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A new species of *Mycomya* Rondani (Diptera, Mycetophilidae, Mycomyinae) from Argentinean Patagonia

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Mycomya bowiei **n. sp.** is described based on male and female specimens from Argentinean Patagonia. Additionally, we provide a redescription of *Mycomya bifida* Freman (1951) and new records of three species of *Mycomya* previously unrecorded from either Chubut Province or Argentina.

Mycomya Rondani is a genus of Mycetophilidae, included in the subfamily Mycomyinae, with a global distribution (Väisänen 1984), being absent only from Antarctica. It is highly diverse and widely distributed in the Holarctic region (Väisänen 1982b, 1984; Zaitzev 1994; Krzeminska & Klimont 2011) and is represented by 86 species in the Neotropical region (Oliveira & Amorim 2014a), 31 of which are known for Patagonia in Argentina and Chile. From these, Coher (1959) described one, Freeman (1951) 25, Plassmann and Vogel (1990) two, Vogel and Plassmann (1985) one, Blanchard *in* Gay (1852) one and Philippi (1865) one species.

The primary taxonomist on Mycetophilidae in Argentina and Chile was Jose Pedro Duret. His outstanding work included 42 articles and almost 300 new species (Oliveira & Amorim 2014b) but did not describe any *Mycomya* species, probably because of the vast amount of time that its study would require. However, he mainly focused on the genera *Mycetophila* Meigen, *Austrosynapha* Tonnoir & Edwards, *Echinopodium* Freeman and *Tetragoneura* Winnertz.

For continental Argentina, this is the first addition to the genus in almost 50 years. After the major work by Freeman (1951), Coher (1959) described *M. portoblest* from Río Negro Province in Argentina, Vogel & Plassmann (1985) described *M. malvinensis* for the Malvinas islands, and Plassmann & Vogel (1990) described two species (*M. carpinea* and *M. libentia*) from Tierra del Fuego, Chile.

In this contribution we describe and illustrate a new species of *Mycomya* based on the male and female, and redescribe the male of *M. bifida* Freeman, based on specimens collected in Chubut Province, Argentinean Patagonia. The redescription of *M. bifida* includes figures and descriptions of structures (head, thorax and genitalia in dorsal view) not included in the original description by Freeman (1951).

Material and methods

Specimens were collected from February to April of 2015 as part of a larger biodiversity study in communities associated with vulnerable environments. The study was performed at Torrecillas Glacier (42°40'S, 71°55'W), located within Los Alerces National Park, and Lago Baggilt (43°16'S, 71°41'W), located within a provincial protected area. According to Morrone (2006), both areas are located in the province of Subandean Patagonia of the Subantarctic subregion, Andean region. The subantarctic forest in this region is characterized by the presence of *Austrocedrus chilensis*, *Luma apiculata*, *Nothofagus antarctica*, *N. dombeyi* and *N. pumilio*.

Samples were collected using hand nets. Specimens were macerated with hot 10% sodium hydroxide then neutralized with a weak solution of glacial acetic acid, dehydrated and mounted in temporary slides to take photographs and draw; then were stored in ethanol 70%. Samples were observed in a Leica MZ6 stereo microscope and photographs were taking using a Leica DM 500 compound microscope equipped with a Leica EC3 camera. Morphological terminology follows Søli (1997). All type material is deposited in the collection of Museo de Ciencias Naturales de La Plata (MLP), La Plata Province, Argentina. Other specimens are deposited in the Centro de Investigación Esquel de Montaña y Estepa Patagónicas (CIEMEP) collection, Esquel, Chubut Province, Argentina.

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Species descriptions

Mycomya bowiei Omad & Pessacq sp. nov.

Diagnosis. Mycomya bowiei can be separated from other Patagonian species by the unique shape of the gonostylus bilobed (Fig. 4); anterior lobe with two prominences (Fig. 4 in lateral view), superior prominence small, with rounded apex armed with two sub-apical strong hooks and four long setae; inferior prominence finger like, slender, two times longer than superior one, with four strong setae at basal part and with a strong setae present at the concave region between prominences (Fig. 4).

