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Synopsis of the genus *Corythaica* Stål (Insecta, Heteroptera, Tingidae), with the description of three new species from Argentina

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ORIGINAL ARTICLE

Synopsis of the genus *Corythaica* Stål (Insecta, Heteroptera, Tingidae), with the description of three new species from Argentina

Sara Itzel Montemayor^{a*} & María Cecilia Melo^b

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In the present contribution, three new species of the genus *Corythaica* from Argentina are described and illustrated: *C. dellapei*, *C. leprosa* and *C. saltensis*. *Corythaica passiflorae* is raised from synonymy with *C. cyathicollis*, and the identity of these species and *C. monacha* are discussed. An updated key to the Argentinean species of the genus is provided together with distributional maps and new records from Argentina.

Keywords: Heteroptera; Tingidae; *Corythaica*; new species; Argentina; nomenclatural arrangements

Introduction

Corythaica Stål is a New World genus comprised of 16 species, 10 of which are distributed in the Neotropical region, and six occurring in Argentina (Montemayor & Coscarón 2005): *Corythaica bosqi* Monte, *C. cucullata* (Berg), *C. cyathicollis* (Costa), *C. misionera* Ajmat, *C. monacha* (Stål), and *C. pavonia* Ajmat.

The genus *Corythaica* can be recognized by its compressed hood that completely covers the head and tapers anteriorly ending in an acute tip, the tricarinate pronotum, the wide paranota often with basal folds wider at the callus and the hemelytra much wider basally and sometimes constricted medially.

In the most comprehensive study of the *Corythaica* (Poor Hurd 1945), the genus and the 13 known species were redescribed, and a key and illustrations were provided. Drake & Froeschner (1967) described two additional species from the Galapagos Archipelago, and Ajmat (2000) studied the Argentinean *Corythaica*, providing a key for them and describing two more species.

In this paper three new species are described, *C. passiflorae* (Berg) is raised from synonymy with *C. cyathicollis* (Costa), and the identity of these species and *C. monacha* (Stål), a species confused for a long time in the literature, are discussed. An updated key to the Argentinean species and distributional maps are also presented.

Materials and methods

All the specimens were examined with binocular microscope, and measurements were made using a micrometer. The specimens are deposited in the Museo de La Plata (MLP). The illustration of *C. passiflorae* was drawn from the holotype deposited in MLP; and the hemelytron of *C. monacha* was drawn from a photograph of the type available online at www2.nrm.se/en/het_nrm/a/heta.html. The scheme of the hemelytra of *C. cyathicollis* was copied from Costa's (1864) illustration. Measurements are given in millimeters. The symbol “?” indicates that the measurement could not be taken because the structure is missing or broken. The measurements of each individual are always provided in the same order. The distributions for *C. misionera* and *C. pavonia* given in the maps were extracted exclusively from the bibliography; the distribution of the other species corresponds to material examined as indicated in the text and bibliographical information. *Corythaica cyathicollis* was not included in the maps because there is great confusion in relation to its identity and therefore with its distribution.

Material examined

Corythaica cucullata (Berg): Argentina: Buenos Aires: Holotype ♂, Baradero, F. Lynch, *Leptobyrsa cucullata* Berg, 1496, typus (MLP); Paratype ♀

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same data (MLP); Entre Ríos: 1 ♂, Gualeguaychú, 20 December 1941, Biraben-Bezzi cols. (MLP).

Corythaica monacha (Stål): Argentina, Buenos Aires, 5 ♂ 4 ♀, San Nicolás, October 2003, Carpintero col., on *Abutilon grandifolium* (MLP).

Corythaica passiflorae (Berg): Argentina: Buenos Aires: ♀ Holotype, Buenos Aires, type, 415, *Leptobyrza passiflorae* Berg, *Corythaica cyathicollis* (Costa) C.J.D., 1497 (MLP); 1 ♀, La Plata (MLP); 1 without abdomen, 1 ♀, Buenos Aires (MLP); 2 ♂ 2 ♀, Buenos Aires, Palermo, 19 June 1918 (MLP); Chaco: 3 ♂ 5 ♀, December 1932, on eggplant (MLP); 1 ♀, Resistencia, 6 December 1936 (MLP); 2 ♀, Fontana, 11 May 1937, on cotton (MLP); Corrientes: 4 ♂ 3 ♀, Itatí, 15 March 1939, P. Denier col. (MLP); Formosa: 5 ♂ 15 ♀, 17 March 1938, P. Denier col. (MLP); 2 ♀, Clorinda, 17 April 1938, P. Denier col. (MLP); 1 ♂ 1 ♀, Isla Oro, May 1931, Denier col. (MLP); 4 ♂ 11 ♀, same data, 3 March 1938, P. Denier col. (MLP); 1 ♂, same data, 30 March 1938, P. Denier col. (MLP); 1 ♀, Isla Oca, 2 March 1938, P. Denier col. (MLP); 3 ♂ 16 ♀, Pirané, 20 March 1939, P. Denier col. (MLP); 2 ♂ 11 ♀, 17 March 1938, P. Denier col. (MLP); Jujuy: 1 ♂ 1 ♀, Jujuy, 12 October 1938, Bosq col. (MLP); Mendoza: 1 ♂ 3 ♀, Las Heras, Algarrobal, 10 January 1943, B.A. Justo col., on potato (MLP); Guaymallen, 12 January 1947, B.A. Torres col. (MLP); Misiones: 2 ♀, Loreto, Dr. A.A. Oglobin col. (MLP); Salta: 1 ♂, Salta, 10 March 1939, Biraben-Scott col. (MLP); 1 ♀, Güemes, 21 October 1935; San Juan: 2 ♂ 14 ♀, Los Médanos, (V. Aberastain), 21 January 1964, Dr. Torres- Ferreyra col. (MLP); 10 ♂ 18 ♀, May 1937, over eggplant (MLP); Santiago del Estero: 1 ♂ 2 ♀, city, March 1935 (MLP); 2 ♂ 3 ♀, city, February 1935 (MLP).

