

Checklist of the Argentinean Agaricales 6. Paxillaceae, Gomphidiaceae, Boletaceae and Russulaceae

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ABSTRACT— A checklist of species belonging to families *Paxillaceae*, *Gomphidiaceae*, *Boletaceae*, and *Russulaceae* was made for Argentina. The list includes all species published up to 2011. Sixteen genera and 54 species are recorded: 15 species from *Paxillaceae*, 3 from *Gomphidiaceae*, 11 from *Boletaceae*, and 25 from *Russulaceae*.

KEY WORDS—*Agaricomycetes, Paxillus, Russula, Lactarius, Phlebopus*

Introduction

In previous papers, partial checklists of the Argentinean *Agaricales* were presented for the families *Amanitaceae*, *Pluteaceae*, and *Hygrophoraceae* (Niveiro & Albertó 2012a); *Coprinaceae* and *Strophariaceae* (Niveiro & Albertó 2012b); *Bolbitaceae* and *Crepidotaceae* (Niveiro & Albertó 2012c); *Tricholomataceae* (Niveiro & Albertó 2012d) and *Agaricaceae* (Niveiro & Albertó 2013a). The purpose of this study is to establish a baseline of knowledge about the diversity of species described from the families *Paxillaceae*, *Gomphidiaceae*, *Boletaceae*, and *Russulaceae* in Argentina for future studies of mushroom biodiversity.

Materials & Methods

Nomenclature and classification systems

This checklist was based on all publications recorded for Argentina up to 2011. Nomenclature and classification systems follow Singer (1986) for families, and Kirk et al. (2008) and Index Fungorum (<http://www.indexfungorum.org>) for genera and species. Synonyms were simplified and only the basionym and the names recorded for Argentina of each species are included. Index Fungorum was consulted for current names of species and synonyms.

For journal abbreviations, the Botanico Periodico Huntianum (http://fmhibd.library.cmu.edu/fmi/iwp/cgi?db=BPH_Online&loadframes) web site was used. For author abbreviations, the International Plant Names Index (IPNI) (<http://www.ipni.org>) and Authors of Fungal Names (<http://www.indexfungorum.org/names/AuthorsOfFungalNames.asp>) were used. References cited for each species were ordered firstly by author in alphabetical order and secondly by year of publication.

Remarks were only added for those taxa where we found a conflict such as: species not validly published (NVP), the holotype is missing (MH), doubtful name, synonyms, unpublished transfer of genus, or when the distribution of the species was not completely clear. Books are cited by the year in which they were really published and not the year printed in the publication. This is the case, for example, of “Pródromo de la flora Agaricina Argentina” which is cited as Singer & Digilio (1952). In such cases, two years are provided for

species citation in the “literature cited” section, the real year of publication between parenthesis and year printed in the book between brackets.

Distribution

Species distribution is cited according to the Argentinean Province (State) where it was collected using abbreviations presented in Table 1. A map with the political division of Argentina and the abbreviations for each state can be seen in Niveiro & Albertó (2012a).

TABLE 1— Abbreviations used for Provinces of Argentina.

Province	Abbrev.	Province	Abbrev.
Antártida	ANT	Mendoza	MZA
Buenos Aires	BA	Neuquén	N
Catamarca	CAT	Rio Negro	RN
Córdoba	CBA	Salta	S
Chaco	CH	Santa Cruz	SC
Chubut	CHU	Santiago del Estero	SE
Corrientes	CTES	Santa Fe	SF
Entre Ríos	ER	San Juan	SJ
Formosa	FSA	San Luis	SL
Islas Malvinas	IM	Tucumán	T
Jujuy	J	Tierra del Fuego	TF
La Pampa	LP	No data	ND
La Rioja	LR	Patagonian Andes forest	AP
Misiones	MNES		

It should be taken into account that although many species were recorded in the provinces of the Patagonia Argentina (Neuquén, Rio Negro, Chubut, Santa Cruz, Tierra del Fuego), most of them were found in the Patagonian Andes forest which is located in a narrow strip to the west of the southern provinces.

Results

CHECKLIST OF ARGENTINEAN *PAXILLACEAE*, *GOMPHIDIACEAE*, *BOLETACEAE* AND *RUSSULACEAE*

PAXILLACEAE

Austropaxillus Bresinsky & Jarosch

Austropaxillus boletinoides (Singer) Bresinsky & Jarosch, *Pl. Biol. (Stuttgart)* **1**(3): 332, 1999.

