Gasteroid mycobiota (*Agaricales*, *Geastrales*, and *Phallales*) from Espinal forests in Argentina

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ABSTRACT — Sampling and analysis of gasteroid agaricomycete species (*Phallomycetidae* and *Agaricomycetidae*) associated with relicts of native Espinal forests in the southeast region of Córdoba, Argentina, have identified twenty-nine species in fourteen genera: *Bovista* (4), *Calvatia* (2), *Cyathus* (1), *Disciseda* (4), *Geastrum* (7), *Itajahya* (1), *Lycoperdon* (2), *Lysurus* (2), *Morganella* (1), *Mycenastrum* (1), *Myriostoma* (1), *Sphaerobolus* (1), *Tulostoma* (1), and *Vascellum* (1). The gasteroid species from the sampled Espinal forests showed an overall similarity with those recorded from neighboring phytogeographic regions; however, a new species of *Lysurus* was found and is briefly described, and *Bovista coprophila* is a new record for Argentina.

KEY WORDS — *Agaricomycetidae*, fungal distribution, native woodlands, *Phallomycetidae*.

Introduction

The Espinal Phytogeographic Province is a transitional ecosystem between the Pampeana, the Chaqueña, and the Monte Phytogeographic Provinces in Argentina (Cabrera 1971). The Espinal forests, mainly dominated by *Prosopis* L. species, originally occupied 32 million Ha., which actually has been reduced to 0.2–0.1% (56.759 Ha) of the original area (Bertonatti & Coruera 2000; Noy-Meir et al. 2012). Land-cover changes and native forest decline were caused by human activities such as timber extraction, agriculture, extensive cattle rising, and forestry, and urbanization growth (Zak 2008). The remaining Espinal forests are distributed in isolated patches among agricultural landscapes in central Argentina (Lewis & Collantes 1973; Lewis et al. 2004, 2009; Zak 2008; Noy-

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Meir et al. 2012) and some of them are protected in national, provincial, municipal or private parks and reserves (Bertonatti & Coruera 2000). As a result of human activities, nowadays it is difficult to elucidate the original distribution of the Espinal. The value of its biodiversity is considered as 'medium' as it is less species rich than the neighboring phytogeographic regions. Consequently its endemism level is considered of 'medium' value as well (Bertonatti & Coruera 2000). Also there is an incipient invasion of exotic woody species, mainly *Morus alba* L. (Lewis et al. 2006, 2009; Noy-Meir et al. 2012). Therefore the Espinal forest is one of the most endangered ecosystems in the country. Moreover, knowledge about its fungal diversity is scarce.

The aim of this work is to provide a first list of gasteroid fungi (*Phallomycetidae* and *Agaricomycetidae*, *Agaricomycetes*) associated with a native preserved remnant of the Espinal forest. A list of fungal species, its distribution data in Argentina and photographs of species' basidiomata and basidiospores are provided.

Materials and methods

Study area — The Espinal forest in Córdoba can be separated into six districts each one with a particular vegetation type (Lewis & Collantes 1973). The selected sampling area belongs to the Central District. Specimens were collected during three consecutive sampling days in March 2013, and again in March 2014 at Estancia "El Yucat", Córdoba province (32°22'7.89"S 63°25'34.93"W). Different sectors of the Estancia were sampled and a vast area of each one was covered to obtain a representative sample of its gasteroid community. No specific sampling scheme was used. The climate is defined as temperate with dry season and annual mean temperature is 25 ºC. Annual rain fall is about 800 mm. The Espinal remnants at Estancia "El Yucat" are dominated in some patches by large *Prosopis alba* Griseb., other patches are dominated by *Celtis tala* Gillet ex Planchon and deep in the forest, large individuals of *Morus alba*, an exotic species, can be found. A dense tree stratum can be found but there are some open areas probably of anthropogenic origin. *Jodina rhombifolia* (Hook. et. Arn.) Reissek, *Geoffroea decorticans* (Gill. ex Hook.) Burk., *Acacia caven* (Mol.) Mol., *M. alba* and *Porlieria microphylla* (Baill.) Descole, O´Donell & Lourteig can be found among the tree stratum species; also *Schinus* spp. L. and some shrubs are present (Lewis et al. 2005).

Processing and examination of specimens — Dried specimens were deposited at the herbarium Museo Botánico de Córdoba (CORD) from Universidad Nacional de Córdoba, Argentina. Morphological features were studied under stereoscope (NIKON C-PS) and light microscope (NIKON SMZ745T). Basidiospores and capillitial hyphae were mounted in 3% KOH, Melzer's Reagent and lactophenol cotton blue. Thirty spores were measured from each collection for specimen's identification. Basidiospores were mounted on aluminum stubs, covered with gold with a standard sputter coater for the Scanning Electron Microscopy (SEM) with a Zeiss LEO 1450VP.

All the species listed below were collected at Estancia "El Yucat" and were identified to species with the relevant monographs of each genus and Argentinean bibliography. An exhaustive bibliographic research was made in order to include the provinces in which each species had been recorded. The herbarium material listed in the bibliography was not studied; nevertheless all descriptions were revisited and compared with the type descriptions and available SEM images of the spores. *Vascellum* species are included within *Lycoperdon* according to Larsson & Jepson (2008). Terms "aff." and "cfr." are used according the International Code of Botanical Nomenclature (ICBN).

Abbreviations — The names of Argentinean provinces and regions are abbreviated as follows: BA–Buenos Aires, Ca–Catamarca, Ch–Chaco, Chu–Chubut, Cba–Córdoba, Co–Corrientes, ER–Entre Ríos, GC–Gran Chaco, Ju–Jujuy, LP–La Pampa, LR–La Rioja, Me–Mendoza, Mi–Misiones, Pa–Patagonia, RN–Rio Negro, Sa–Salta, SJ–San Juan, SL–San Luis, SC–Santa Cruz, SF–Santa Fe, SE–Santiago del Estero, TF–Tierra del Fuego, Tu–Tucumán.

