

CRITICAL REVISION OF SOME *MYXOMYCETES* DEPOSITED IN THE BUENOS AIRES HERBARIA BAFC, BA AND THE TUCUMAN HERBARIUM LIL. IV

G. MORENO¹, A. CASTILLO¹, J.R. DESCHAMPS², G. GIMÉNEZ³,
A. HLADKI⁴ & A. LÓPEZ-VILLALBA¹

¹ Dpto. de Ciencias de la Vida (Botánica), Facultad de Biología,
Universidad de Alcalá, 28805Alcalá de Henares, Madrid, Spain

² Universidad de Belgrano, Facultad de Ciencias Agrarias,
Federico Lacroze 1955, Cap. Fed. 1426. Buenos Aires, Argentina

³ Universidad de Tucumán, Facultad de Ciencias Naturales,
Miguel Lillo 205, San Miguel de Tucumán, CP 4000, Argentina

⁴ Fundación Miguel Lillo, Miguel Lillo 251, San Miguel de Tucumán CP 4000, Argentina

CORRESPONDENCE TO *: gabriel.moreno@uah.es

Summary. MORENO G., A. CASTILLO, J.R. DESCHAMPS, G. GIMÉNEZ, A. HLADKI & A. LÓPEZ-VILLALBA (2015). Critical revision of some *Myxomycetes* deposited in the Buenos Aires herbaria BAFC, BA and the Tucuman LIL. IV. *Bol. Soc. Micol. Madrid* 39: 129-140.

Fifty-seven collections preserved in herbaria BAFC, BA; LIL and AH representing 26 different species of *Myxomycetes* are included in this paper. **Five species**, *Comatricha ellae*, *Didymium megalosporum*, *Lycogala exiguum*, *Physarum flavicomum* and *P. stellatum*, are new records from Argentina. **Microphotographs using both optical (LM) and scanning electron microscopy (SEM)** are included. These photographs illustrate the most representative characteristics of those species which are rare or not mentioned in Argentina before this work.

Key words: Argentina, myxobiota, *Protozoa*, slime moulds, taxonomy.

Resumen. MORENO G., A. CASTILLO, J.R. DESCHAMPS, G. GIMÉNEZ, A. HLADKI & A. LÓPEZ-VILLALBA (2015). Revisión crítica de algunos *Myxomycetes* depositados en los herbarios BAFC y BA de Buenos Aires y en el herbario LIL de Tucumán. IV. *Bol. Soc. Micol. Madrid* 39: 129-140.

Cincuenta y siete colecciones conservadas en los herbarios BAFC, BA LIL y AH se incluyen en este trabajo que representan 26 especies diferentes de *Myxomycetes*. Cinco especies, *Comatricha ellae*, *Didymium megalosporum*, *Lycogala exiguum*, *Physarum flavicomum* y *P. stellatum*, son nuevas citas para Argentina. **Microfotografías de microscopía óptica y microscopía electrónica de barrido** son incluidas. Estas fotografías ilustran las características más representativas de las especies que son raras o no citadas en Argentina.

Palabras clave: *Protozoa*, myxobiota, hongos mucilaginosos, Argentina, taxonomía.

INTRODUCTION

This paper continues with a review of the Myxomycete samples collected mostly in Argentine territory, and are deposited in various international herbaria such as: BAFC, LIL and BA. Following this line, three papers have been published previously by MORENO & *al.* (2012, 2013a, 2013b).

In the first paper MORENO & *al.* (2013a), reviewed 32 samples deposited in the BAFC herbarium, representing 20 different taxa. This herbarium currently has 476 collections of Myxomycetes. In the second paper MORENO & *al.* (2012), which was published a year before the first study, we reviewed 25 samples representing 15 different species, 10 of which are deposited in LIL. In the latter herbarium, 550 specimens of Myxomycetes are deposited.

In the 3rd paper, MORENO & *al.* (2013b) reviewed 86 collections from 29 species, from which 41 were deposited in AH and 45 in BAFC.

For the present paper, we requested samples deposited at the Argentine Museum of Natural Sciences “Bernardino Rivadavia” (BA) at the Autonomous city of Buenos Aires, which were collected between 1925 and 1970. The collectors were different researchers of this Museum. In alphabetical order the collectors were: Roberto Capurro, Alberto Castellanos, Oscar Kühneman, Celina Matteri, Román Perez Moreau, Ovidio Nuñez, María A. Perez Rueda y Carmen Pujals.

Most collections were made in the city of Buenos Aires and its surroundings. The samples collected in the province of Buenos Aires do not exceed 37 degrees South latitude, they are located in the area known as “pampa húmeda”, with few native shrub formations and many introduced.

Some of the samples come from the mountains of Tandilia, as Tandil-Balcarce, Magdalena –near the Río de la Plata– and Punta Lara located in the district of Ensenada, with subtropical vegetation as in the gallery forest. Other collections come from the provinces of Tucumán (Tafí Viejo) and Misiones (Iguazú).