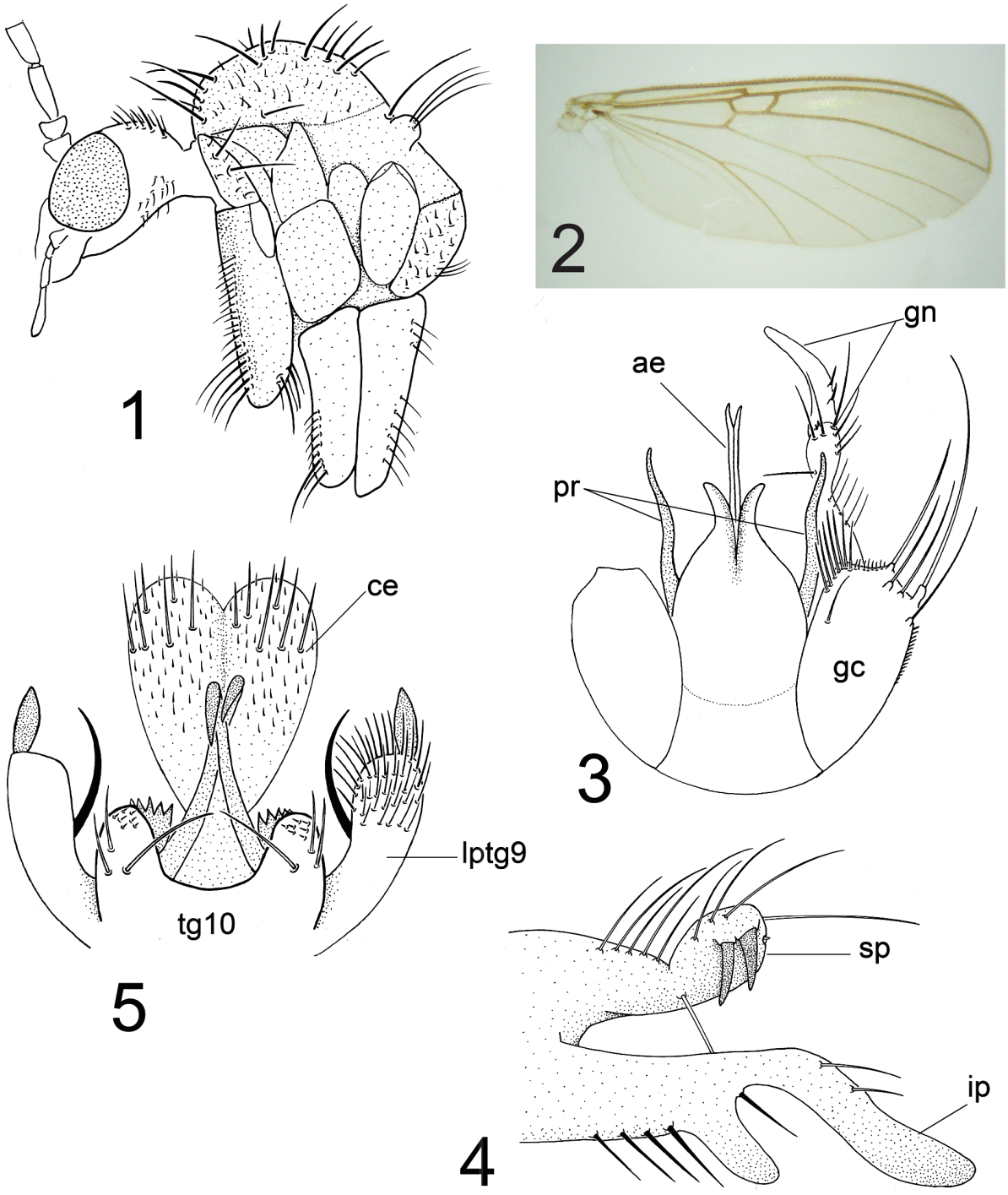

FIGURE 1–5. *Mycomya bowiei* **sp. n.** male. 1: Head and thorax, lateral view. 2: Wing. 3: genitalia,ventral view. 4: genitalia, prominences of gonostylus. 5: Genitalia, dorsal view Abbreviations: ae = aedeagus; ce = cercus; gc = gonocoxite; gn = gonostylus; pr = paramere; lp = lateral processes tg = tergite; sp = superior prominence; ip = inferior prominence.

