**Geastrum diosiae** J.C. Zamora, sp. nov.

**Etymology.** Named for Maria Martha Dios recognising her contribution to the knowledge of Argentinian gasteroid fungi.

**Classification —** Geastraceae, Geastrales, Agaricomycetes.

**Unexpanded basidiomata** 5–10 mm diam, subglobose to ovoid, normally with a distinct apical umbo. **Exoperidium** splitting in 6–13 more or less equal to unequal rays, 5–14 mm diam when closed in dry state, 14–33 mm diam when hydrated and forced in horizontal position, saccate, strongly hygrometric. **Mycelial layer** thin, whitish, intermixed with deciduous debris, easily peeling-off leaving its innermost part or the fibrous layer exposed, double-layered; inner layer whitish, formed by rather indistinct, thin-walled, hyaline, clamped, generative hyphae, outer layer formed by comparatively thick-walled and asceptate, hyaline, skeletal hyphae, 1–2.5 μm diam, with indistinct lumen. **Fibrous layer** papyraceous, pale-cream to more or less brown, formed by thick-walled, asceptate, brownish, skeletal hyphae, 2–4.5 μm diam. **Pseudoparenchymatous layer** pale-cream to yellowish when young, soon ochraceous to orange, dark brown when old, normally not cracked, very persistent even in very old basidiomata, composed of thick-walled (walls 2–3 μm thick) cells of various sizes and shapes, about 15–30 μm diam. **Endoperidial body** globose to subglobose, 4–10 mm diam, pale grey to brownish grey; **endoperidial surface** glabrous and naked or covered with a very inconspicuous pruina, sessile; **endoperidium** consisting of brownish skeletal hyphae, (2.5–)3–6 μm diam. **Mesoperidium** inconspicuous, reduced to few generative hyphae and some 3–10 μm diam, bipayramidal, calcium oxalate dihydrate crystals on the endoperidial surface. **Peristome** fibrillose, often darker or of the same colour than the endoperidial body, sometimes slightly lighter, flat to broadly conical, distinctly delimited, thickened, formed by up to 12 μm diam, brownish, skeletal hyphae. **Stalk** absent. **Apophysis** absent. **Columella** weak, intruding about 1/3–1/2 in the global mass. ** Mature gleba** brown to blackish. **Basidiospores** globose, 4.0–5.0 μm diam; ornamentation baculate, consisting of 0.3–0.5 (–0.6) μm in height, brown, low, truncate warts, sometimes fused to form short crests. **Broadest capillitial hyphae** 6–7 μm wide, asceptate, brown to dark brown, very rarely branched, thick-walled, with narrow lumen, mostly visible; tips often acute; surface covered with debris or not. **Rhizomorphs** deciduous, only a few studied, covered with some acicular to horn-like calcium oxalate monohydrate crystals.

**Ecology & Distribution —** This species grows in rather disturbed places, on patches of denuded soil among Prosopis spp. (‘alarrobos’). It is currently known from rather wooded zones of the Monte ecoregion in Argentina, which is part of the Temperate grasslands, savannas and shrublands biome of the Neotropical ecozone (Olson et al. 2001). These places are not far from the ecotone with the Arid Chaco ecoregion (tropical and subtropical grasslands, savannas and shrublands biome), and some specimens seem to have been found in the Arid Chaco (M.M. Dios, pers. com., not studied by the author and therefore not included here), so the species should probably be looked for in both ecoregions.

**Typos. Argentina,** La Rioja, Castro Barros, Anjullón, on the ground, with *Prosopis* spp. (*Leguminosae*) litter, growing close to old adobe buildings, 6 Apr. 2012, L. Papinutti & J.C. Zamora (holotype AH 47626, isotypes in MA-Fungi 83788 and UPS; ITS sequence GenBank KF988452, LSU sequence GenBank KF988587, rpb1 sequence GenBank KF988722, atp6 sequence GenBank KF988853, MycoBank MB812569).

**Additional specimens examined.** Argentina, La Rioja, Castro Barros, Anjullón, on *Prosopis* spp. (*Leguminosae*) litter, growing close to old adobe edifications, 8 Apr. 2012, L. Papinutti & J.C. Zamora, MA-Fungi 83789, duplo AH 47603 (ITS sequence GenBank KF988453, LSU sequence GenBank KF988588, rpb1 sequence GenBank KF988723, atp6 sequence GenBank KF988854); ibid., AH 47604.

**Notes** — The morphological description is based on c. 70 fruitbodies in different degrees of development. *Geastrum diosiae* is a well-defined species, characterised by the small basidiomata, strongly hygrometric exoperidium, mycelial layer encrusting debris and peeling-off, sessile endoperidial body, fibrillose and distinctly delimited peristome, and basidiospores with bacular ornamentation. This species belongs to *Geastrum* sect. *Corollina* and was included in the phylogenetic analyses of the entire genus *Geastrum* by Zamora et al. (2014), but left undescribed as ‘*Geastrum* sp.1’. The morphologically closest taxon is *G. hungaricum*, but this species is included in G. sect. *Geastrum* by molecular data and by the more distinct mesoperidium, with numerous crystalline aggregates of calcium oxalate monohydrate crystals, having also thinner capillitial hyphae and bigger basidiospores (5.0–6.0 μm) with an irregularly verrucose ornamentation (Sunhede 1989, Zamora et al. 2015). *Geastrum arenarium* is another hygrometric species recorded from the same Argentinian biome, but the endoperidium is subsessile to slightly stalked, the exoperidium is subcompound to arched, the mycelial layer is rather persistent, and the basidiospores have a very irregularly verrucose ornamentation; it also belongs to *Geastrum* sect. *Geastrum*, being phylogenetically distinct (Zamora et al. 2014, 2015). *Geastrum floriforme* has much larger basidiospores (5–7 μm), an indistinctly delimited peristome, and the endoperidial surface is not completely smooth, but normally rough due to groups of fused hyphae; it is also very different based on molecular data, belonging to *Geastrum* sect. *Papillata* (Zamora et al. 2014). Among the Argentinian species described by C. Spegazzini, only *G. platense* has a hygrometric exoperidium and a fibrillose peristome (Spegazzini 1898) but, after revising the type material (LPS 13345), the specimen was found to be very close to *G. floriforme*, and thus it also has larger basidiospores, an indistinctly delimited peristome and a rough endoperidial surface. Finally, *G. corollinum* is distinguished by the larger basidiomata and mycelial layer not encrusting debris (Sunhede 1989); this species is the type of *Geastrum* sect. *Corollina* and it is further differentiated from *G. diosiae* based on molecular data, each species forming independent and well-separated clades (Zamora et al. 2014).