Results

Twenty-nine taxa were recognized and identified for the Espinal forests, belonging to the following genera: *Bovista* Pers. (4), *Calvatia* Fr. (2), *Cyathus* Haller (1), *Disciseda* Czern. (4), *Geastrum* Pers. (7), *Itajahya* Möller (1), *Lycoperdon* Pers. (2), *Lysurus* Fr. (2), *Morganella* Zeller (1), *Mycenastrum* Desv. (1), *Myriostoma* Desv. (1), *Sphaerobolus* Tode (1), *Tulostoma* Pers. (1), and *Vascellum* (1). Twenty-one species were collected during 2013 and eighteen were in 2014; basidioma presence/absence during both sampling periods is shown in Table 1. Ten species were collected in both years (*Calvatia cyathiformis*, *Cyathus stercoreus*, *Disciseda hyalothrix*, *D. stuckertii*, *Geastrum lloydianum*, *G. saccatum*, *Itajahya galericulata*, *Lycoperdon lambinonii*, *Mycenastrum corium* and *Lycoperdon pampeanum*) whereas nineteen species were recorded only in one of the two years. *Lysurus*, *Morganella*, *Sphaerobolus*, and *Tulostoma* species were only collected during 2013, whereas *Myriostoma coliforme* was only collected in 2014. *Bovista coprophila* is reported for the first time for Argentina. And we present a brief description and comments on the new species of *Lysurus*.

Checklist of the gasteroid species (*Phallomycetidae* and *Agaricomycetidae*, *Basidiomycota*) from the Espinal forests in central Argentina

Bovista coprophila (Cooke & Massee) G. Cunn. FIGS. 1–2

BASIONYM– *Lycoperdon coprophilum* Cooke & Massee

DISTRIBUTION– Cba. First record for Argentina.

Bovista cunninghamii Kreisel

DISTRIBUTION– Cba (Domínguez de Toledo 1989, Hernández Caffot et al. 2013); SE (Domínguez de Toledo 1989); LR (Kuhar et al. 2012a).

Bovista pila Berk. & M.A. Curtis FIGS. 3–4

DISTRIBUTION– Cba (Hernández Caffot et al. 2013).

Bovista polymorpha (Vittad.) Kreisel FIGS. 5–6

BASIONYM– *Lycoperdon polymorphum* Vittad.

DISTRIBUTION– BA, SF, Tu (Spegazzini 1898, 1927); Ca (Spegazzini 1912, Domínguez de Toledo 1989); Cba (Domínguez de Toledo 1989).

Calvatia cyathiformis (Bosc.) Morgan FIGS. 7–8

BASIONYM– *Lycoperdon cyathiforme* Bosc.

Distribution– Cba (Domínguez de Toledo 1989); SE (Domínguez de Toledo 1989, 1993); Ca (Dios et al. 2011).

Calvatia fragilis (Vittad.) Morgan FIGS. 9–10

BASIONYM– *Lycoperdon fragile* Vittad.

DISTRIBUTION– BA, Chu (Spegazzini 1898); Cba, SE, LP (Domínguez de Toledo 1989).

Cyathus stercoreus (Schwein.) De Toni FIGS. 11–12

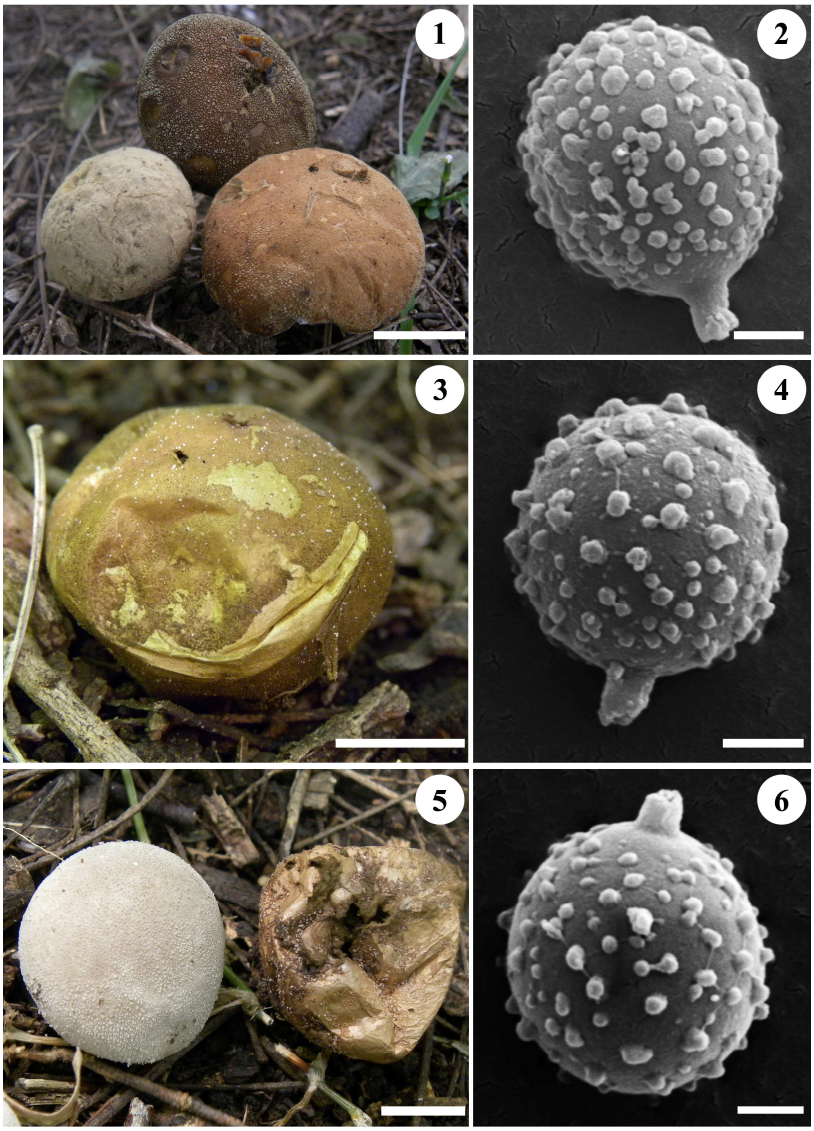
BASIONYM– *Nidularia stercorea* Schwein.

DISTRIBUTION– BA (Martinez 1956; Spegazzini 1880, 1898; Wright & Albertó 2006); Cba (Domínguez de Toledo 1989, 1993; Hernández Caffot et al. 2013; Martinez 1956); Ju (Fries 1909, Martinez 1956, Wright 1949c); Tu (Martinez 1956, Spegazzini 1898), Sa (Spegazzini 1880); Me (Martinez 1956).