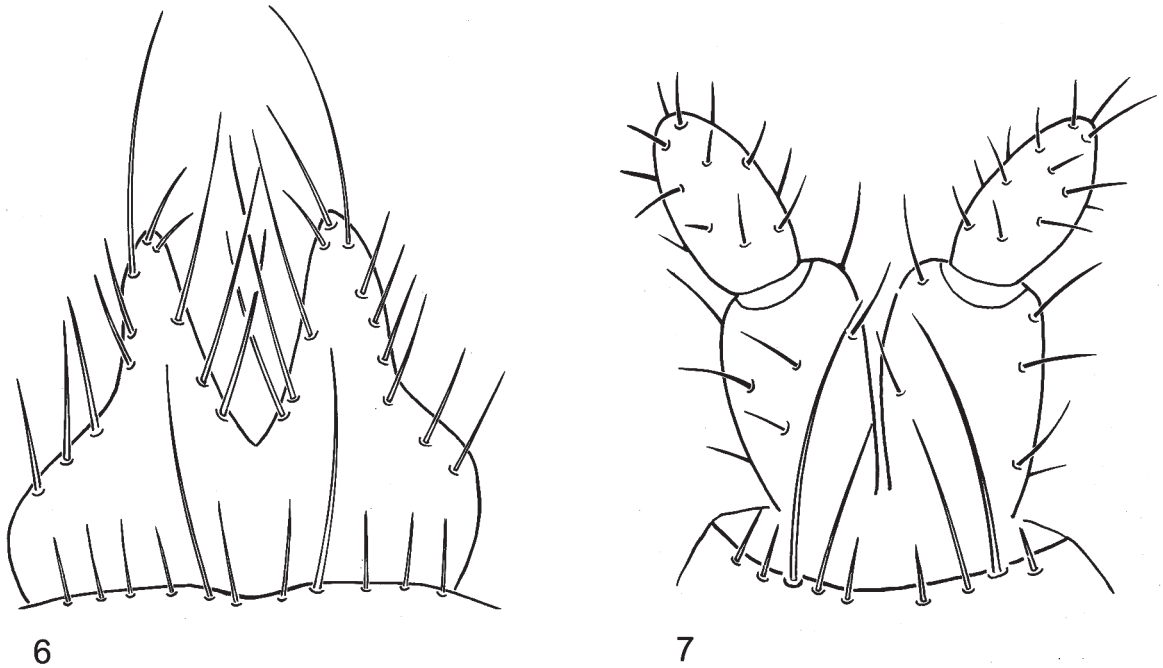

FIGURE 6–7. *Mycomya bowiei* **sp. n.** female. 6: Sternite 8, ventral view. 7: Cerci, dorsal view.

Description: Male (Figs. 1–5). Head. Mouthparts yellow; head brown. Antenna light brown, pedicel conical, scape rounded, first flagellomere 2.5x longer than pedicel; apical flagellomere with rounded tip (Fig. 1).

Thorax (Fig. 1). Brownish. Pronotum with two long bristles and a few small setae. Proepisternum, proepimeron, anepisternum, katepisternum, mesepimeron and laterotergite bare. Mediotergite darker on ventral side, with a few short-thick setae on its posterior margin, close to the abdomen. Metepisternum with small setae over its surface (Fig. 1). Scutum covered with bristles and short setae. Coxae and legs light yellow. Fore coxa with a light brown area anteriorly, setae on anterior and distal margin, middle coxa without basal spur, a row of setae on distal anterior margin, hind coxae with long setae posteriorly. Wings hyaline, venation as in figure 2.

Abdomen. First four segments light brown, darkening posteriorly except tergite nine. Genitalia (Figs. 3–5) yellow. Sternite 9 rounded, bare. Gonocoxite (Fig. 3) nearly oval, with a group of 6–7 long bristles on its inner margin, outer margin with 4–5 longer setae; gonostylus bilobed (Fig. 4); anterior lobe with two prominences (Fig. 4 in lateral view), superior prominence small, with rounded apex armed with two sub-apical strong hooks and four long setae; inferior prominence finger like, slender, two times longer than superior one, with four strong setae at basal part and with a strong setae present at the concave region between prominences (Fig. 4).

