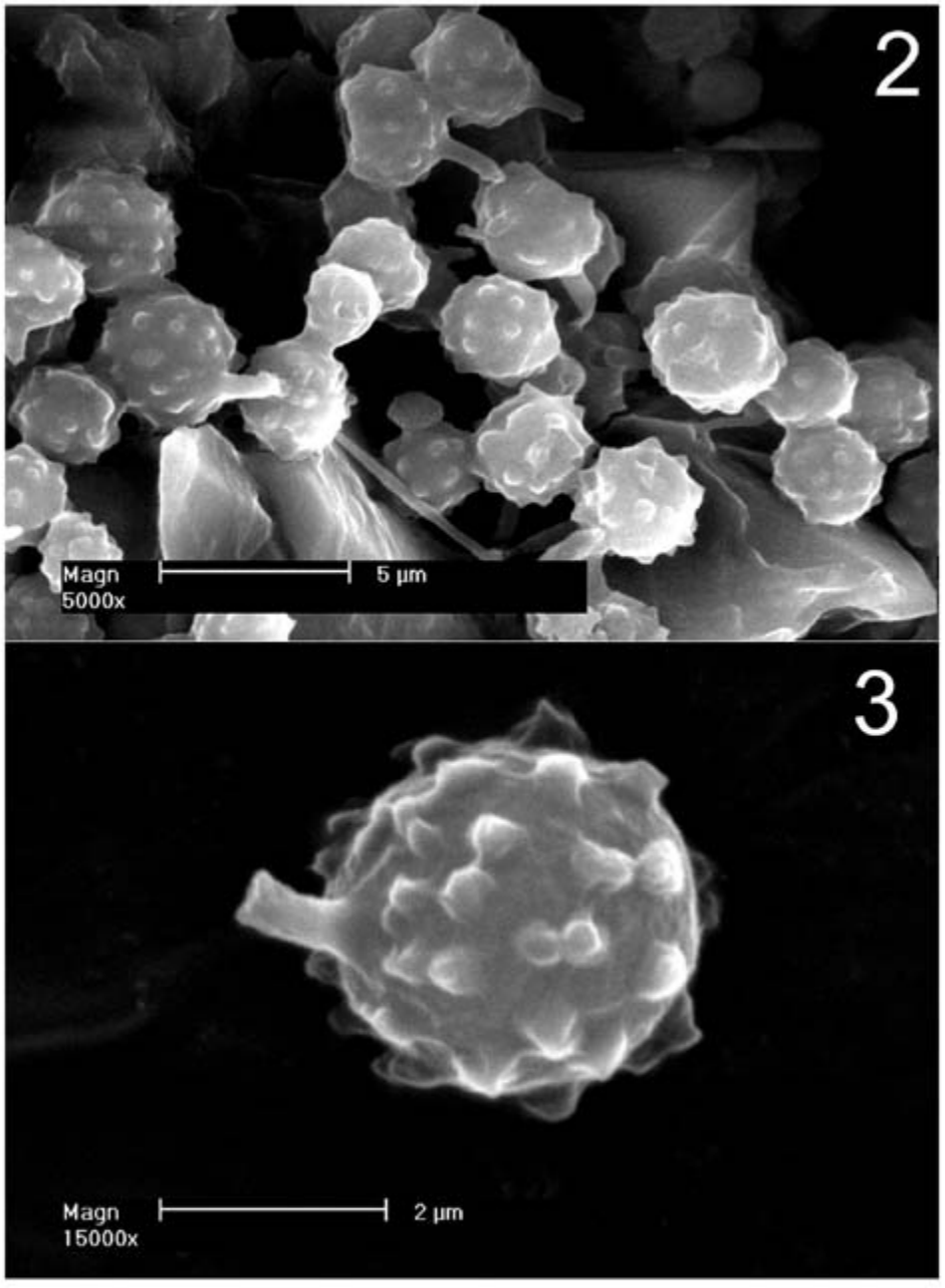


Figure 1: *Morganella benjaminii* (PACA 13.806, holotype): mature basidiome.

& Wright 1996, Krüger & Kreisel 2003). However, none of these are close to *M. benjaminii*, which differs from the other South American *Morganella* species fundamentally by the distinct basidiospore morphology: in *M. costaricensis*, the basidiospores are almost smooth under light microscope (Morales et al. 1974); *M. fuliginea* has strongly echinate basidiospores; *M. velutina* presents echinate basidiospores and a setose exoperidium; and finally, *M. pyriformis* presents little warted basidiospores, but differs from all above cited species on the presence of eucapillitium.

In the infra-generic classification of the genus, *M. benjaminii* is placed in subgen. *Morganella* sect. *Morganella* due to the presence of paracapillitum, eucapillitium absent, and non-chambered subgleba (Krüger & Kreisel 2003).

We propose the following updated key for the determination of the South American species of the genus, which was modified after the monograph of Suárez & Wright (1996) and the recent work by Krüger & Kreisel (2003). Except for *M. costaricensis*, the remaining species occurs in Brazil.



Figures 2-3: *Morganella benjaminii* (PACA 13.806, holotype): basidiospres under SEM.

Key to the South American species of *Morganella*

1a. Paracapillitium and eucapillitium present ..... ***M. pyriformis***
1b. Only paracapillitium present 2
2a. Exoperidium formed by setose, thick-walled hyphae ..... ***M. velutina***
2b. Exoperidium formed by chains of slightly thick-walled hyphae 3
3a. Basidiospores smooth under light microscopy (echinulate under SEM) ..... ***M. costaricensis***
3b. Basidiospores verrucose or echinate under SEM and light microscopy 4
4a. Basidiospores verrucose ..... ***M. benjaminii***
4b. Basidiospores strongly echinate ..... ***M. fuliginea***

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