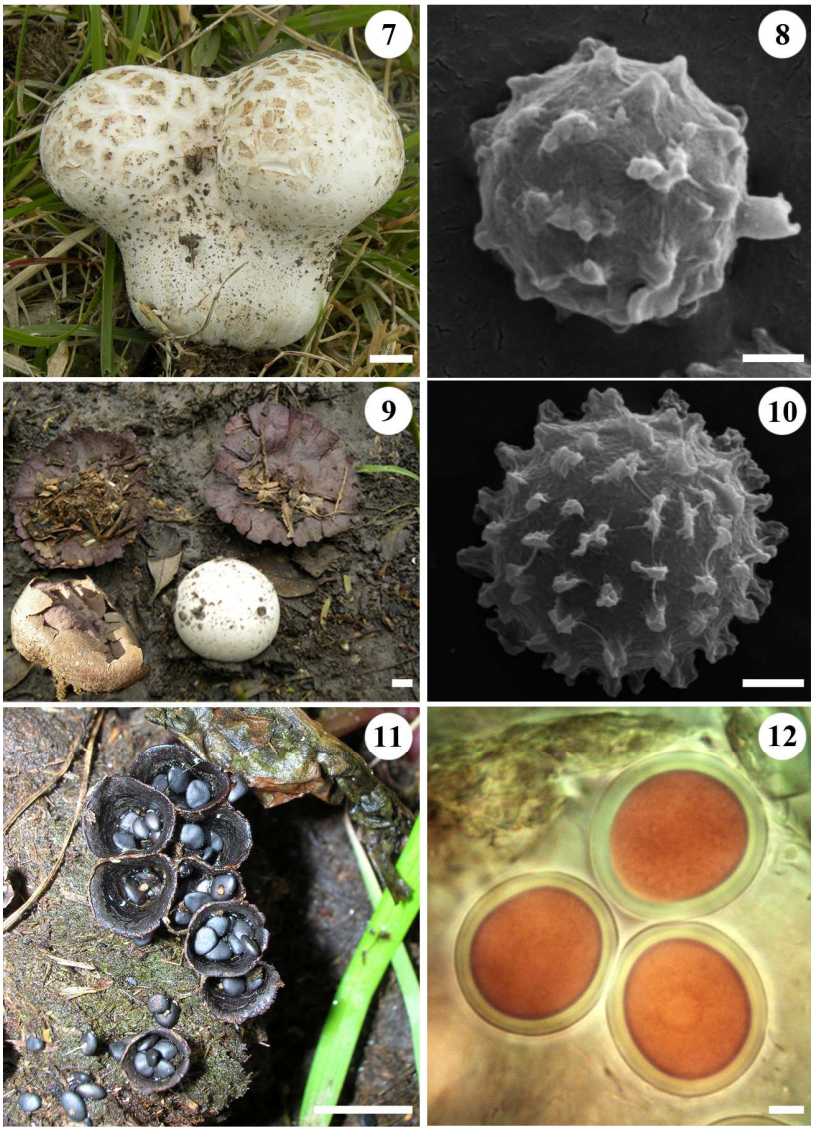
Disciseda candida (Schwein.) Lloyd FIGS. 13–14

BASIONYM– *Bovista candida* Schwein.

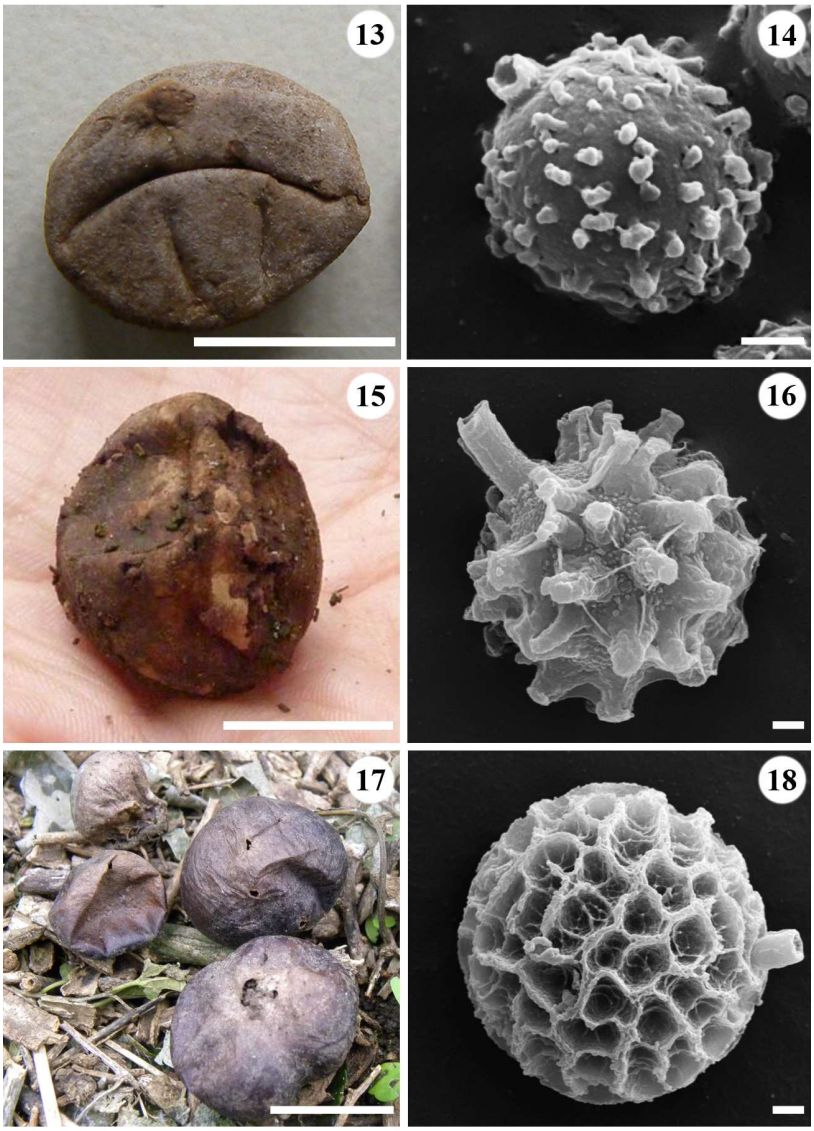
DISTRIBUTION– BA, Tu (Moravec 1954); Cba (Domínguez de Toledo 1989, 1993; Hernández Caffot et al. 2013).