Aedeagus (Fig. 3) thin, bifurcate at apex; hypoproct dome shaped, rounded at base, with two apical divergent lobes. Parameres present, fine, smoothly sinuous, not reaching the tip of the aedeagus (Fig. 3). Tergite ten (Fig. 5) with two lobes, U-shaped, with three long setae and several small bristles on each lobe, a pair of combs close to apex of each lobe, both with six dark, short spines (Fig. 5). Tergite 9 with lateral processes (Fig. 5) thicker towards apex, densely covered by setae on its distal half, with one long and very thick curved seta at the inner margin and an elongated oblong "nail-shape" structure on its apex; with a pair of long and slender dark spurs, with hooked apex, emerging at the base of the gonostylus and crossing each other at the apex (Fig. 5). Cercus globular, covered by small setae, tongue shaped, overlapping each other on the midline, with a group of 6–7 small setae near apex (Fig. 5).

Female. (Fig. 6–7). Similar to male, except as follows: abdomen light brown, all segments similar colour. Coxae yellow. Terminalia: sternite 8 covered with setae; hypoginal valve well developed, long setae on margins (longer apically) (Fig. 6). Tergite 8 covered with microtrichia, long and short setae. Cercus short (Fig. 7), covered with setae, apical segment rounded.

Type material. Holotype male: Argentina, Chubut, Los Alerces National Park, Torrecillas Glacier (42°40'S, 71°55'W), hand net, 2.II.2015, Omad, leg.

Paratypes: 5 ♂, 8 ♀; same data as holotype; 5 ♂, 3 ♀, Argentina, Chubut, Baggilt Lake, state protected area (43°16'S, 71°41'W), hand net, 13.II.2015, Omad, leg.

Etymology. We name this species in honour of David Bowie, who through his voice and music made our lives better.

Distribution. *Nothofagus* forests of western Chubut Province (Argentina), Subandean Patagonia province (Subantarctic subregion, Andean region).

Comments. The aedeagal complex of *M. bowiei* shows affinities with that of a group of seven Patagonian species described by Freeman (1951), that includes *M. coxalis* Freeman, *M. divisus* Freeman, *M. jaffuelensis* Freeman, *M. pectinata* Freeman and *M. taurus* Freeman currently not assigned to a particular subgenus and *M. forcipata* Freeman and *M. longistila* Freeman included in the subgenus *Mycomyopsis*. As in *M. bowiei*, these species share the presence of a pair of long and slender structures ventral to tergite nine and attached to the base of gonostylus, which cross each other and possess a curved apex. Additionally, *M. taurus*, *M. divisus*, and *M. bowiei* share a strikingly similar ventral half of the gonostylus, which bears a rounded process armed with several long setae and two strong hooks (absent in remaining species). With the five remaining species of this group (*M. coxalis*, *M. forcipata*, *M. jaffuelensis*, *M. longistila* and *M. pectinata*), *M. bowiei* shares the lateral processes of tergite 9 with several setae and an apical, elongated and more sclerotized, "nail-shape" structure, articulated with the apex of the gonostylus (lacking in *M. taurus* and *M. divisa*). Additionally, as in *M. bowiei*, the tergite nine is U-shaped, with two short lateral lobes in *Mycomya coxalis*, *M. jaffuelensis* and *M. pectinata*, the gonostylus also possess a thick, long inner basal seta in *M. coxalis* and *M. jaffuelensis* and there is a comb in the apex of tergite nine in *M. forcipata*, *M. longistila* and *M. pectinata*.

However, *M. bowiei* can be separated by the remaining species of the genus in Patagonia by the unique shape of the aedeagus and gonostylus.

Mycomya bifida Freeman

Mycomyia bifida **Freeman 1951**: 34, fig. 18, plate IV (male and female, figures of male hypopygium in sternal view, type locality: Correntoso lake, Argentina, Neuquén Province, about 40°44'11''S, 71°40'28'' W). **Oliveira & Amorim 2014**: 27 (catalogue).