Moreover, the studied materials listed with

LIL acronym belonging to “Fundación Miguel Lillo” in Tucumán city. These materials have the distinction of having been collected in the same geographical location and day by Guadalupe Giménez and Adriana Hladki. The study site is located in the province of Salta Argentina. Since 1979 that zone is considered Provincial Reserve.

The Provincial flora and fauna Reserve Acambuco (R.P.F.F.A.) has a surface estimated in 32200 hectares, and geographically belongs to the municipality of Aguaray. The climate is subtropical, with plentiful rainfall which appear mostly in spring and summer. The sector is frequently treated as an area with “cloud forests” and phytogeographically belongs to the province of Yungas. The Yungas are forests the descend from Ecuador on a narrow strip west of the Andes. These are lands with piedmont vegetation ending in the province of Catamarca (Argentina), with vegetation heights varying between 500 and 1400 m above sea level and annual rainfall close to 1000 mm. This forests were originally very rich subtropical lands, but were heavily exploited by the quality of their wood. Dominant trees included the following genera: *Scutia*, *Cordia*, *Patagonula*, *Tabebuia*, *Ocotea*, *Phoebe*, *Eugenia*, *Diatenopteris*, *Chrysophyllum* and *Phyllostylon*. Other very common genera included: *Celtis*, *Amburana* and *Cedrela*.

The latitude of this reserve is 22 degrees and 21 minutes South. A curious observation is that around the years 1900 to 1902, the Swedish explorer Otto Nordenskjöld toured the area in one of his famous expeditions and collected myxomycetes. Later in Uppsala (Sweden), these collections were reviewed by the myxomycete specialist Robert Fries, grandson of the eminent Elias Magnus Fries, who then published them in a paper from this area and southern Bolivia (FRIES, 1903).

MATERIALS & METHODS

We studied samples from the province of Buenos Aires (Belén de Escobar, Berazategui, Castelar, Ensenada, Ezeiza, La Plata, Llavallol, Longchamps, Mar de Plata, Tigre), the prov-

ince of Chubut (Parque Nacional Los Alerces), the province of Córdoba (Dpto. de Punilla), the province of Entre Ríos (Dpto. Colón), the province of Misiones (Colonia General Belgrano), the province of Río Negro (Parque Nacional Nahuel Huapi), province of Tierra del Fuego (Isla Grande) and the province of Tucumán (Dpto. Monteros). Locations shown above present native vegetation, except some as Longchamps, Llavallol, Ezeiza, Castelar, La Plata and Mar del Plata where predominantly introduced trees, mainly of genera *Eucalyptus*, *Populus* and *Ulmus*, dominate the landscape

The material studied is preserved in the BAFC herbarium (School of Exact and Natural Sciences, University City, II Pavilion, 4th. floor, University of Buenos Aires, Argentina), LIL herbarium, belonging to Miguel Lillo Foundation of the city of Tucumán in Argentina, herbarium BA, Argentine Museum of Natural Sciences "Bernardino Rivadavia" at the Autonomous city of Buenos Aires and AH (Plant Biology herbarium of the University of Alcalá, Madrid; Spain).

The samples BA 1690, BA 2270, BA 10790, BA 10795, BA 19649, BA 21018 and BA 20801 have not been considered due the fact that they were either destroyed or badly developed.

New records from Argentina are marked with an asterisk (*) and his protologue is indicated.

Slide mounts in Hoyer's medium for each specimen are preserved in AH. Spore measurements were made using an oil immersion objective and included such surface structures as warts and spines.

Scanning electron microscopy (SEM) micrographs were obtained at the University of Alcalá de Henares using a Zeiss DSM-950 instrument. **Sporocarps were rehydrated in concentrated ammonium hydroxide (28-30%) for 30 minutes, dehydrated in aqueous ethanol (70%) for 30 minutes, fixed for two hours in pure ethylene glycol dimethyl ether (= 1,2-dimethoxymethane) and finally immersed in pure acetone for at least two hours followed by critical point drying and sputtering with gold-palladium. This technique allows the use of very little material (part of a single sporocarp or no more than a few spores).**

Spore wall ornamentation as seen by SEM is described according to the terminology proposed by RAMMELOO (1974, 1975) and abbreviations for author citations follow KIRK & ANSELL (1992). The nomenclature used follows LADO (2005-2015).

TAXONOMY

Arcyria cinerea (Bull.) Pers.

Material studied: Buenos Aires, Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 23, LIL 156522, AH 45601. leg. G. Giménez & A. Hladki 077, LIL 156523, AH 45602 and leg. G. Giménez & A. Hladki 085 LIL 156524, AH 45603.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires, Catamarca, Córdoba, Jujuy and Tucumán according to the checklist of CRESPO & LUGO (2003), of Neuquén, Río Negro and Santa Cruz by WRIGLEY DE BASANTA & al. (2010) and of Salta by LADO & al. (2011).

Arcyria denudata (L.) Wettst.