FIGS. 1–6. 1–2: *Bovista coprophila* MLHC 2133: 1. Basidiomata. 2. Spore. 3–4: *B. pila* MLHC 2124: 3. Basidioma. 4. Spore. 5–6: *B. polymorpha* MLHC 2125: 5. Basidiomata. 6. Spore. Basidiomata bars = 1 cm. Basidiospores bars = 1 µm.



Figs. 7–12. 7–8: *Calvatia cyathiformis* MLHC 2160: 7. Basidioma. 8. Spore. 9–10: C. *fragilis* MLHC 2140: 9. Basidiomata in different maturation stages. 10. Spore. 11–12: *Cyathus stercoreus* MLHC 2122: 11. Basidiomata. 12. Spores at light microscope. Basidiomata bars = 1 cm. Basidiospores bars 8–10: = 1 µm, 12 = 5 µm.



FIGS. 13–18. 13–14: *Disciseda candida* MLHC 2112: 13. Basidioma. 14. Spore. 15–16: *D. hyalothrix* MLHC 2109: 15. Basidioma. 16. Spore. 17–18: *D. stuckertii* MLHC 2108: 17. Basidiomata. 18. Spore. Basidiomata bars = 1cm. Basidiospores bars = 1 µm.

Disciseda hyalothrix (Cooke & Massee) Hollós FIGS. 15–16

BASIONYM–*Bovista hyalothrix* Cooke & Massee

DISTRIBUTION– BA (Spegazzini 1927); Ch, Mi, Pa (Spegazzini 1912); Cba (Domínguez de Toledo 1989, 1993).

Disciseda stuckertii (Speg.) G. Moreno, Esqueda & Altés FIGS. 17–18

BASIONYM– *Bovista stuckertii* Speg.

DISTRIBUTION– Ch, Ju (Wright & Suarez 1990); Cba, SE (Domínguez de Toledo 1989); LR (Kuhar et al. 2012a).

Disciseda* aff. *verrucosa G. Cunn. FIGS. 19–20

DISTRIBUTION– LR (Kuhar et al. 2012a).

COMMENTS– Kuhar et al. (2012a) recorded *D. verrucosa* for La Rioja ecosystems. We found that our material matches the e macro and micro-characters described for *D. verrucosa* by Moreno et al. (2003) and Lizárraga et al. (2010). However, the basidiospore ornamentation and the length of the apiculus of this species vary within our material. Our specimens have the typical digitiform processes with rounded and curved tops and small verrucae between spines as cited for the species (Lizárraga et al. 2010; Kuhar et al. 2012a). We did find some differences such as basidiospores with a larger apiculus, and some of the basidiospores exhibit less close and dense ornamentation than described for *D. verrucosa* by Lizárraga et al. (2010) and Kuhar et al. (2012a). Maybe these variations of the spore morphology were caused by an incomplete maturation. We do not discard the idea of two very similar species. Despite the mentioned dissimilarities, the pattern of the spines of the episporium is similar to the one illustrated for *D. verrucosa* SEM photographs (Moreno et al. 2003; Lizárraga et al. 2010). Molecular analyses might be able to resolve the identity of our material.

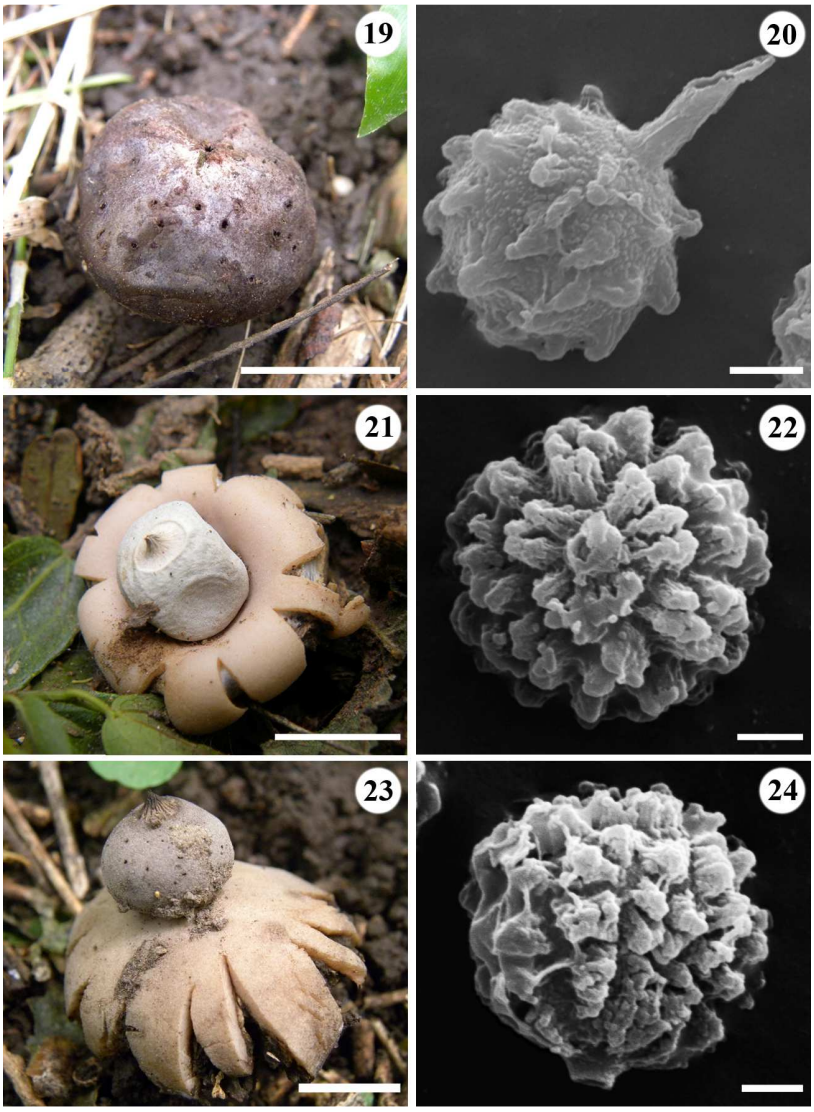
Geastrum corollinum (Batsch) Hollós FIGS. 21–22