Diagnosis: *Mycomya bifida* can be separated by other species of *Mycomya* by the presence of a short mid-coxal spur about half as long as coxa, branched; outer branch with a black brush of bristles apically, inner branch slender, with a few hairs apically. Combs present at apices of hind tibiae only.

Male redescription. (Fig. 8–9). Head. Mouthparts yellow, first two segments of labial palps short, last segment longer than remaining ones. Frons and posterior part of the head brown, vertex light brown. Antenna light brown; pedicel slightly conical, scape rounded, first flagellomere 2x longer than pedicel (Fig. 8).

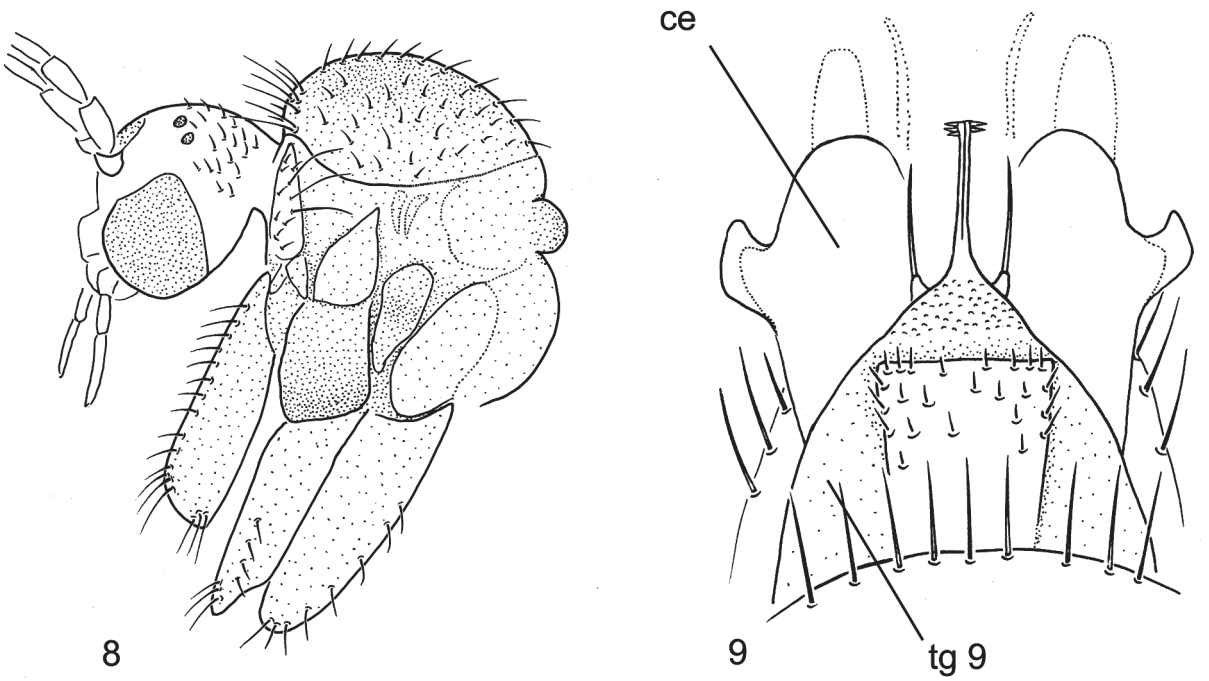

FIGURE 8–9. *Mycomya bifida* male. 8: Head and thorax, lateral view. 9: genitalia, dorsal view. Abbreviations: ce = cercus; tg = tergite.

Thorax (Fig. 8). Light brown with the exception of mesepimerom, wich is yellowish on ventral and dorsal margin. Pronotum with three long bristles and a few small setae; proepimerom, proepisternum, anepisternum and mesepimerom bare; katepisternum light brown on the dorsal half, darkening to dark brown on the ventral half, bare; scutum dark brown on its middle, yellowish to light brown on lateral margin, covered with small setae and a few bristles close to its anterior margin. Scutellum light brown on the dorsal half, turning yellowish on the ventral half, with four strong setae. Legs yellow. Coxa two with a process on the base (Freeman, 1951, fig. 78), nearly triangular, ending in a small dark bump covered with microtrichia, with two strong spines near apex.