Bas: *Paxillus boletinoides* Singer, 1952 [1951].

Dist: N, RN, TF

Ref: Horak (1980), Raithelhuber (1977, 1988, 1991, 2004), Singer (1953b, 1954, 1964), Singer & Digilio (1952).

Austropaxillus muelleri (Berk.) Bresinsky & Jarosch, *Pl. Biol. (Stuttgart)* **1**(3): 332, 1999.

Bas: *Paxillus muelleri* Berk., 1887.

Dist: ND

Ref: Singer (1969).

Obs: Singer (1969) cited this species as recorded in southern South America, but he did not clear up if it was present in Argentina.

Austropaxillus statuum (Speg.) Bresinsky & Jarosch, *Pl. Biol. (Stuttgart)* **1**(3): 332, 1999.

Bas: *Agaricus statuum* Speg., 1887.

= *Flammula statuum* (Speg.) Sacc., 1891.

= *Paxillus statuum* (Speg.) E. Horak, 1967.

Dist: TF, AP

Ref: Farr (1973), Gamundi & Horak (2002), Horak (1967, 1980), Raithelhuber (1988, 1991, 2004), Singer (1950a), Spegazzini (1887, 1922).

Hygrophoropsis (J. Schröt.) Maire ex Martin-Sans

Hygrophoropsis aurantiaca (Wulfen) Maire, *L'Empoisonnement Champ.*: 99, 1921.

Bas: *Agaricus aurantiacus* Wulfen, 1781.

Dist: N, RN

Ref: Singer (1954, 1964).

Paxillus Fr.

Paxillus argentinus Speg., *Anales Mus. Nac. Buenos Aires* **6**: 139, 1899 [1898].

Dist: BA

Ref: Farr (1973), Raithelhuber (1991, 2004), Singer (1950a, 1964), Singer & Digilio (1952), Spegazzini (1899, 1909).

Paxillus boletinoides f. **olivascens** E. Horak, *Fl. criptog. Tierra del Fuego* **11**(6): 46, 1980 [1979].

Dist: TF

Ref: Horak (1980), Singer (1969).

Obs: *Paxillus boletinoides* was transferred to *Austropaxillus* (Bresinsky et al. 1999). However, the combination of the form to *Austropaxillus* has not been done.

Paxillus boletinoides var. **leucopus** Singer, *Nova Hedwigia* **7**: 104, 1964.

Dist: RN

Ref: Singer (1964, 1969).

Obs: see comment above in *P. boletinoides* f. *olivascens*.

Paxillus boletinoides var. **blestianus** Raithelh., *Metrodiana* **3**(1): 25, 1972.

Dist: N, RN, TF

Ref: Raithelhuber (1972, 1977, 1988, 1991, 2004).

Obs: see comment above in *P. boletinoides* f. *olivascens*.

Paxillus defibulatus Singer, *Lilloa* **25**: 434, 1952 [1951].

Dist: N, RN, TF

Ref: Singer (1953b, 1954, 1964, 1969), Singer & Digilio (1952).

Paxillus involutus (Batsch) Fr., *Epicr. syst. mycol.* (Upsaliae): 317, 1838.

Bas: *Agaricus involutus* Batsch, 1786.

Dist: S, T, N, RN, TF

Ref: Raithelhuber (1977, 1988, 1991, 2004), Singer (1950a, 1953b, 1954, 1964, 1969), Singer & Digilio (1952), Wright & Alberto (2002).

Paxillus statuum var. **unicolor** (Singer) Raithelh., *Fl. Mycol. Argentina, Hongos III* (Stuttgart): 194, 1991.

Bas: *Paxillus defibulatus* var. *unicolor* Singer, 1952.

Dist: N, TF

Ref: Raithelhuber (1991, 2004), Singer (1953b, 1969), Singer & Digilio (1952).

Neopaxillus Singer

Neopaxillus echinospermus (Speg.) Singer, *Lilloa* **22**: 633, 1951 [1949].

Bas: *Naucoria echinosperma* Speg., 1889.

= *Flammula echinospora* Speg., 1902.

Dist: T, CBA

Ref: Farr (1973), Raithelhuber (1988, 1991, 2004), Singer (1950a, 1964), Singer & Digilio (1952), Spegazzini (1902, 1909).

Ripartites P. Karst.

Ripartites amparae Singer, *Schweiz. Z. Pilzk.* **28**: 195, 1950.