Corythaica bosqi Monte: Argentina: Santiago del Estero: 2 ♀ paratypes, S. del Estero, Fortín Inca, 19 December 1937, *Corythaica bosqi* Monte, 1495 (MLP).

Note: Monte (1938) stated that there is only one paratype deposited in Bosq's collection (this collection is now housed in the Museo de La Plata) but in fact there are two paratypes in this collection.

Results

Description of new species

Corythaica dellapei Montemayor & Melo, new species (Figures 1, 6, 8A)

Description

General color yellowish brown. Hood 2.69 times longer than wide, curved downward in front of

head (Figure 1A, B). Paranota (Figure 1A) subangulate and reflexed, margins deeply sinuate, with three rows of areolae at widest part, basal fold wide, forming a perpendicular angle with body axis. Pronotal median carina (Figure 1B) biseriate at middle, uniseriate at base and apex; as high as or slightly shorter than hood; higher than lateral carinae. Lateral carinae (Figure 1A) converging at middle and at both ends. Rostrum reaching posterior half of mesosternum.

Maximum width of each hemelytron on anterior third, smoothly constricted at middle (Figure 1C). Costal area biseriate, with a fuscous macula at the widest part of hemelytra, areolae of regular shape and size. Subcostal area with three rows of areolae at widest part. Discoidal area with three rows of areolae at widest part, infusate apically, sloping steeply from the highly elevated outer margin and running smoothly into the sutural area without being interrupted by a vein. R+M vein elevated and tectiform. Sutural area composed of large irregular areolae. Hypocostal ridge uniseriate. Legs and antennae testaceous.

Measurements

Holotype ♂: body length: 2.49; scapus 0.11, pedicellus: 0.08 (flagellomeres absent); hood length: 0.62, width: 0.23; hemelytra length: 1.65; discoidal area length: 0.69. Paratypes: (4 ♂, 3 ♀) body length: 2.46, 2.08, 2.49, 2.22/2.24, 2.02, 2.10; scapus: 0.12, 0.09, 0.09, 0.08/0.11, 0.09, 0.10, pedicellus: 0.08, 0.07, 0.06, 0.07/0.07, 0.06, 0.06; basiflagellomere: ?, 0.46, ?, ?/?; 0.32, 0.33, distiflagellomere: ?, 0.21, ?, ?/?; hood length: 0.57, 0.61, 0.58, 0.57/0.50, 0.52, 0.52, width: 0.23, 0.21, 0.24, 0.21/0.24, 0.23, 0.24; hemelytra length: 1.68, 1.34, 1.65, 1.39/1.48, 1.29, 1.40; discoidal area length: 0.73, 0.56, 0.66, 0.57/0.68, 0.55, 0.63.

Etymology

This species is dedicated to our colleague and friend Pablo M. Dellapé (MLP).

Discussion

This species is similar to *C. monacha* in sharing the following characters: hypocostal ridge uniseriate, Cu vein inconspicuous, and paranota angulate. *Corythaica dellapei* sp. n. can be distinguished by its smaller size (*C. monacha* measures about 3 mm versus *C. dellapei* at most 2.5 mm or less), and the smoothly widened anterior third of hemelytra, rather than the strongly widened anterior third in *C. monacha* (Figure 5A).