Material studied: Ciudad Autónoma de Buenos Aires, Villa Luro, leg. Nuñez, 3-XII-1946, BA 6050, as *Arcyria denudata*. Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 16, LIL 156525, AH 45604; leg. G. Giménez & A. Hladki 17, LIL 156526, AH 45605; leg. G. Giménez & A. Hladki 31, LIL 156527, AH 45606 and leg. G. Giménez & A. Hladki 32, LIL 156528, AH 45607.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires, Catamarca, Córdoba, Entre Ríos, Jujuy, Misiones and Tucumán according to the checklist of CRESPO & LUGO (2003), of Río Negro by WRIGLEY DE BASANTA & al. (2010) and San Luis by LADO & al. (2011).



Figs. 1-2 *Comatricha ellae* Härk., BAFC 22194. 1. Sporocarp. 2 Detail of sporotheca. Scale bars: 1-3 = 0.5 mm

***Arcyria insignis* Kalchbr. & Cooke**

Material studied: Buenos Aires, Alte. Brown, Adrogué, leg. Carmen Pujals, III-1958, BA 10798, as *Arcyria nutans*.

Observations: In Argentina it has only been reported from the provinces of Buenos Aires, Jujuy and Río Negro according to the checklist of CRESPO & LUGO (2003), of Salta by LADO & al. (2011) and Tucumán by MORENO & al. (2012).

***Ceratiomyxa fruticulosa* (O.F. Müll.) T. Macbr.**

Material studied: Buenos Aires, Alte. Brown, Adrogué, leg. Carmen Pujals, III-1958, BA 10796.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has been reported from the provinces of Buenos Aires, Córdoba, Jujuy, Misiones, Tierra del Fuego and Tucumán according to the checklist of CRESPO & LUGO (2003), from Chubut and Río Negro reported by WRIGLEY DE BASANTA & al. (2010) and also from La Rioja by GIMENEZ & al. (2012).

**Comatricha ellae* Härk., *Karstenia* 18(1): 23 (1978). Figs. 1-2

Material studied: Buenos Aires, Olivos, leg. M. Adler, VIII-1968, conifer woody debris, BAFC 22194.

Fructifies forming small scattered colonies with stipitate sporocarps 0.5-0.9 mm total height. Sporotheca dark-brown 0.2-0.5 mm in diam., globose to subglobose. Stalk black, shiny fibrous at the base, the same height or slightly bigger than sporotheca. Fugacious peridium. Columella reaching 2/3 the total height of the sporotheca, with scarce main branches. Surface net well developed, at the base with meshes variable size (4-35 µm in diam.) and spiny free ends, more abundant in the upper half. Spores globose, 9-10 µm in diam, dark-violet in mass, violet with a paler area by LM, finally warty.

Observations: This species is characterized by its small sporocarps, capillitium forming by a more or less complete net at the base of the sporotheca, warty spores and fructifications on conifer woods.

This species is unfrequently cited in America, only recorded from Mexico (MORENO & al., 2001), this is a new record from Argentina.

***Craterium leucocephalum* (Pers. ex J.F. Gmel.) Ditmar**

CRITICAL REVISION OF SOME *MYXOMYCETES* DEPOSITED IN THE BUENOS AIRES HERBARIA
BAFC, BA AND THE TUCUMAN HERBARIUM LIL. IV

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 8, LIL 156529, AH 45608, leg. G. Giménez & A. Hladki 26 LIL 156530, AH 45609, leg. G. Giménez & A. Hladki 64 LIL 156531, AH 45610, leg. G. Giménez & A. Hladki 69 LIL 156532, AH 45611, leg. G. Giménez & A. Hladki 73a LIL 156533, AH 45612.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires and Salta according to the checklist of CRESPO & LUGO (2003), from Catamarca, Jujuy, La Rioja and San Juan reported by LADO & *al.* (2011). A macro and microscopic study of this species including the spore ornamentation under SEM has been made by MORENO & OLTRA (2010).

Cribaria cancellata (Batsch) Nann.-Bremek.
≡ *Dictydium cancellatum* (Batsch) E. Sheld.

Material studied: Buenos Aires, Villa Adelina, leg. Celina Matteri, IV-1970, BA 21003, as *Dyctydium cancellatum*. Buenos Aires, Bella Vista, Quinta Gallardo, leg. Capurro, 15-III-1964, BA 19648, as *Dyctydium cancellatum*.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires and Tierra del Fuego according to the checklist of CRESPO & LUGO (2003), from de Chubut and Río Negro reported by WRIGLEY DE BASANTA & *al.* (2010).

Diachea leucopodia (Bull.) Rostaf.

Material studied: Buenos Aires, Magdalena, Fundación Elsa Show de Pearson, Ruta 11, leg. Q. Pérez Rueda, on living plants of *Ligustrum* sp., BA 35235.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires, Córdoba, Jujuy, Misiones, Salta and Tucumán according to the checklist of CRESPO & LUGO (2003) and from Chubut and Río Negro reported by WRIGLEY DE BASANTA & *al.* (2010).