BASIONYM– *Lycoperdon corollinum* Batsch

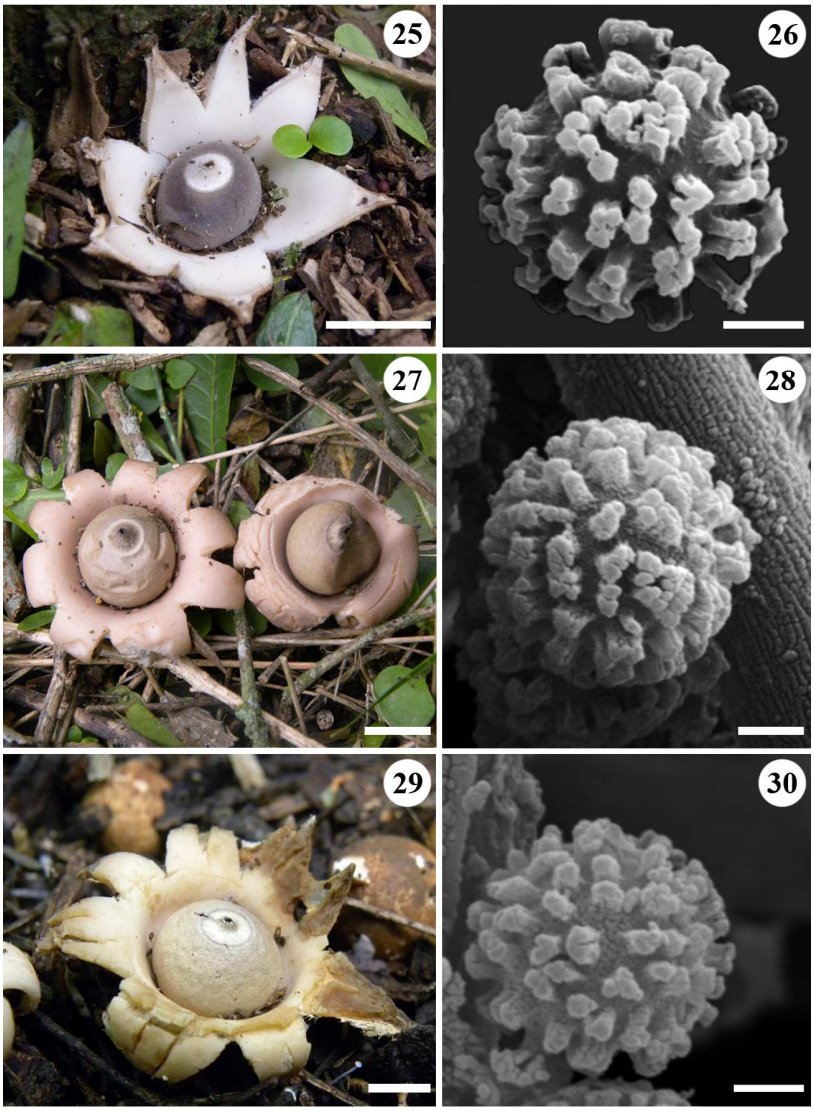
DISTRIBUTION– Cba (Domínguez de Toledo 1989); LR (Kuhar et al. 2012b).

Geastrum floriforme Vittad.

DISTRIBUTION– BA (Spegazzini 1898, 1927; Farr 1973; Soto & Wright 2000); Ca (Spegazzini 1912); Mi (Spegazzini 1898); Cba (Domínguez de Toledo 1989); LR (Kuhar et al. 2012b).



FIGS. 19–24. 19–20: *Disciseda* aff. *verrucosa* MLHC 2111: 19. Basidioma. 20. Spore. 21–22: *Geastrum corollinum* MLHC 2159: 21. Basidioma. 22. Spore. 23–24. *G. lloydianum* MLHC 2164: 23. Basidioma. 24. Spore. Basidiomata bars = 1 cm. Spores Bars = 1 µm.



FIGS. 25–30. 25–26: *Geastrum pampeanum* MLHC 2157: 25. Basidioma. 26. Spore. 27–28: *G. saccatum* MLHC 2156: 27. Basidiomata. 28. Spore. 29–30: *G. triplex* MLHC 2151: 29. Basidiomata. 30. Spore. Basidiomata bars = 1 cm. Basidiospores bars = 1 µm.

Geastrum indicum (Klotzsch) Rauschert

BASIONYM– *Cycloderma indicum* Klotzsch

DISTRIBUTION– Cba (Domínguez de Toledo 1989, Hernández Caffot et al. 2013); Mi (Spegazzini 1927).

Geastrum lloydianum Rick FIGS. 23–24

DISTRIBUTION– Cba (Domínguez de Toledo 1989); LR (Kuhar et al. 2012b).

Geastrum pampeanum Speg. FIGS. 25–26

DISTRIBUTION– BA (Farr 1973, Soto & Wright 2000); LR (Kuhar et al. 2012b).

Geastrum saccatum Fr. FIGS. 27–28

DISTRIBUTION– BA (Soto & Wright 2000, Wright & Albertó 2006); Cba (Farr 1973, Domínguez de Toledo 1989, Hernández Caffot et al. 2013, Spegazzini 1926); LR (Kuhar et al. 2012b); Mi (Wright & Wright 2005).

Geastrum triplex Jungh. **s.l.** FIGS. 29–30

DISTRIBUTION– BA (Soto & Wright 2000, Wright & Albertó 2006); Cba (Hernández Caffot et al. 2013); Mi (Spegazzini 1927).

COMMENTS– Our specimens belonging to *G. triplex* complex, match the description by Sunhede (1989), with special emphasis on the presence of the exoperidium collar and spore ornamentation (Sunhede 1989; Kasuya et al. 2012).

