

Bovista psammophila



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Bovista psammophila A.C.M. Rodrigues, Baseia & M.P. Martín, *sp. nov.**Etymology.* In reference to the sandy habit.Classification — *Agaricaceae*, *Agaricales*, *Agaricomycetidae*, *Agaricomycetes*, *Agaricomycotina*.

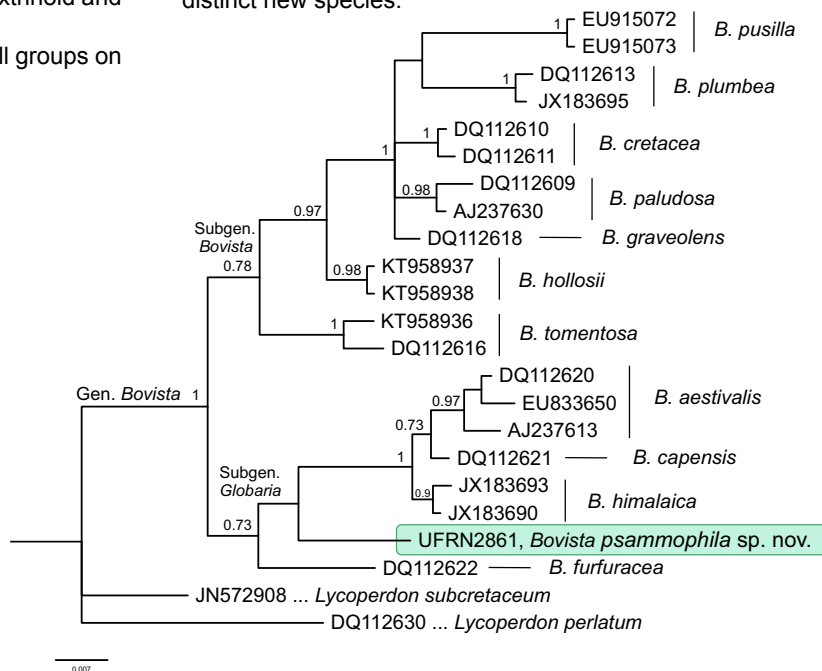
Basidiomata growing in small groups, subglobose, 13–19 mm wide × 10–18 mm high, white in young basidiomata. *Exoperidium* granulose to furfuraceous, evanescent, brown (5F8, Kernerup & Wanscher 1978) at maturity. *Endoperidium* papery, dark blond (5D4) at maturity, fragile, smooth, with irregular opening. *Gleba* cottony, brown (6E5) at maturity. *Subgleba* absent. *Rhizomorphs* thin, whitish (1A1), encrusted with sand. *Exoperidium* composed of two layers: the inner layer with pseudoparenchymatous cells, globose, subglobose, pyriform, and clavate, 17.1–30.2 × 13.2–9.8 µm, with regular walls ≤ 1 µm thin, hyaline in 5 % KOH, non-dextrinoid, mycosclereids with irregular shape, and the outer layer composed of spherocysts in chains, 14.1–24.7 × 11.7–15.2(–19.5) µm, with regular walls ≤ 1 µm thin, yellowish in 5 % KOH. *Endoperidium* with filamentous hyphae measuring 3.1–3.9 µm diam, with regular walls ≤ 1 µm, branched, aseptate, hyaline in 5 % KOH, and non-dextrinoid. *Capillitium* lycoperdon-type along the gleba, subelastic to elastic, hyphae 3–4.8 µm diam, with regular walls ≤ 1 µm, dichotomously branched, with numerous pits, yellowish in 5 % KOH, non-dextrinoid, septa lacking. *Paracapillitium* absent. *Basidiospores* globose, verrucose, 3.6–4.4 × 3.6–4.3 µm [$Q_m = 1.03$; $x = 4.0 \pm 0.2 \times 4.1 \pm 0.2$; $n = 30$], with short pedicels, 0.7–1.2 µm, hyaline in 5 % KOH, non-dextrinoid and acyanophilic.

Habit & Habitat — Basidiomata growing in small groups on sandy soil.

Typus. BRAZIL, Rio Grande do Norte, Natal, Parque Estadual Dunas do Natal, Trilha da Peroba, soil, 7 Apr. 2016, A.C.M. Rodrigues, N.M. Assis & I.G. Baseia (holotype UFRN-Fungos 2861, ITS and LSU sequences GenBank MN243154 and MN243155, MycoBank MB832116).

Additional material examined. BRAZIL, Rio Grande do Norte, Parque Estadual Dunas do Natal, soil, 5 July 2008, E.P. Fazolino (UFRN-Fungos 776).

Notes — Based on morphological and molecular characters, *Bovista psammophila* belongs to the subgenus *Globalaria*, in the genus *Bovista* (Kreisel 1967), and is recognised by its granulose exoperidium, capillitium lycoperdon-type along the gleba, with numerous pores, presence of mycosclereids in the inner layer of the exostratum, and verrucose basidiospores. *Bovista psammophila* is closely related to *B. aestivalis*, *B. furfuracea*, and *B. himalaica*. However, *B. aestivalis* exhibits a compact subgleba, an intermediary-type capillitium in the centre of the gleba with numerous pores, and globose to ovoid basidiospores (Calonge & Demoulin 1975, Demoulin 1979), characters not found in *B. psammophila*. *Bovista furfuracea* is morphologically similar to *B. psammophila*, but *B. furfuracea* has a lycoperdon-type capillitium, with fragile hyphae and numerous septa, smooth to verruculose basidiospores, and a robust rhizomorph (Moyersoen & Demoulin 1996). *Bovista himalaica* exhibits globose to pyriform basidiomata, rudimentary subgleba, and intermediary-type capillitium along the gleba with no pits (Yousaf et al. 2013), which differs from *B. psammophila*. Morphological and molecular data (ITS nrDNA) show *B. psammophila* as a distinct new species.



Colour illustrations. Brazil, Rio Grande do Norte, Natal, Parque Estadual Dunas do Natal, where the specimens were collected. From bottom to top: immature and expanded basidiomata *in situ* (UFRN-Fungos 2861); lycoperdon-type capillitium (UFRN-Fungos 2861); capillitium under SEM (UFRN-Fungos 2861); basidiospores under SEM (UFRN-Fungos 2861); Scale bars = 10 mm (basidiomata), 50 µm (capillitium), 1 µm (capillitium SEM), 2 µm (basidiospores SEM).

ITS nrDNA phylogenetic tree obtained with MrBayes v. 3.2.7a (Ronquist et al. 2012) under GTR+G+I model for 5 M generations. The new species is marked with a rectangle. The posterior probabilities greater than 0.70 are indicated on the branches. Two *Lycoperdon* species were included as out-group. FigTree v. 1.42 and CoreDRAW v. 20.0.0.633 software were used to edit the final tree.

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