Dist: T

Ref: Raithelhuber (1988, 1991, 2004), Singer (1950c), Singer & Digilio (1952).

Ripartites tricholoma (Alb. & Schwein.) P. Karst., *Bidrag Kändedom Finlands Natur Folk.* **32**: 477, 1879.

Bas: *Agaricus tricholoma* Alb. & Schwein., 1805.
 = *Paxillus panaeolus* Fr., 1861.
 Dist: CBA, N
 Ref: Raithelhuber (1988, 1991, 2004), Singer (1969), Spegazzini (1926a).

Tapinella E.-J. Gilbert

Tapinella panuoides (Batsch) E.-J. Gilbert, *Les Livres du Mycologue* III: 68, 1931.
 Bas: *Agaricus panuoides* Fr., 1818.
 = *Paxillus panuoides* (Fr.) Fr., 1838.
 = *Tapinella panuoides* f. *ionipus* (Quél.) Šutara, 1992.
 Dist: BA, RN, TF
 Ref: Raithelhuber (1991, 2004), Singer (1964, 1969).

GOMPHIDIACEAE

Chroogomphus (Singer) O.K. Mill.

Chroogomphus papillatus (Raithelh.) Raithelh., *Metrodiana, Sonderh.* 2: 16, 1983.
 Bas: *Chroogomphus rutilus* var. *papillatus* Raithelh., 1974.
 Dist: BA
 Ref: Raithelhuber (1974, 1983, 1988, 1991, 2004).

Chroogomphus rutilus (Schaeff.) O.K. Mill., *Mycologia* 56(4): 543, 1964.
 Bas: *Agaricus rutilus* Schaeff., 1774.
 = *Gomphidius rutilus* (Schaeff.) S. Lundell, 1937.
 Dist: BA
 Ref: Raithelhuber (2004), Singer (1964), Wright & Albertó (2002).

Gomphidius Fr.

Gomphidius maculatus (Scop.) Fr., *Epicr. syst. mycol. (Upsaliae)*: 319, 1838 [1836-1838].
 Bas: *Agaricus maculatus* Scop., 1772.
 Dist: BA
 Ref: Ramadori (1985).

BOLETACEAE

Boletus L.

Boletus loyo Speg., *Anales Mus. Nac. Buenos Aires* 23: 9, 1912.
 Dist: T, N

Ref: Farr (1973), Raithelhuber (1991), Singer (1959), Singer & Digilio (1957), Spegazzini (1912).

Boletinellus Murrill

Boletinellus monticola (Singer) Watling, *Edinburgh J. Bot.* **54**(2): 245, 1997.

Bas: *Gyrodon monticola* Singer, 1957.

Dist: T, CAT

Ref: Becerra et al. (2005b), Singer (1964), Singer & Digilio (1957, 1960).

Boletinellus rompelii (Pat. & Rick) Watling, *Edinburgh J. Bot.* **54**(2): 243, 1997.

Bas: *Phylloporus rompeli* Pat. & Rick, 1907.

= *Gyrodon rompeli* (Pat. & Rick) Singer, 1938.

Dist: T, CTES

Ref: Singer (1964), Singer & Digilio (1957, 1960).

Leccinellum Bresinsky & Manfr. Binder

Leccinellum crocipodium (Letell.) Bresinsky & Manfr. Binder, *Regensburg. Mykol. Schriften.* **11:** 233, 2003.

Bas: *Boletus crocipodium* Letell., 1838.

= *Phylloporus platensis* Speg., 1926.

= *Leccinum nigrescens* (Richon & Roze) Singer, 1947.

Dist: BA

Ref: Farr (1973), Singer (1950a), Singer & Digilio (1957), Spegazzini (1926b).

Phlebopus (R. Heim) Singer

Phlebopus braunii (Bres.) Heinem., *Bull. Jard. Bot. État Bruxelles* **21:** 243, 1951.

Bas: *Boletus braunii* Bres., 1890.

= *Phaeogyroporus braunii* (Bres.) Singer, 1944.

= *Boletus bruchii* Speg., 1926.

= *Phlebopus bruchii* (Speg.) Heinem. & Rammeloo, 1982.

= *Phaeogyroporus tropicus* f. *microporus* Singer, 1950.

Dist: S, T, MNES, CBA

Ref: Deschamps & Moreno (1999), Singer (1950a, 1964), Singer & Digilio (1957, 1960),

Spegazzini (1926a, 1926b)

Phlebopus tropicus (Rick) Heinem. & Rammeloo, *Mycotaxon* **15:** 389, 1982.