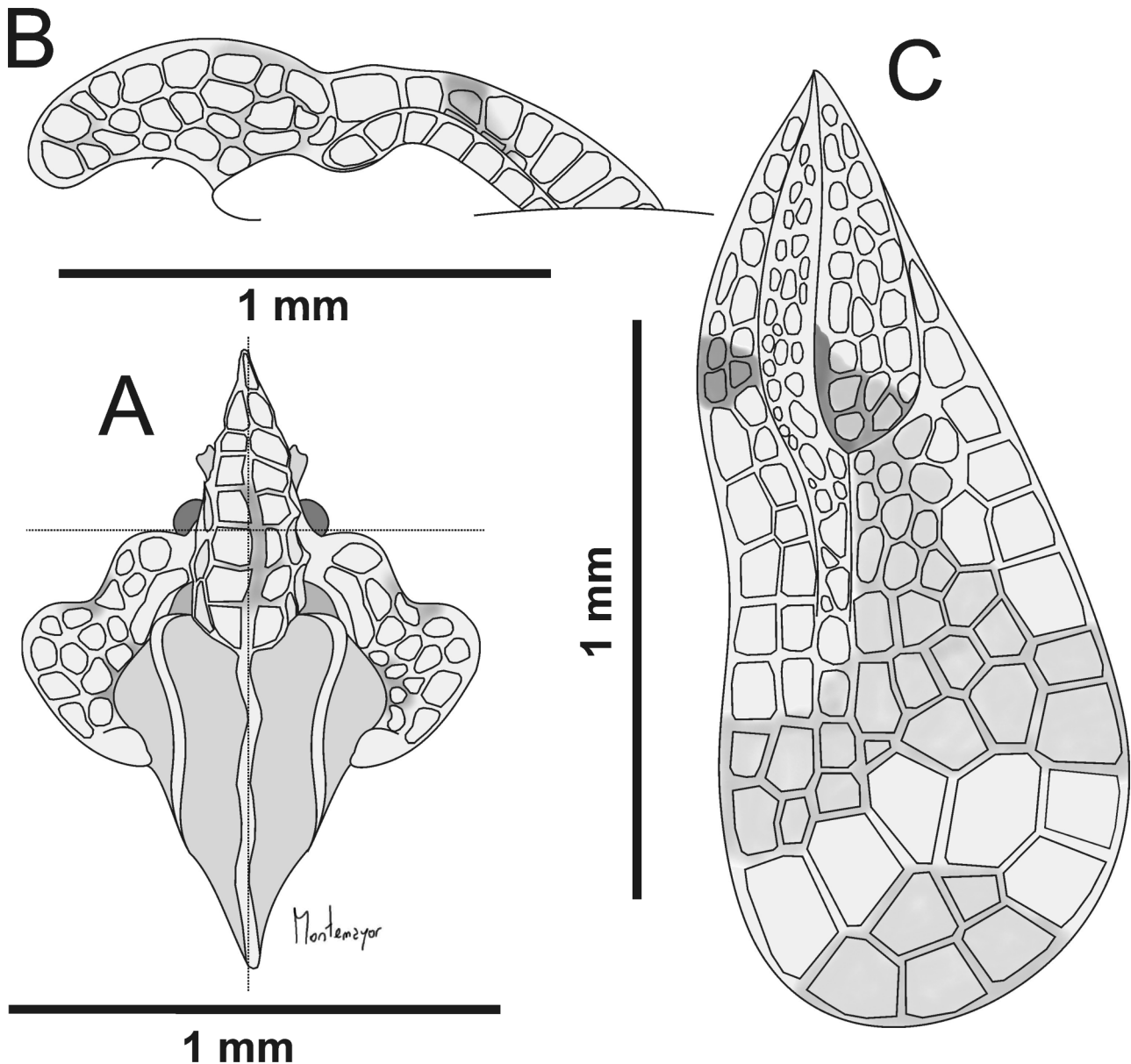


Figure 1. *Corythaica dellapei* sp. n.: A, head and pronotum, dorsal view; B, head and pronotum, lateral view; C, hemelytron.

Type material

Holotype ♂, [Formosa], Isla de Oro, 4 March [1943], Denier col. (MLP). Paratypes: 5 ♂ 2 ♀, same data (MLP).

Corythaica leprosa Montemayor & Melo, new species (Figures 2, 6, 8B)

Description

General color pale brown. Hood 2.48 times longer than wide, high, curved downward in front of head (Figure 2A, B). Paranota (Figure 2A) angulate and reflexed, margins sinuate, maximum width with three

rows of areolae, basal fold narrow, forming an obtuse angle with the body axis. Pronotal median carina (Figure 2B) uniseriate, as high as or slightly higher than hood, higher than lateral carinae; lateral carinae (Figure 2A) converging at middle and diverging at both ends. Rostrum reaching posterior end of mesosternum.

Maximum width of each hemelytron on middle third, constricted just beyond. Costal area biseriate, with one fuscous macula at widest part of hemelytra, with areolae of irregular shape and size. Subcostal area with four rows of areolae at widest part. Discoidal area with three rows of areolae at widest part, infuscate apically, Cu vein well developed. R+M vein tectiform.