Itajahya galericulata Möller FIGS. 31–32

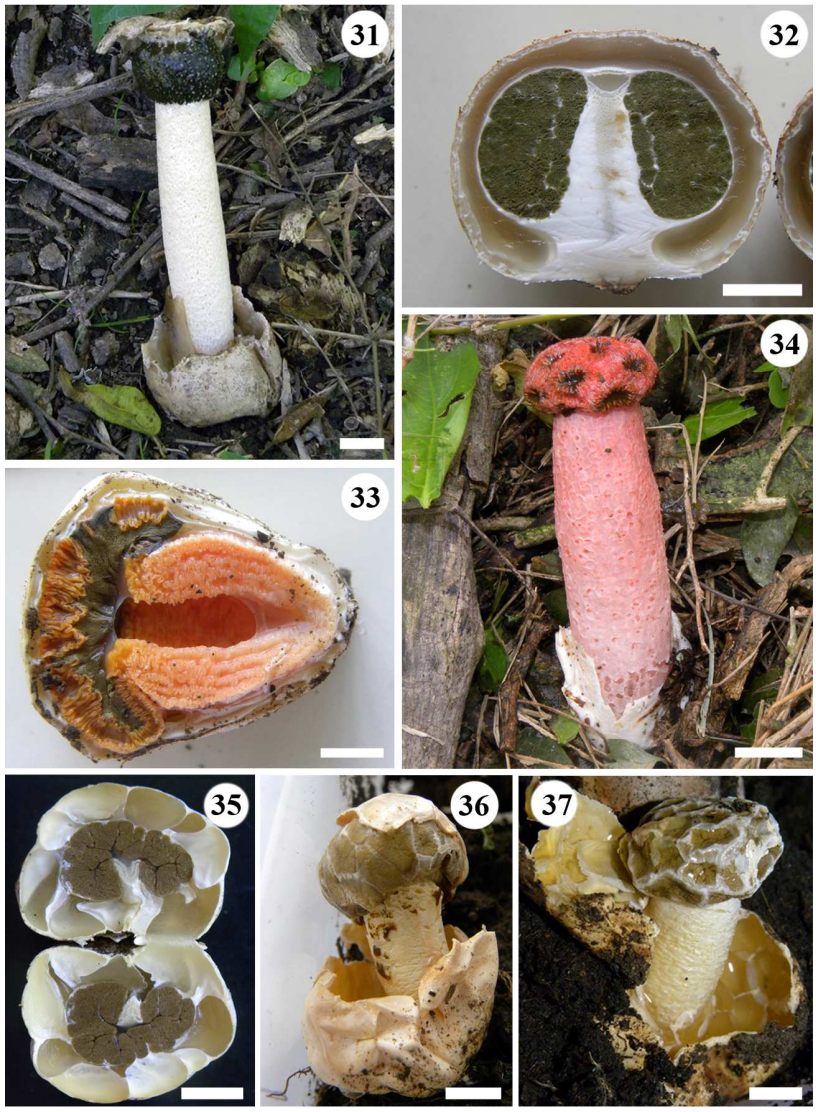
DISTRIBUTION– BA (Spegazzini 1898, 1927; Wright 1949a); Ca (Dios 2001); Ch (Wright 1949a); Cba, SE (Domínguez de Toledo 1989); GC (Fries 1909, Spegazzini 1927, Wright 1949a); Me (Ruiz Leal 1954); Sa (Wright 1960)

Lycoperdon lambinonii Demoulin FIGS. 40–41

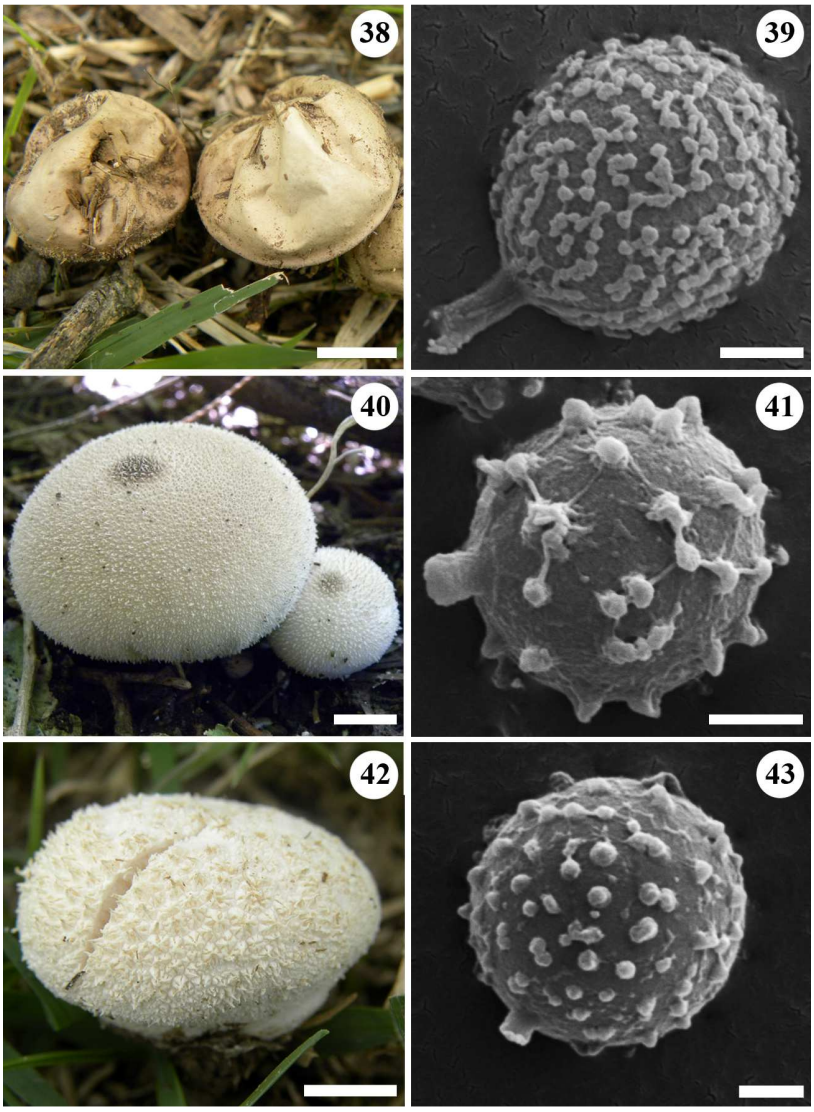
DISTRIBUTION– Cba (Domínguez de Toledo 1989, 1993; Hernández Caffot et al. 2013).