Bas: *Boletus tropicus* Rick, 1907.

= *Phaeogyroporus tropicus* (Rick) Singer, 1944.

= *Phaeogyroporus tropicus* f. *macroporus* Singer, 1950.

Dist: S, T, MNES, CBA

Ref: Singer (1950a, 1964), Singer & Digilio (1957, 1960), Spegazzini (1926b), Wright & Wright (2005), Wright et al. (2008).

Phylloporus Quél.

Phylloporus caballeroi Singer, *Beih. Sydowia* 7: 101, 1973.

Dist: J

Ref: Singer (1973).

Suillus P. Micheli ex Adans.

Suillus granulatus (L.) Roussel, *Fl. Calvados*, Edn 2: 34, 1796.

Bas: *Boletus granulatus* L., 1753.

Dist: T, MNES, ER, BA

Ref: Niveiro et al. (2009), Singer & Digilio (1957), Wright & Albertó (2006).

Suillus lakei (Murrill) A.H. Sm. & Thiers, *Monogr. North Amer. Species Suillus*: 34, 1964.

Bas: *Boletinus lakei* (Murrill) Singer, 1945.

Dist: AP

Ref: Barroetaveña (2006).

Suillus luteus (L.) Roussel, *Fl. Calvados*, Edn 2: 34, 1806.

Bas: *Boletus luteus* L., 1753.

Dist: AP

Ref: Barroetaveña (2006).

Xerocomus Quél.

Xerocomus chrysenteron (Bull.) Quél., *Flore mycologique de la France et des pays limitrophes*: 418, 1888.

Bas: *Boletus chrysenteron* Bull., 1791.

Dist: CBA, BA

Ref: Singer (1964), Wright & Albertó (2006).

RUSSULACEAE

Lactarius Pers.

Lactarius alni Singer, *Sydowia* 15(1-6): 83, 1962 [1961].

= *Lactarius cupularis* (Bull. ex Pers.) Quél., sensu Singer 1952.

= *Lactarius cupularoides* Raithelh., 1990.

Dist: T

Ref: Raithelhuber (1990, 1991, 2004), Singer & Digilio (1952).

Lactarius deliciosus (L.) Gray, *Nat. Arr. Brit. Pl.* (London) **1**: 624, 1821.

Bas: *Agaricus deliciosus* L., 1753.

Dist: MNES, BA, AP

Ref: Barroetaveña (2006), Niveiro et al. (2009), Raithelhuber (2004), Wright & Albertó (2002).

Lactarius obscuratus (Lasch) Fr., *Epicr. syst. mycol.* (Upsaliae): 346, 1838.

Bas: *Agaricus obscuratus* Lasch, 1828.

Dist: T

Ref: Raithelhuber (1987).

Lactarius omphaliiformis Romagn., *Bull. Trimestriel Soc. Mycol. France* **90**(2): 146, 1974.

Dist: T, CAT

Ref: Becerra et al. (2005a).

Lactarius piperatus (L.) Pers., *Tent. disp. meth. fung.* (Lipsiae): 64, 1797.

Bas: *Agaricus piperatus* L., 1753.

Dist: ND

Ref: Singer (1969).

Obs: Singer (1969) cited this species as recorded in southern South America, but he did not clear up if it was present in Argentina.

Lactarius salmonicolor R. Heim & Leclair, *Rev. Mycol.* (Paris) **18**: 221, 1953.

= *Lactarius salmoneus* R. Heim & Leclair, 1950.

= *Lactarius subsalmoneus* Pouzar, 1954.

Dist: BA, RN

Ref: Raithelhuber (1974, 1987, 1991, 2004).

Obs: *L. salmoneus* R. Heim & Leclair is a *nom. illegit.*

Russula Pers.

Russula albidula Peck, *Bull. Torrey Bot. Club* **25**: 370, 1898.

Dist: BA

Ref: Raithelhuber (2004), Wright & Albertó (2002).

Russula alnijorullensis (Singer) Singer, *Agaric. mod. Tax.*, Edn 4 (Koenigstein): 824, 1986.

Bas: *Russula emetica* subsp. *alnijorullensis* Singer, 1950.

Dist: T, CAT

Ref: Becerra et al. (2005a), Raithelhuber (1987, 1991, 2004), Singer & Digilio (1952).