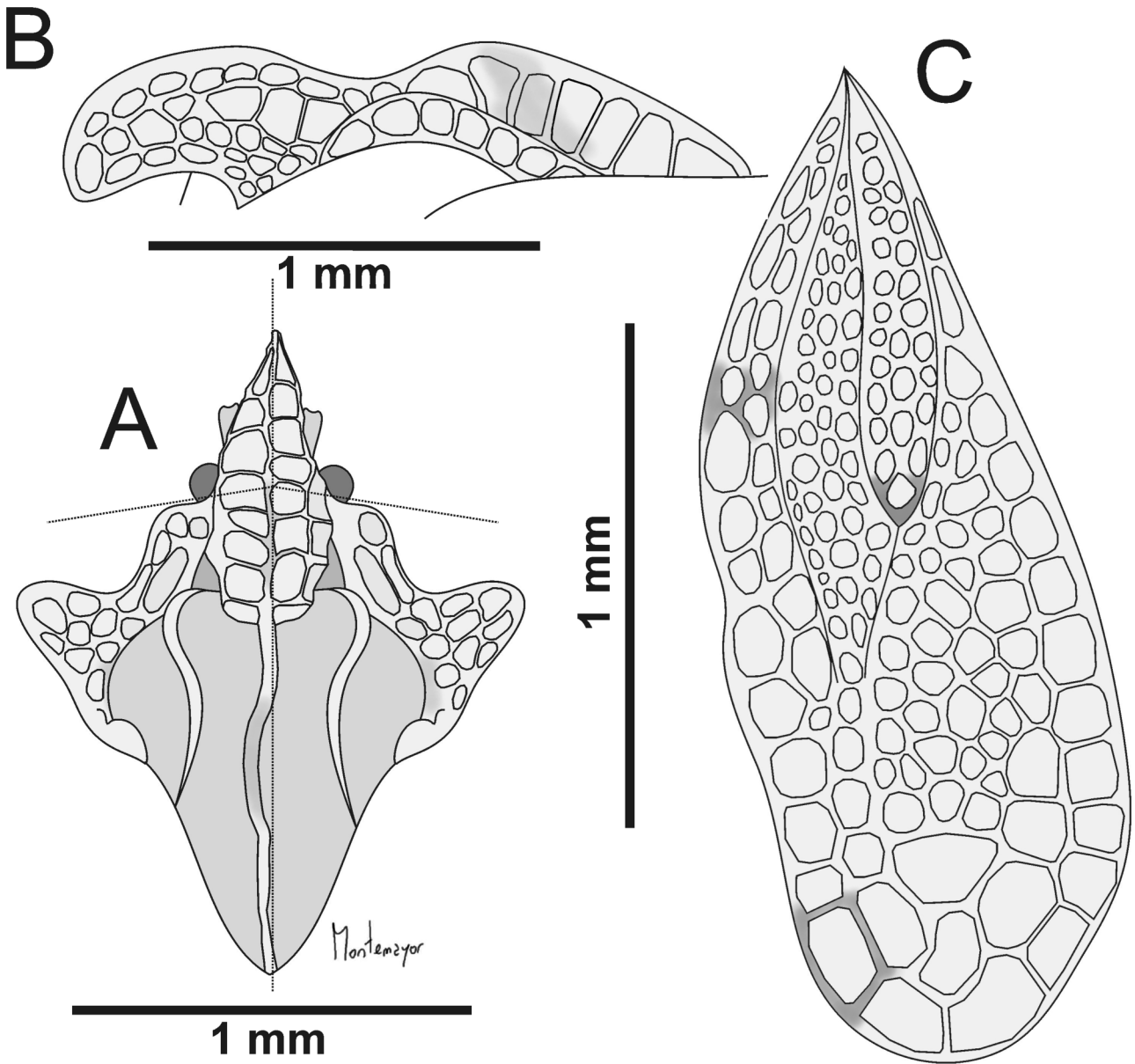


Figure 2. *Corythaica leprosa* sp. n.: A, head and pronotum, dorsal view; B, head and pronotum, lateral view; C, hemelytron.

Sutural area mostly composed of small irregular areolae. Hypocostal ridge uniseriate. Legs and antennae testaceous.

Measurements

Holotype ♂: body length: 2.98; scapus: 0.12, pedicellus: 0.09, basiflagellomere: 0.60, distiflagellomere: 0.17; hood length: 0.72, width: 0.29; hemelytra length: 1.96; discoidal area length: 0.81. Paratypes: (3 ♂, 4 ♀) body length: 3.06, 3.20, 2.88/3.23, 3.20, 3.10, 2.87; scapus: 0.10, 0.12, 0.12/0.12, 0.13, 0.10, 0.10, pedicellus: 0.08, 0.11, 0.09/0.07, 0.07, 0.07, 0.07, basiflagellomere: 0.56, ?, 0.53/0.67, 0.55, 0.52, 0.50, distiflagellomere: 0.25, ?, 0.26/0.23, 0.25, 0.27, 0.23; hood length: 0.70,

0.77, 0.67/0.75, 0.78, 0.77, 0.75, width: 0.32, 0.31, 0.27/0.33, 0.33, 0.33, 0.32; hemelytra length: 2.00, 2.08, 1.94/2.13, 2.10, 2.06, 1.87; discoidal area length: 0.87, 0.81, 0.79/0.95, 0.92, 0.92, 0.88.

Etymology

The specific epithet refers to the subspecific epithet of the host plant where the holotype was collected.

Discussion

This new species shares with *C. misionera* the biseriate costal area, the quadriseriate subcostal area, and the well developed Cu vein. *Corythaica leprosa* sp. n. can

be distinguished by the more reflexed paranota, the more slender basal fold that forms an obtuse angle with the body axis (Figure 2A), the rostrum that reaches the mesosternum, the hood that is at most 2.5 times longer than wide, and the uniseriate median carina.