Lycoperdon pampeanum Speg. FIGS. 42–43

DISTRIBUTION– BA (Homrich & Wright 1988; Spegazzini 1896, 1898, 1902; Wright & Albertó 2006). Ch, ER, SC, SF (Homrich & Wright 1988). Cba (Domínguez de Toledo 1989, 1993; Nouhra & Domínguez de Toledo 1994; Spegazzini 1912; Homrich & Wright 1988; Hernández Caffot et al. 2013). Co (Spegazzini 1912). Sa (Spegazzini 1898, Homrich & Wright 1988). SE (Homrich & Wright 1988, Spegazzini 1927).



FIGS. 31–37. 31–32: *Itajahya galericulata* MPD18: 31. Expanded receptacle. 32. Unexpanded receptacle. 33–34: *Lysurus periphragmoides* MPD19: 33. Unexpanded receptacle. 34. Expanded receptacle. 35–37: *Lysurus* sp. nov. ined. MPD15: 35. Egg sectioned. 36. Emerging receptacle. 37. Mature receptacle. Basidiomata bars = 1 cm. Basidiospores bars = 1 μm.



FIGS. 38–43. 38–39: *Vascellum hyalinum* MLHC 2119: 38. Basidiomata. 39. Basidiospore. 40–41: *L. lambinonii* MLHC 2131: 40. Basidiomata. 41. Basidiospore. 42–43: *L. pampeanum* MLHC 2128: 42. Basidioma. 43. Basidiospore. Basidiomata bars = 1 cm. Basidiospores bars = 1 μm.

Lysurus periphragmoides (Klotzsch) Dring FIGS. 33–34

BASIONYM– *Simblum periphragmoides* Klotzsch

DISTRIBUTION– BA (Spegazzini 1881a, 1887a, 1898); Ca (Dios 2001); Cba (Domínguez de Toledo 1989, 1993,1995; Nouhra & Domínguez de Toledo 1994; Spegazzini 1887a, 1898; Hernández Caffot et al. 2013); LR (Kuhar et al. 2012a); Sa (Spegazzini 1898, Wright 1960); SE (Domínguez de Toledo 1989, 1995); Tu (Wright 1960, Spegazzini 1898, 1916).

***Lysurus* sp. nov. ined.** FIGS. 35–37

DISTRIBUTION– Cba.

BRIEF DESCRIPTION– EGGS: Light yellow and globose with marked sutures, containing a well developed and light yellow receptacle net shaped with a small and white stipe. VOLVA: light yellow. STIPE: white, up to 32 mm high × 15 mm diam. RECEPTACLE: dark green gleba on a light yellow, globose to cylindrical, up to 10 mm high × 22 mm diam. MATURE SPECIMENS: up to 54 mm high. BASIDIOSPORES: bacilliform and smooth, 2.5–3.5 × 5–6.5 µm.

COMMENTS– The external morphology of the egg in addition to its phenology and macro- micro-morphology allowed us to place this new species into the *Clathraceae,* within *Lysurus* (Lloyd 1907, Dring 1980). In an early immature stage, the receptacle of *Lysurus* sp. nov. is composed by a large fertile portion and a very small stipe or sterile portion (FIG. 35). Once outside the receptacle, the dry gleba sooner starts to liquefy and its light green color quickly turns darker (FIG. 36). The mature gleba smells like yeast. During the maturation process the stipe also changes in color and size. The small and cream colored stipe observed in the immature stages enlarges to up to 32 mm long (FIG. 37) and after one day the receptacle emerges from the egg. When decomposition processes begin, the stipe turns orange-red.

Morganella fuliginea (Berk. & M.A. Curtis) Kreisel & Dring

BASIONYM– *Lycoperdon fuligineum* Berk. & M.A. Curtis

DISTRIBUTION– Co (Suárez & Wright 1996). Mi (Wright & Wright 2005).

Mycenastrum corium (Guers.) Desv. FIGS. 44–45

BASIONYM– *Lycoperdon corium* Guers.

DISTRIBUTION– BA (Spegazzini 1880, Homrich & Wright 1973). Ca (Dios 2001); Cba, SE (Domínguez de Toledo 1989, 1993). Co, Me, RN, SF, Tu (Homrich & Wright 1973). Ju (Fries 1909). Pa (Spegazzini 1887b).

Myriostoma coliforme (Dicks.) Corda FIGS. 46–48

BASIONYM– *Lycoperdon coliforme* Dicks.

DISTRIBUTION– Ca (Dios et al. 2011). Cba (Domínguez de Toledo 1989, 1995).

Sphaerobolus stellatus Tode

DISTRIBUTION– BA (Spegazzini 1927; Wright & Albertó 2006). Cba (Domínguez de Toledo 1989, 1993; Spegazzini 1926; Hernández Caffot et al. 2013). TF (Spegazzini 1887b, c). Tu (Spegazzini 1906).