Diderma effusum (Schwein.) Morgan

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22°



Figs. 3-5 *Didymium megalosporum* Berk. & M.A. Curtis, AH 45615. 3. Sporocarp. 4. Sporotheca discoid and umbilicate. 5. Discoid columella and branched and anastomosed capillitium. Scale bars: 3-5 = 0.5 mm

20° 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, *leg.* G. Giménez & A. Hladki 72, LIL 156534, AH 45614.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires, Jujuy, Tierra del Fuego and Tucumán according to the checklist of CRESPO & LUGO (2003) and from Tierra del Fuego reported by WRIGLEY DE BASANTA & *al.* (2010).

****Didymium megalosporum* Berk. & M.A. Curtis in Berkeley, *Grevillea* 2: 53 (1873) Figs. 3-5**

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, on leaves non identified, *leg.* G. Giménez & A. Hladki 059, LIL 156535, AH 45615.

Sporocarps scattered and stipitate, 0.7-1.6 mm in total height. Sporotheca subglobose to discoid, umbilicate. Stalk 0.5-0.9 mm long, dark-brown at the base, paler in the upper part, striate longitudinally. Peridium membranous, delicate, brown to greyish, filled with crystals of calcium carbonate. Irregular dehiscence. Hypothallus discoidal. Columella light brown with lime, subglobose. Capillitium branched and anastomosed with thin (1-1.5 µm) threads pale brown. Spores 8-9 µm diam., globose, dark brown in mass, pale brown LM, minutely warted to almost smooth, the warts sometimes converge in faint groups.

Observations: This species is characterized by the light brown and subglobose columella, the umbilicated sporotheca and long stalk. This species is closely related to *Didymium nigripes* (Link) Fr., which has black columella. This species had widely been recorded from North America (MARTÍN & ALEXOPOULOS, 1969) and South America only from Brazil by FARR (1976). According to the bibliography consulted it is a new record from Argentina.

***Didymium nigripes* (Link) Fr.**

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, *leg.* G.

Giménez & A. Hladki 073b, LIL 156536, AH 45613.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has only been reported from the provinces of Buenos Aires, Jujuy and Tucumán according to the checklist of CRESPO & LUGO (2003) also from Neuquén by WRIGLEY DE BASANTA & *al.* (2010).

***Hemitrichia calyculata* (Speg.) M.L. Farr = *H. stipitata* (Masse) T. Macbr.**

Material studied: Buenos Aires, Ensenada, Punta Lara, *leg.* Capurro, X-1968, BA 17917. Buenos Aires, Ensenada, Punta Lara, *leg.* Carmen Pujals, 12-X-1949, BA 19646, as *Hemitrichia stipitata*. Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, *leg.* G. Giménez & A. Hladki 42, LIL 156537, AH 45616.

Observations: In Argentina it has only been reported from the provinces of Buenos Aires and Tucumán according to the checklist of CRESPO & LUGO (2003), also from Salta (MORENO & *al.*, 2012) and from Entre Ríos (MORENO & *al.*, 2013b) and from Catamarca (AGUERO & *al.*, 2013).