Abdomen. Genitalia (Fig. 9 dorsal view; ventral view by Freeman, 1951, Fig. 18). Aedeagus long, same length as parameres, with truncate apex. Parameres thin, black, strongly sclerotized. Gonocoxite wide at base, 3 times longer than gonostylus, with small setae on its surface; gonostylus smaller than gonocoxite, with globular base, tapering towards apex. Tergite one to five dark brown dorsally, turning light brown on the sides; tergite six and seven dark brown, last tergites yellowish; sternites light brown, tergite 9 yellowish; tergite 10 brownish, covered with small setae with processus nearly triangular, ending in a thin, long appendage with two or three short lateral setae on each side of the apex and two long bristles on the base (Fig. 9). Cercus wide, similar in shape to boxing glove, with wide rounded apex with two dorsal and two ventral lateral lobes on outer margin (Fig. 9).

Material examined. ARGENTINA: Chubut, Baggilt Lake, state protected area (43°16'S, 71°41'W), hand net, 13.II.2015, Omad, leg. 2 ♂. CIEMEP.

Distribution. *Nothofagus* forest of western Chubut and Río Negro provinces (Baguilt, Correntoso and Nahel Huapi lakes, Argentina), and eastern of X Region (Casa Pangue, Chile) in the Subandean Patagonia province (Subantarctic subregion, Andean region).

Comments: This is the first record of the species in Chubut province.

Other *Mycomya* species recorded in Chubut Province, Argentina

Mycomya spinifera Freeman. First record for Argentina, previously recorded in Chile, (Ancud and Castro, X Region).

Mycomya ochracea Freeman. First record for Chubut Province, previously recorded in Argentina (Lakes Correntoso and Gutierrez and Bariloche city, Río Negro Province), and Chile (Peulla, Ancud and Marga Marga, X Region).

Mycomya chilensis (Blanchard *in* Gay). First record for Chubut Province, previously recorded in Argentina (Lakes Correntoso, Gutierrez and Nauhel Huapi, Río Negro Province), and Chile (Casa Pangue, Puntra, Ancud and Marga Marga, X Region).

Discussion

Currently, including this paper, there are 32 described species of *Mycomya* in Southern Argentina and Chile. In agreement with the species-rich nature of the genus, with a limited sampling effort we found one new species and four other *Mycomya* species, (*M. bifida*, *M. chilensis*, *M. ochracea* and *M. spinifera*). Thus, new additions to this genus in Patagonia are expected to continue. It must be stressed that these are the first collections of Mycetophilidae in Chubut state, and that any record of previously known species implies an extension of its distributional range.

Väisänen (1984) proposed a division of *Mycomya* into different subgenera, based primarily on Holarctic and Palearctic species. Many of the species in the Neotropical region are not included in this division, and among the 25 species described by Freeman for Patagonia, only ten are assigned to a particular subgenus, and 15 are unplaced (Oliveira & Amorim 2014a). *Mycomya bowiei* does not fully fit the diagnosis of any of the subgenera proposed by Väisänen (1984). Nevertheless, it shares similarities with *Mycomyopsis*, including the coxae without special setae, tergite 9 basally bare and gonocoxites with combs and strong curved dark spurs. It differs from *Mycomyopsis* in having a mediotergite with a few spines (bare in *Mycomyopsis*). Väisänen (1984) only included two Patagonian species in *Mycomyopsis*, but mentions that other Chilean species could possibly be included in the subgenus. A revision of the subgeneric position of Patagonian species of *Mycomya* is needed.

One of the most important gaps on our knowledge of *Mycomya* worldwide is the knowledge of their ecology and behaviour. Most papers dealing with the genus are faunal lists, catalogues, or descriptions of species. Biological records, compared with the number of known species, are few and scattered. This is a challenge for the future and we hope to contribute to that knowledge for Patagonian *Mycomya* in the near future.

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