Tulostoma* cfr. *stuntzii D.M. Oliver & Hosford FIGS. 49–50

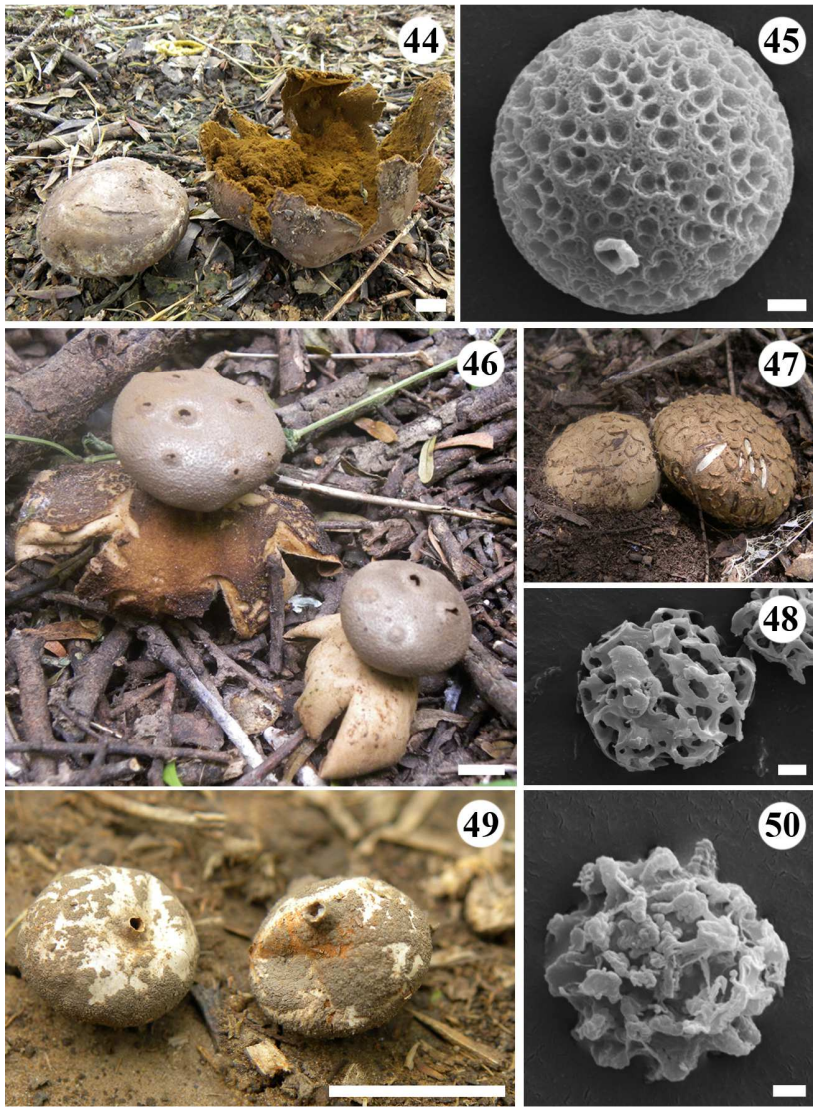
DISTRIBUTION– Cba.

COMMENTS– If this material indeed is *T. stuntzii,* this would constitute its first record for Argentina. According to the protologue this species is characterized by a small and depressed globose spore sac, with membranous to pitted exoperidium, tubular mouth, smooth collar when visible, a short and striate stipe tapering towards the apex and finely echinulate globose basidiospores up to 4.5–6(–7) µm in diam., (Oliver & Hosford 1979). These features are similar to our species macro and micro-characteristics but they are also ambiguous as it is common in most *Tulostoma* species. Revision of the type material of *T. stuntzii*, in addition to molecular analyses, will probably solve this issue.

Vascellum hyalinum Homrich & Wright FIGS. 38–39

DISTRIBUTION– Cba (Domínguez de Toledo 1989, 1993). Mi (Wright & Wright 2005).

COMMENTS– In agreement with the molecular analysis carried out by Larsson & Jepson (2008), *Vascellum* should be considered as a subgenus within a broadly defined *Lycoperdon*. Species included within *Vascellum* presents several morphological features similar to those exhibited by *Lycoperdon* species. In fact, the type species of the genus, *L. perlatum* Pers., presents a well developed diaphragm as the one defined for *Vascellum*. *L. perlatum* Pers. presents a well developed diaphragm as the one defined for *Vascellum*. Specialist have not formally transferred *Vascellum* species to *Lycoperdon*; thus, we provisionally keep this species within *Vascellum*



FIGS. 44–50. 44–45: *Mycenastrum corium* MLHC 2137: 44. Basidiomata. 45. Basidiospore. 46–48: *Myriostoma coliforme* MLHC 2136: 46. Basidiomata. 47. Egss. 48. Basidiospore. 49–50: *Tulostoma* cfr. *stuntzii* MLHC 2201: 49. Basidiomata. 50. Basidiospore. Basidiomata bars = 1 cm. Basidiospores bars = 1 μm.

TABLE 1: Gasteroid taxa from the Espinal forest in Estancia "El Yucat", in Córdoba-Argentina, collected in March 2013 and March 2014. Presence/absence data.

	Species	2013	2014
1	*Bovista coprophila*		×
2	*B. cunninghamii*	×	
3	*B. pila*	×	
4	*B. polymorpha*	×	
5	*Calvatia cyathiformis*	×	×
6	*C. fragilis*	×	
7	*Cyathus stercoreus*	×	×
8	*Disciseda candida*		×
9	*D. hyalothrix*	×	×
10	*D. stuckertii*	×	×
11	*D.* aff. *verrucosa*		×
12	*Geastrum corollinum*		×
13	*G. floriforme*		×
14	*G. indicum*		×
15	*G. lloydianum*	×	×
16	*G. pampeanum*		×
17	*G. saccatum*	×	×
18	*G. triplex*	×	
19	*Itajahya galericulata*	×	×
20	*Lycoperdon lambinonii*	×	×
21	*L. pampeanum*	×	×
22	*Lysurus periphragmoides*	×	
23	*Lysurus* sp. nov. ined.	×	
24	*Morganella fuliginea*	×	
25	*Mycenastrum corium*	×	×
26	*Myriostoma coliforme*		×
27	*Sphaerobolus stellatus*	×	
28	*Tulostoma* cfr. *stuntzii*	×	
29	*Vascellum hyalinum*	×	

Discussion

We presented the first records of gasteroid fungi associated with native woodlands of the Espinal Phytogeographic Province from Córdoba, Argentina. According to the presence/absence data (Table 1), additional gasteroid fungi are expected to be found and described for this type of forests. Perhaps some species fruit sporadically, and/or require specific climatic conditions that were not prevalent during the observed collecting times. An approximation to the knowledge of the whole community of gasteroid fungi from Yucat will be possible with regular field expeditions during the next years.

The Espinal biodiversity has been influenced by the neighboring Phytogeographic Provinces (Chaqueña, Monte, Pampeana and Selva Paranaense) and this influence maybe the cause for the low number of endemic species in the Espinal found so far (Bertonatti & Corcuera 2000). In fact, for the gasteroid fungi, many of the listed species in our work have already been registered for the above mentioned Phytogeographic Provinces (i.e., Domínguez de Toledo 1989, 1995; Wright & Albertó 2006 and Hernández Caffot et al. 2013). However, we recorded two interesting fungal novelties for this type of forest that enhance its biodiversity status: the new species, *Lysurus* sp. nov. and a new record for Argentina's gasteroid mycobiota: *Bovista coprophila*. A collection we tentatively identified as *Tulostoma stuntzii* might also constitute a first record of this species for Argentina.

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