Type material

Holotype ♂, Argentina, Buenos Aires, La Plata, sobre *Solanum granulatum leprosum*, 18 January 2009, S. I. Montemayor col. (MLP); paratypes: 3 ♂ 4 ♀, same data (MLP).

Corythaica saltensis

Montemayor & Melo, new species (Figures 3, 6, 8C)

Description

General color yellowish brown. Hood 2.29 times longer than wide, slightly curved downward in front of head (Figure 3A, C). Paranota (Figure 3A) rounded, slightly reflexed, margins smoothly sinuate, maximum width with three rows of areolae, basal fold wide, forming a perpendicular angle with the body axis. Pronotal median carina (Figure 3B) biseriate, uniseriate at apex; darker medially, as high as or slightly

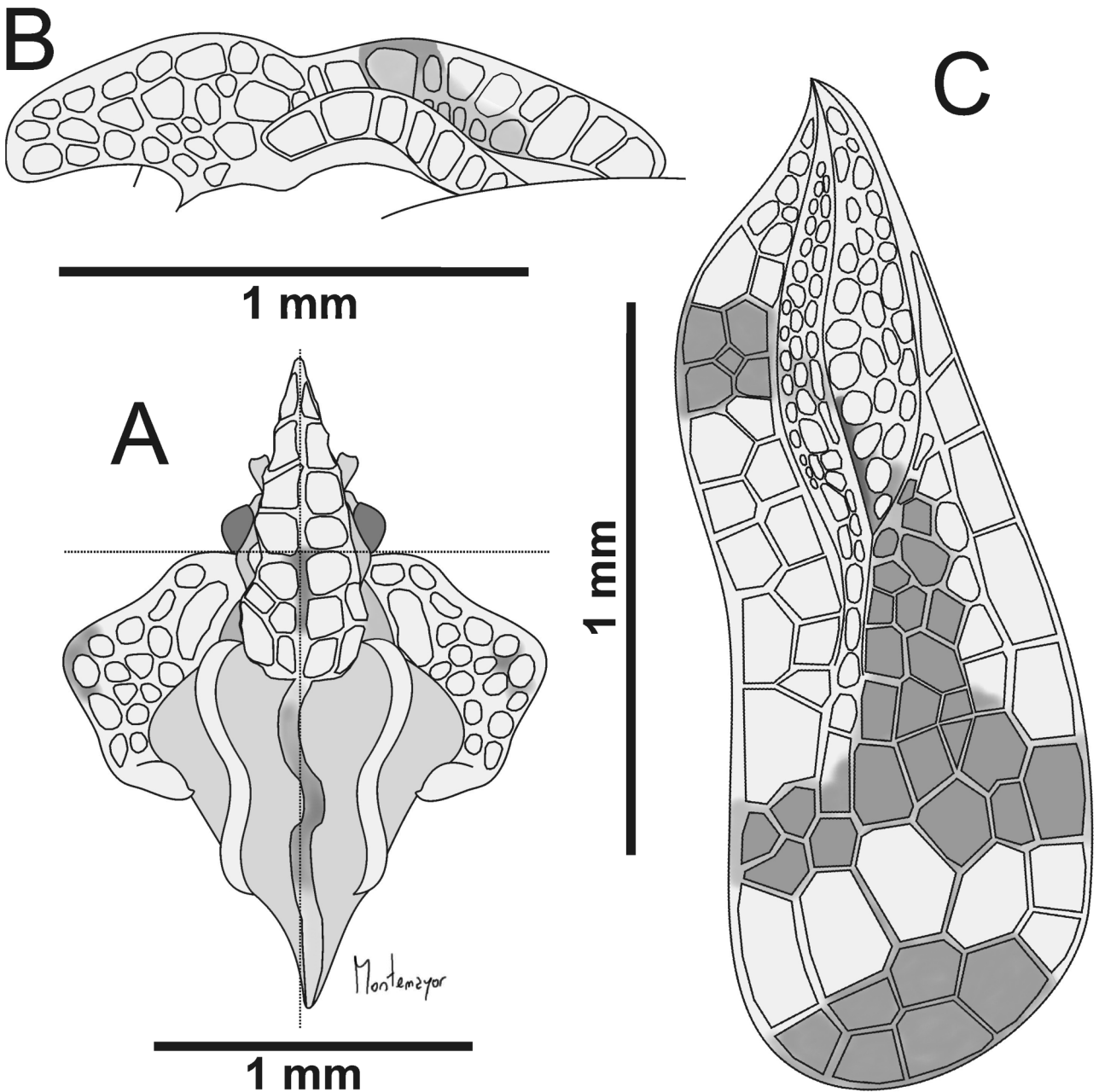


Figure 3. *Corythaica saltensis* sp. n.: A, head and pronotum, dorsal view; B, head and pronotum, lateral view; C, hemelytron.