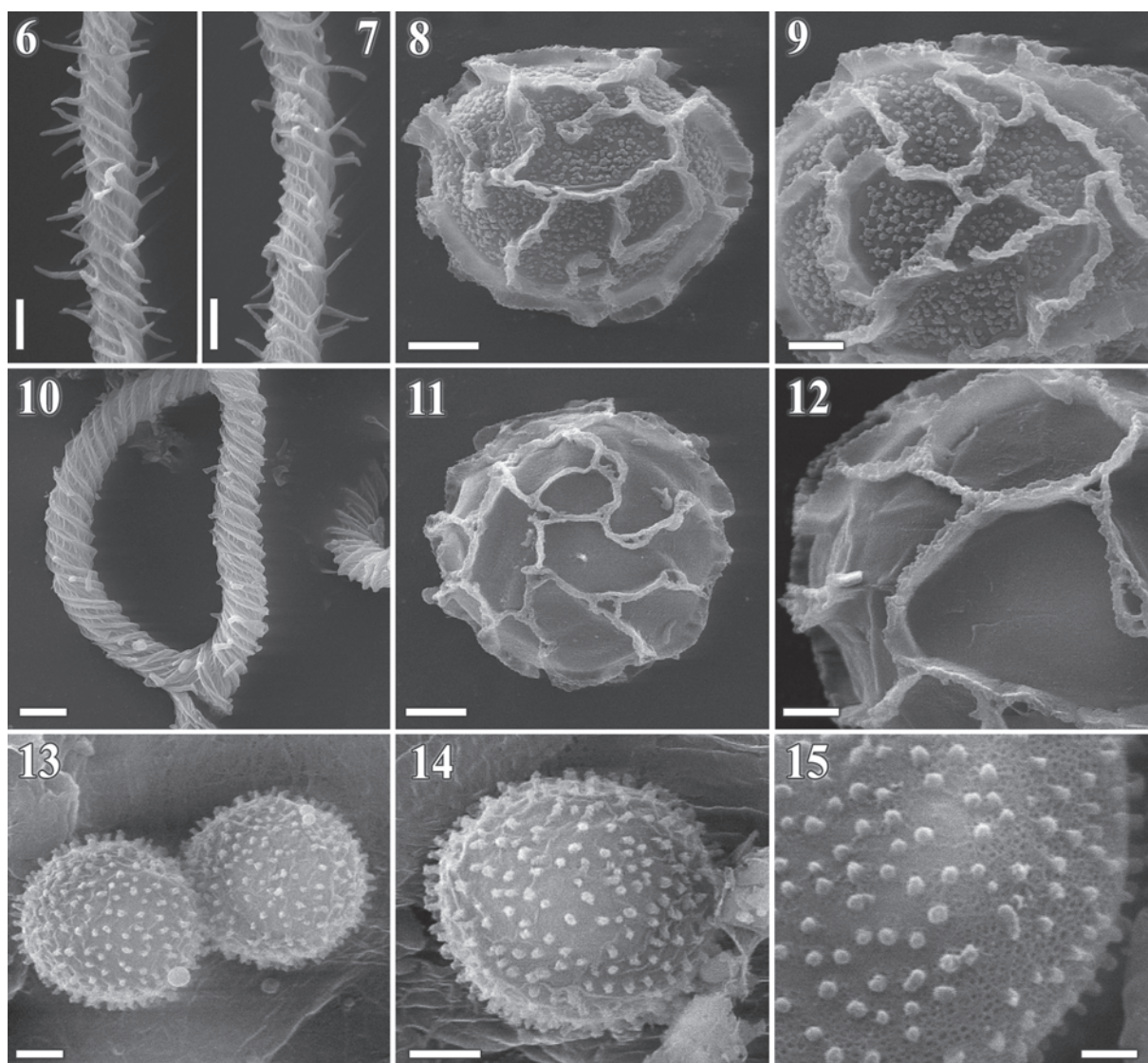
***Hemitrichia parviverrucospora* (Lizárraga, G. Moreno & Illana) G. Moreno & Illana, Figs. 6-9**

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, *leg.* G. Giménez & A. Hladki 82, LIL 156538, AH 45617 and *leg.* G. Giménez & A. Hladki 86 LIL 156539, AH 45618.

Observations: This species is morphologically similar to *Hemitrichia serpula*, and such similarity has been widely discussed by MORENO & *al.* (2012). It is only recorded based on several samples from the province of Tucumán (MORENO & *al.*, 2012; 2013b).

***Hemitrichia serpula* (Scop.) Rostaf. ex Lister, Figs. 10-12**

Material studied: Tucumán, Taff del Valle, *leg.* Celina Matteri, IX-1967, BA 19670, as *Trichia favoginea*. Salta. Depto. Gral. José de San Martín, Reserva Provincial de



Figs. 6-9 *Hemitrichia parviverrucospora* (Lizárraga, G. Moreno & Illana) G. Moreno & Illana, AH 45617. 6-7. Capillitium with spines. 8. Spore. 9. Detail of the reticulated ornamentation and warty innerside of the spores. **Figs. 10-12** *Hemitrichia serpula* (Scop.) Rostaf. ex Lister. 10. Capillitium faintly spiny (BA19670). 11. Spore (AH 45619). 12. Detail of the reticulated ornamentation and smooth innerside of the spores (BA19670). **Figs. 13-14** *Physarum cinereum* (Batsch) Pers., AH 45621. 13. Spore. 14. Detail of spore ornamentation. **Fig. 15** *Stemonitis axifera* (Bull.) T. Macbr., AH 45635. Detail of spore ornamentation. Scale bars: 6-7, 10 = 5 μm ; 8, 11, 13-14 = 2 μm ; 9, 12 = 1 μm , 15 = 0.5 μm

Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 37, LIL 156540, AH 45619.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969), occurring both in temperate and tropical areas. In Argentina

it has only been reported from the provinces of Buenos Aires, Jujuy and Tucumán according to the checklist of CRESPO & LUGO (2003), from Buenos Aires and Tucumán (MORENO & *al.*, 2012), from Entre Ríos and Tucumán (MORENO & *al.*, 2013b) and finally also from Catamarca (AGUERO & *al.*, 2013).

****Lycogala exiguum*** Morgan, *J. Cincinnati Soc. Nat. Hist.* 15(3-4): 134 (1893)

Material studied: Buenos Aires, Alte. Brown, Adrogué, leg. Carmen Pujals, III-1958, BA 10797, as *Lycogala epidendrum*. Salta. Depto. Gral. José de San Martín. Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 61, LIL 156541, AH 45620.

Observations: This species is characterized by its globose to subglobose and small aethalia (2-4 mm diam.). Peridium ornamented by prominent, dark-brown scales. The warts or scales reddish brown with cellular structure by LM. Irregular and apical dehiscence. Capillitium abundant, with tubular filamentous (4-8 µm in diam.) and sinuous walls. Spores, 5.5-6(-7) µm in diam., light brown almost colorless LM, reticulated. These characteristics were indicated by MARTIN & ALEXOPOULOS (1969). The differences between the species within the genus *Lycogala* are described by HOOFF (2014).