Russula amethystina Quél., *Compt. Rend. Assoc. Franç. Avancem. Sci. Assoc. Sci. France* **26**: 450, 1897.

Dist: BA

Ref: Raithelhuber (2004), Wright & Albertó (2002).

Russula emetica (Schaeff.) Pers., *Observ. mycol. (Lipsiae)* **1**: 100, 1796.

Bas: *Agaricus emeticus* Schaeff., 1774.

Dist: T, CAT

Ref: Singer (1950b).

Russula fuegiana Singer, *Rev. Mycol. (Paris)* **15**: 125, 1950.

Dist: N, RN, TF

Ref: Gamundí & Horak (2002), Horak (1980), Raithelhuber (1977, 1987, 1991, 2004), Singer (1950a, 1954, 1969), Singer & Digilio (1952).

Russula haasii Raithelh., *Hong. Argentin.* **2**: 130, 1977.

Dist: TF

Ref: Raithelhuber (1977, 1987, 1991, 2004).

Russula livescens (Batsch) Bataille, *Fl. Monogr. Astérosporales*: 76, 1908.

Bas: *Agaricus livescens* Batsch, 1786.

Dist: BA

Ref: Raithelhuber (1974, 1987, 2004), Wright & Albertó (2002).

Russula lutea (Huds.) Fr., *Epicr. syst. mycol. (Upsaliae)*: 363. 1838 [1836-1838].

Bas: *Agaricus luteus* Huds., 1778.

Dist: BA

Ref: Raithelhuber (2004), Wright & Albertó (2002).

Russula major Singer, *Sydomia* **8**: 153, 1954.

Dist: N, RN

Ref: Raithelhuber (1987, 1991, 2004), Singer (1954).

Russula mallophora Singer, *Rev. Mycol. (Paris)* **15**: 130, 1950.

Dist: N, RN, TF

Ref: Raithelhuber (1987, 1991, 2004), Singer (1950b, 1954, 1969), Singer & Digilio (1952).

Russula montivaga Singer, *Rev. Mycol. (Paris)* **15**: 131, 1950.

Dist: J, S, T, CAT, TF

Ref: Raithelhuber (1987, 2004), Singer (1950b), Singer & Digilio (1952).

Russula nothofaginea Singer, *Rev. Mycol. (Paris)* **15**: 127, 1950.

Dist: N, RN, TF

Ref: Gamundí & Horak (2002), Horak (1980), Raithelhuber (1987, 1991, 2004), Singer (1950b, 1954, 1969), Singer & Digilio (1952).

Russula nothofaginea var. **carminea** Singer, *Beih. Nova Hedwigia* **29**: 353, 1969.

Dist: TF

Ref: Horak (1980), Singer (1969), Singer & Digilio (1952).

Russula pectinatoides Peck, *Rep. (Annual) New York State Mus. Nat. Hist.* **116**: 43, 1907.

Dist: BA

Ref: Raithelhuber (1991, 2004), Singer (1953a), Singer & Digilio (1952), Wright & Albertó (2002).

Russula puiggarii (Speg.) Singer, *Lilloa* **23**: 239, 1950.

Bas: *Clitocybe puiggarii* Speg. (1889).

Dist: MNES

Ref: Farr (1973), Raithelhuber (1987, 1991, 2004), Singer (1950a, 1950b), Singer & Digilio (1952).

Russula rugosella Raithelh., *Metrodiana* **3**(1): 29, 1972.

Dist: N, RN

Ref: Raithelhuber (1977, 1987, 1990, 1991, 2004).

Russula sanguinea (Bull.) Fr., *Epicr. syst. mycol. (Upsaliae)*: 351, 1838 [1836-1838].

Bas: *Agaricus sanguineus* Bull., 1781.

Dist: AP

Ref: Barroetaveña (2006).

Russula turci Bres., *Fung. Trident.* **1**(1): 22, 1881.

Dist: BA

Ref: Wright & Albertó (2002).

Russula wrightii Raithelh., *Hong. Argentin.* **2**: 130, 1977.

Dist: N, RN

Ref: Raithelhuber (1977, 1987, 1991, 2004).

General remarks

When data were analyzed, we concluded that 54 species belonging to families *Paxillaceae*, *Gomphidiaceae*, *Boletaceae* and *Russulaceae* were recorded. All of them are distributed in 16 genera, the most important being *Russula* (19 species), *Paxillus* (7), and *Lactarius* (6). The rest of the genera had only a few species recorded (1-3).

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