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higher than hood; higher than lateral carinae; lateral carinae (Figure 3A) converging at middle and at both ends. Rostrum reaching posterior end of mesosternum.

Hemelytra's (Figure 3C) maximum width on anterior third, constricted at middle. Costal area biseriate, with a fuscous macula at the widest part, areolae of irregular shape. Subcostal area with three rows of areolae at widest part. Discoidal area with three or four rows of areolae at widest part, infusate apically, sloping steeply from the highly elevated outer margin and running smoothly into the sutural area without being interrupted by a vein. R+M vein tectiform. Sutural area composed of large irregular areolae. Hypocostal ridge uniseriate. Legs and antennae testaceous.

Measurements

Holotype ♂: body length: 2.56; scapus: 0.11, pedicellus: 0.08, basiflagellomere: 0.60, distiflagellomere: 0.26; hood length: 0.62, width: 0.27; hemelytra length: 1.82; discoidal area length: 0.79. Paratypes: (5 ♂, 4 ♀) body length: 2.40, 2.40, 2.40, 2.40, 2.11/2.50, 2.24, 2.59, 2.43; scapus: 0.11, 0.11, 0.09, 0.11, 0.09/0.08, 0.09, ?, 0.08, pedicellus: 0.7, 0.7, 0.7, 0.7, 0.7/0.7, 0.07, ?, 0.07, basiflagellomere: ?, ?, ?, ?, ?/? , ?, ?, ?, distiflagellomere: ?, ?, ?, ?/? , ?, ?, ?; hood length: 0.60, 0.66, 0.60, 0.61, 0.55/0.63, 0.56, 0.67, 0.60, width: 0.27, 0.24, 0.26, 0.23, 0.23/0.27, 0.22, 0.26, 0.23; hemelytra length: 1.72, 1.72, 1.67, 1.75, 1.70/1.70, 1.80, 1.75, 1.82; discoidal area length: 0.73, 0.73, 0.71, 0.73, 0.66/0.73, 0.73, 0.73, 0.76.

Etymology

The specific epithet refers to the Argentinean Province where the holotype was collected.

Discussion

Corythaica caestri (Reed), *C. pavonia* and *C. saltensis* sp. n. share the uniseriate hypocostal ridge, the inconspicuous Cu vein, and the rounded and slightly reflexed paranota. In the first two species, the hemelytral margins are straight after broadening and the tips of both are completely overlapped, whereas in *C. saltensis* sp. n. the hemelytra are constricted after broadening and the tips of both only partially overlap.

Type material

Holotype ♂, Argentina, Salta, Rio Carapari, Kormilev col. (MLP); paratypes: 7 ♂ 6 ♀, same data (MLP).

Taxonomy

Stål (1860) described *Tingis monacha* from Rio de Janeiro (Brazil), and four years later Costa (1864) described *Tingis cyathicollis* from São Paulo (Brazil). The second description is vague and either species could fit, but Costa provided an illustration of the hemelytra that distinguishes *T. cyathicollis*. Stål (1873) described the genus *Corythaica*, designated *C. monacha* as type species of the genus and synonymized this last species with *T. cyathicollis*. Berg (1884) described *Leptobyrsa passiflorae* (Figure 4) from Buenos Aires (Argentina). Some years later, Drake (1928) transferred *L. passiflorae* to the genus *Corythaica*. Drake & Poor (1938) treated *C. cyathicollis* as a distinct species and considered *C. passiflorae* as junior synonym (they only examined the holotype of *C. passiflorae*). Monte (1938) treated *C. cyathicollis* and *C. passiflorae* as different species. He later agreed with Stål (1873) and considered *C. cyathicollis* and *C. monacha* synonyms and reaffirmed the identity of *C. passiflorae* (Monte 1942). Poor Hurd (1945) made a review of the genus, and recognized both *C. monacha* and *C. cyathicollis*, keeping *C. passiflorae* as junior synonym of *C. cyathicollis*. Kogan (1960) made a thorough study of *C. cyathicollis*, designating a neotype for it from São Paulo (Brazil).

By the comparison of photographs of the holotype of *C. monacha* with the holotype of *C. passiflorae*, we conclude that both are distinct species. In *C. monacha* (Figure 5A), the hemelytron widens abruptly on the basal third and then tapers gradually, the costal area has three rows of areolae at its widest part, the discoidal area is shorter and strongly upraised, and the Cu vein is scarcely elevated; in *C. passiflorae* (Figure 5B), the hemelytron gradually widens toward the middle third and then is distinctly constricted, the costal area has two rows of areolae at its widest part, the discoidal area is longer and flat, and the Cu vein is strongly raised. Also, the paranota in *C. monacha* are more angulate and wider than in *C. passiflorae*.