This is a cosmopolitan species and, although widely distributed, it seems to be uncommon (MARTÍN & ALEXOPOULOS, 1969). According to the bibliography consulted it is a new record from Argentina.

Physarum cinereum (Batsch) Pers., Figs. 13-14, 16

Material studied: Buenos Aires, Adrogué, leg. Carmen Pujals, II-1983, on leaf of *Platanus* sp., BA 33765, as *Didymium melanospermum*. Salta. Depto. Gral. José de San Martín. Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 44, LIL 156542, AH 45621, leg. G. Giménez & A. Hladki 47 LIL 156543, AH 45622, leg. G. Giménez & A. Hladki 48 LIL 156544, AH 45623, leg. G. Giménez & A. Hladki 49 LIL 156545, AH 45624, leg. G. Giménez & A. Hladki 74 LIL 156546, AH 45625.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In Argentina it has been reported from the provinces of Buenos Aires, Catamarca, Córdoba, Corrientes, Tierra del Fuego and Tucumán according to checklist by CRESPO & LUGO (2003)

and Río Negro (WRIGLEY DE BASANTA & al., 2010).

****Physarum flavicomum*** Berk., *London J. Bot.* 4: 66 (1845), Fig. 17

Material studied: Salta. Depto. Gral. José de San Martín. Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 30, LIL 156547, AH 45626.

Sporocarps crowded and stalked, 1.5-1.8 mm in total height. Sporotheca subglobose to lenticular, yellowish, 0,5-0,8 in diam. Peridium delicate evanescent, only with remains at the base of sporotheca. Stalk cylindrical, 0,7-0,9 long, brown darker at the base, curved below of sporotheca. Hypothallus conspicuous and brown. Pseudocolumella absent. Capillitium radial, hyaline, with scarce, small (4-15 µm), angular, yellow lime nodes. Spores globose, 9-10 µm in diam., dark violet, with scattered warts.

Observations: According to the bibliography consulted this is a new record from Argentina.

Physarum leucophaeum Fr.

Material studied: Buenos Aires, Almirante Brown, Adrogué, leg. Carmen Pujals, III-1958, BA 10789, as *Physarum leucophaeum*.

Observations: This is a species a widely distributed in Europe and the Americas (MARTIN & ALEXOPOULOS, 1969). In Argentina it has previously been reported from the provinces of Buenos Aires, Mendoza and Tucumán according to the checklist of CRESPO & LUGO (2003), from Santa Cruz and Río Negro (WRIGLEY DE BASANTA & al., 2010) and Salta (LADO & al., 2011).

Physarum melleum (Berk. & Broome) Masee, Figs. 18-20

= *P. tucumanense* Speg.

Material studied: Salta. Depto. Gral. José de San Martín. Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki, 10 LIL 156548, AH 45627, leg. G. Giménez & A. Hladki 25 LIL 156549, AH 45628 and leg. G. Giménez & A. Hladki 53 LIL 156550, AH 45629.



Fig. 16 *Physarum cinereum* (Batsch) Pers., AH 45621. Sporocarps. Scale bar = 1 mm

Sporocarps scattered, 0.8-1.2 mm in total height. Sporotheca globose cream-yellow to white with light yellowish (Figs. 16-18), 0.4-0.5 mm in diam. Peridium iridescent, membranous, thin and yellow or pale brown coloured. Dehiscence apical and irregular, with remains in the lower part of the sporotheca. Stalk whitish, broader at the base, longitudinally striate, 0.5 mm in height. Hypothallus eminent, circular and white. Capillitium strong, with large (up to 50 μm in diam), angular and yellowish white nodes connected by hyaline or yellowish filaments. Columella yellow to whitish (Figs. 18-20) and conical of 0.1 mm high. Spores globose, 7-8(-9) μm in diam, brown in mass, violet by transmitted light, minutely warted with groups of warts.

Observations: This species is characterized by sporocarps with white and strong stalk and yellowish sporotheca. *Physarum tucumanense* Speg. was described by SPEGAZZINI (1896) from the province of Tucumán in Argentina on the remains of *Saccharum officinarum* L., and was subsequently synonymized to *P. melleum* by LISTER (1925).

Physarum leucopus Link is a similar species on the basis of color and stalk type, but differs from *P. melleum* macroscopically for its white sporotheca without columella.



Fig. 17 *Physarum flavicomum* Berk., AH 45626. Sporocarp. Scale bar = 0.25 μm

Physarum melleum is a cosmopolitan species, cited in most South American and Caribbean countries. In Argentina is only mentioned in the province of Tucumán according to de checklist of CRESPO & LUGO (2003).

***Physarum polycephalum* Schwein.**

Material studied: Ciudad Autónoma de Buenos Aires, Villa Luro, leg. Nuñez, 10-XII-1946, BA 6047 and BA 6048.

Observations: This is a cosmopolitan species (MARTIN & ALEXOPOULOS, 1969). In



Figs. 18-20 *Physarum melleum* (Berk. & Broome) Masee, (18. AH 45628, 19. AH 45627, 20. AH 45629). Sporocarps, capillitium and columella. Scale bars = 1 mm

Argentina it has been reported from the provinces of Buenos Aires, Entre Ríos, Jujuy, Misiones and Tucumán according to de checklist of CRESPO & LUGO (2003). However, this species had already been commented before by MORENO & al. (2013a).

**Physarum stellatum* (Masee) G.W. Martin, *Mycologia* 39(4): 461 (1947)

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 43, LIL 156551, AH 45634.

Sporocarps scattered, 1.3-1.6 mm in total height. Sporotheca globose to subglobose,

slightly umbilicated at the insertion point of the stipe, 0.4 to 0.5 mm in diam., whitish to dark brown. Peridium delicate with apical floriform dehiscence. Stipe cylindrical 1 mm in height, covered with calcium carbonate, whitish to grayish. Pseudocolumella central, white and globose. Hypothallus membranous poorly developed. Capillitium filamentous, hyaline, with small nodes elliptical to angular, whitish, 8-15 µm in diam. Spores globose, 7-9 µm in diam, pale violaceous, ornamented with prominent groups of warts.

Observations: This species had been widely recorded from North America and South America (MARTÍN & ALEXOPOULOS, 1969). According to the bibliography consulted it is a new record from Argentina.

***Stemonitis axifera* (Bull.) T. Macbr.**

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 62, LIL 156552, AH 45635.

Observations: This is a cosmopolitan species (MARTÍN & ALEXOPOULOS, 1969). A description and observations of Argentine material has been carried out by MORENO & al. (2013a). In Argentina it has been reported from the provinces of Buenos Aires, Córdoba, Entre Ríos, Jujuy, Río Negro, Tierra del Fuego and Tucumán according to the checklist of CRESPO & LUGO (2003). Later WRIGLEY DE BASANTA & al. (2010) broaden this distribution to the provinces of Neuquén and Chubut.

***Stemonitis flavogenita* E. Jahn**

Material studied: Buenos Aires, Bella Vista, Quinta Gallardo, leg. Capurro, 15-III-1964, BA 19668, as *Stemonitis axifera*.

Observations: A description and observations of Argentine material has been carried out by MORENO & al. (2013a). In Argentina it is only reported from provinces of Buenos Aires according to the checklist of CRESPO & LUGO (2003). Later it has been cited from Río Negro and Tierra del Fuego (LADO & WRIGLEY DE BASANTA, 2008).

***Stemonitis fusca* Roth**

Material studied: Salta. Depto. Gral. José de San Martín, Reserva Provincial de Flora y Fauna Acambuco, S 22° 20' 37,42" W 63° 47' 42,79", 627 m., 27-XI-2012, leg. G. Giménez & A. Hladki 28, LIL 156553, AH 45636.

Observations: This is a cosmopolitan species (MARTÍN & ALEXOPOULOS, 1969). In Argentina it is reported from provinces of Buenos Aires, Córdoba, Entre Ríos, Jujuy, Salta and Tucumán according to the checklist of CRESPO & LUGO (2003). Subsequently, it has been cited from Chubut, Neuquén, Río Negro, Santa Cruz and Tierra del Fuego WRIGLEY DE BASANTA & al. (2010).

***Stemonitis splendens* Rostaf.**

Material studied: Buenos Aires, Sierras de Tandil, Balcarce, leg. Castellanos, IV-1925, BA 699.

Observations: This is a cosmopolitan species (MARTÍN & ALEXOPOULOS, 1969). A description and observations of Argentine material has been carried out by MORENO & al. (2013a). In Argentina it is reported from provinces of Buenos Aires, Catamarca, Córdoba, Jujuy, Salta, Tierra del Fuego y Tucumán according to the checklist by CRESPO & LUGO (2003). Subsequently, it has been cited from Chubut (WRIGLEY DE BASANTA & al., 2010).

***Stemonitopsis typhina* (F.H. Wigg.) Nann.-Bremek.**

≡ *Comatricha typhoides* (Bull.) Rostaf.

Material studied: Buenos Aires, Lomas de Zamora, Banfield, leg. Oscar Kühneman, 8-XI-1939, BA 4284, as *Comatricha typhoides*.

Observations: This is a cosmopolitan species (MARTÍN & ALEXOPOULOS, 1969). Observations of Argentine material has been carried out by MORENO & al. (2013a). In Argentina it is only reported from provinces of Buenos Aires, Neuquén, Tierra del Fuego and Tucumán according to the checklist by CRESPO & LUGO (2003). Later, WRIGLEY DE BASANTA & al. (2010) broaden this distribution to the province of Río Negro.