Since the description of *C. cyathicollis*, no author has actually examined the holotype, and thus the identity of this species has been confused from the beginning. It seems that the holotype was lost shortly after the description or that it was never deposited in a collection. The description of *C. cyathicollis* (Costa 1864) provides several generic characters but very few specific ones, due to the fact that this species was first described in the genus *Tingis* and then transferred to *Corythaica* by Stål (1873) when the genus was established. Even though *C. cyathicollis* is the species of the genus more frequently mentioned in the literature as a major crop pest (Kogan 1960; Stonedahl & Dolling 1992; Neal & Schaefer 2000), probably almost all the

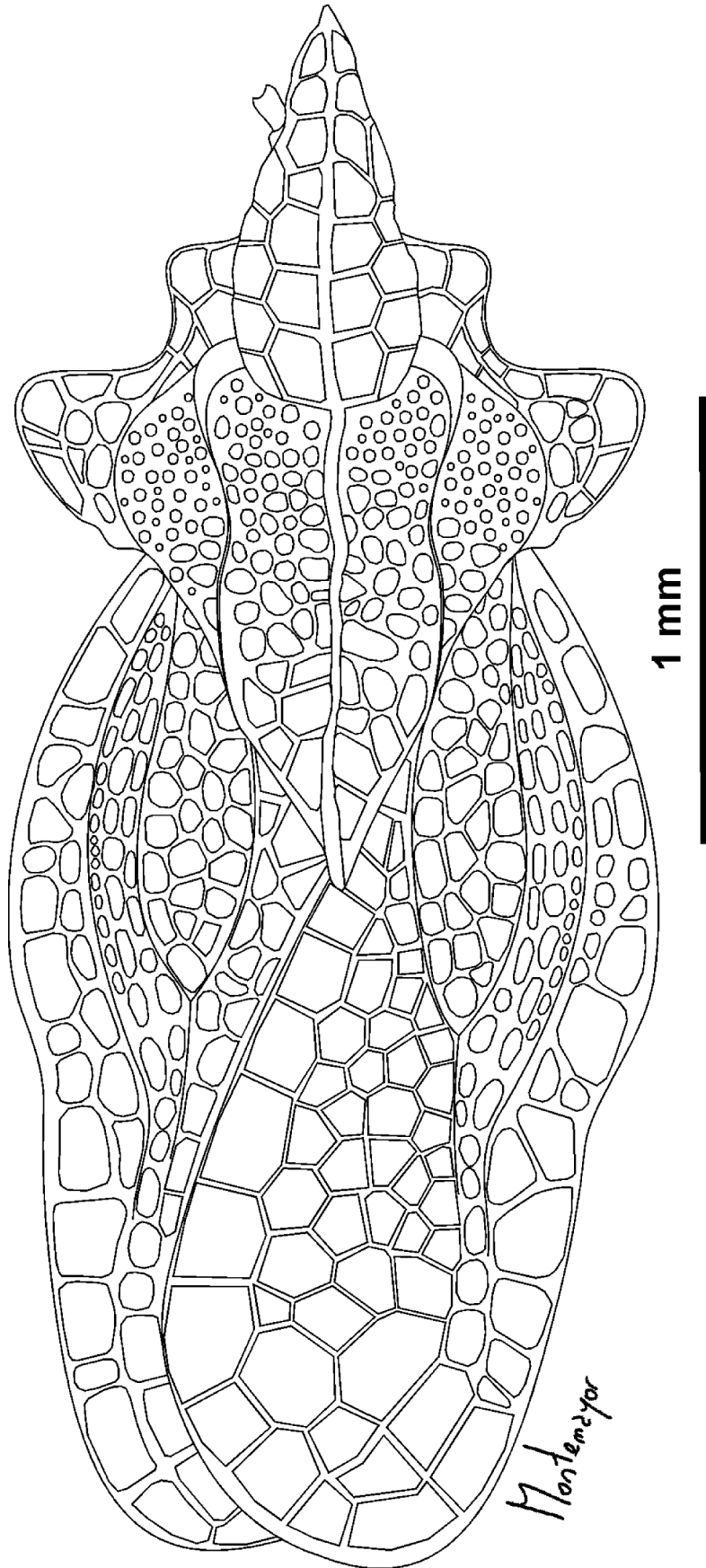


Figure 4. *Corythaica passiflorae* (Berg), holotype.