ACKNOWLEDGEMENTS

We wish to express our gratitude to Mr. A. Priego and Mr. J.A. Pérez of the Electron Microscopy Service of the University of Alcalá de Henares for their invaluable help with the SEM. We also thank Luis Monje and Ángel Pueblas of the Department of Drawing and Scientific Photography at the Alcalá University for his help in the digital preparation of the photographs, to D.W. Mitchell and C. Rojas for revision of the manuscript, to Dr. J. Rejos, curator of the AH herbarium for his assistance with the specimens examined in the present study. We would also like to highlight the help provided by the technicians

Susana Pereira and Laura del Busto, to the curator of the BAFC herbarium Andrea I. Romero. G. Gimenez and A. Hladki would like to express their gratitude to the Ministry of Environment in the province of Salta for the authorizations that made collections possible.

REFERENCES

- AGUERO, A. & A.I. HLADKI (2013). Diversidad de *Myxomycetes* presentes en las Yungas de Catamarca (Argentina). I. Ordenes *Trichiales* y *Liceales*. *Rev. Biodivers. Neotropical* 3(2): 90-97.
- CRESPO, E.M. & M.A. LUGO (2003). Catalogue on the *Myxomycetes* from Argentina. *Mycotaxon* 87: 91-102.
- FARR, M.L. (1976). *Flora Neotropica Monograph 16 Myxomycetes*. The New York Botanical Garden. New York. 304 pp.
- FRIES, R.E. (1903). Myxomyceten von Argentinien und Bolivia. *Ark. Bot.* 1: 57-70.
- KIRK, P.M. & A.E. ANSELL (1992). *Authors of fungal names. A list of authors of scientific names of fungi, with recommended standard forms of their names, including abbreviations*. Index of fungi Supplement. C.A.B.I.
- GIMENEZ, G.A., N.V. CANTON & A.I. HLADKI (2012). Mixobiota del departamento Chilecito (La Rioja, Argentina). *Lilloa* 49(1): 30-39.
- HOOFF, H. van (2014). Is *Lycogala epidendrum* always *Lycogala epidendrum*? *Coolia* 57: 2-6.
- LADO, C. (2005-2015). An on line nomenclatural information system of Eumycetozoa. <http://www.nomen.eumycetozoa.com> (14-I-2015).
- LADO, C. & D. WRIGLEY DE BASANTA (2008). A Review of Neotropical *Myxomycetes* (1828-2008). *Anal. J. Bot. Madrid*. 65(2): 211-254.
- LADO, C., D. WRIGLEY DE BASANTA & A. ESTRADA-TORRES (2011). Biodiversity of *Myxomycetes* from the Monte Desert of Argentina. *Anal. J. Bot. Madrid* 68: 61-95.
- LISTER, A. (1925). *A Monograph of the Mycetozoa* (ed. 3. rev. G. Lister). British Museum Nat. Hist. London. 296 pp.
- MARTIN, G.W & C.J. ALEXOPOULOS (1969). *The Myxomycetes*. University of Iowa Press, Iowa, U.S.A., 560 pp.
- MORENO, G., C. ILLANA, M. LIZÁRRAGA (2001). SEM studies of the myxomycetes from the peninsula of Baja California (Mexico), III. Additions. *Annales botanici Fennici* 38: 225-247.
- MORENO, G. & M. OLTRA (2010). Notas sobre los generos *Badhamia*, *Badhamiopsis* y *Craterium* (*Myxomycetes*) en España. *Bol. Soc. Micol. Madrid* 34: 161-197.
- MORENO, G., A. CASTILLO, J.R. DESCHAMPS & A.I. HLADKI (2012). Critical revision of some *Myxomycetes* kept at the Buenos Aires BAFC Herbarium and Tucumán LIL Herbarium.II. *Bol. Soc. Micol. Madrid* 36: 81-92.
- MORENO, G., A. CASTILLO & J.R. DESCHAMPS (2013a). Critical revision of myxomycetes in the Buenos Aires BAFC herbarium 1. *Mycotaxon* 123: 63-79.
- MORENO, G., A. CASTILLO & J.R. DESCHAMPS (2013b). Critical revision of some *Myxomycetes* held at the Buenos Aires BAFC herbarium and the argentinian material kept in AH herbarium. III. *Bol. Soc. Micol. Madrid* 37: 99-114.
- RAMMELOO, J. (1974). Structure of the epispore in the *Trichiaceae* (*Trichiales*, *Myxomycetes*) as seen with the scanning electron microscope. *Bull. Soc. Roy. Bot. Belgique* 107: 353-359.
- RAMMELOO, J. (1975). Structure of the epispore in the *Stemonitales* (*Myxomycetes*) as seen with the scanning electron microscope. *Bull. Jard. Bot. Belgique* 45: 301-306.
- SPEGAZZINI, C. (1896). Hongos de la caña de azúcar. *Rev. Fac. Agron. Vet. La Plata* 2 (19): 227-258.
- WRIGLEY DE BASANTA, D., C. LADO, A. ESTRADA-TORRES & S.L. STEPHENSON (2010). Biodiversity of myxomycetes in subantarctic forest of Patagonia and Tierra del Fuego, Argentina. *Nova Hedwigia* 90: 45-79.