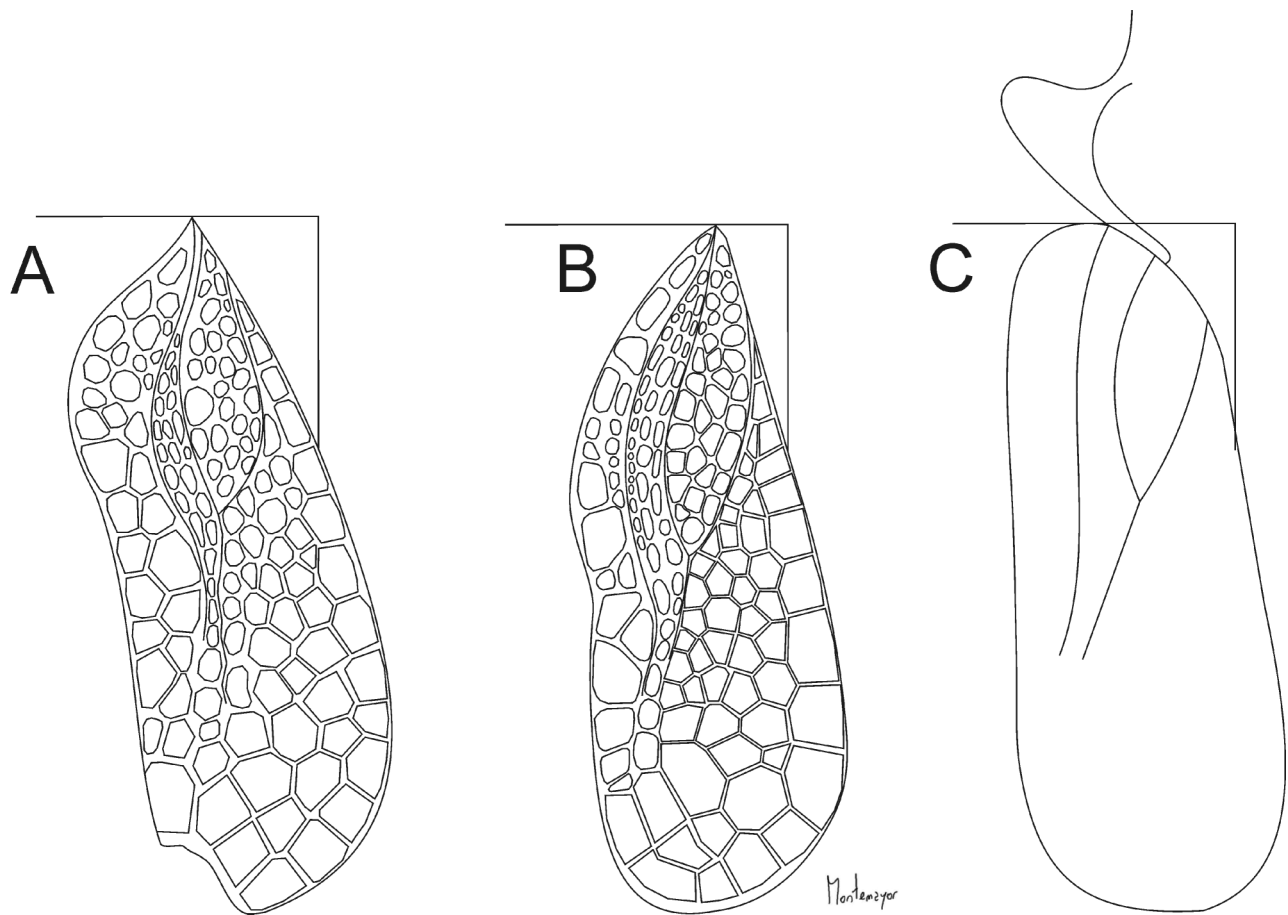


Figure 5. Hemelytra of *Corythaica* species: A, *C. monacha* Stål; B, *C. passiflorae* (Berg); C, *C. cyathicollis* (Costa).

citations do not refer to Costa's species and most likely pertain to *C. monacha* or *C. passiflorae*. The latter two have been considered junior synonyms of *C. cyathicollis* by many authors, but in both the shape of the hemelytra distinctly differs from the scheme presented by Costa (1864). In that scheme each hemelytron widens abruptly at the base and from there onward has the same width throughout its length and the outer margins are straight (Figure 5C). Neither *C. monacha* (Figure 5A) nor *C. passiflorae* (Figure 5B) have this kind of hemelytra. Comparing the holotype of *C. passiflorae* with the illustrations of the neotype of *C. cyathicollis* that Kogan (1960) presented we reached the conclusion that the identity of this neotype is *C. passiflorae* and not *C. cyathicollis*.

When Kogan (1960) designated the neotype of *C. cyathicollis* he believed that the holotype of *C. passiflorae* was lost and mentioned: "Drake and collaborators revalidated *C. cyathicollis* (Drake & Poor 1938; Poor Hurd 1945); Monte in his last works considered *C. passiflorae* as the valid name (Monte 1943; 1947; 1948). . . . Most of the foreign authors

refer to *C. cyathicollis*". "Considering this situation it seems unwise on behalf of Drake and collaborators to revalidate *C. cyathicollis* on the basis of a few morphological differences extracted from brief descriptions that were not based on the type material to support them, but once the revalidation is made and accepted by most of the authors I do not think wise to keep the discussion because of the lack of elements it is more a literature discussion than a scientific one."

When Kogan (1960) and other authors discussed this complex systematic problem they all seem to have forgotten Costa's illustration of *C. cyathicollis* that clearly distinguishes this species from *C. passiflorae* or any other species of *Corythaica*. According to the Article 75.3.5 of the ICZN (1999), the designation of a neotype is valid if: "evidence that the neotype is consistent with what is known of the former name-bearing type from the original description and from other sources . . .". So considering all the above mentioned evidence, and that *C. cyathicollis* and *C. passiflorae* are two distinct species, and that the holotype of *C. passiflorae* is safely deposited in the Museo de La

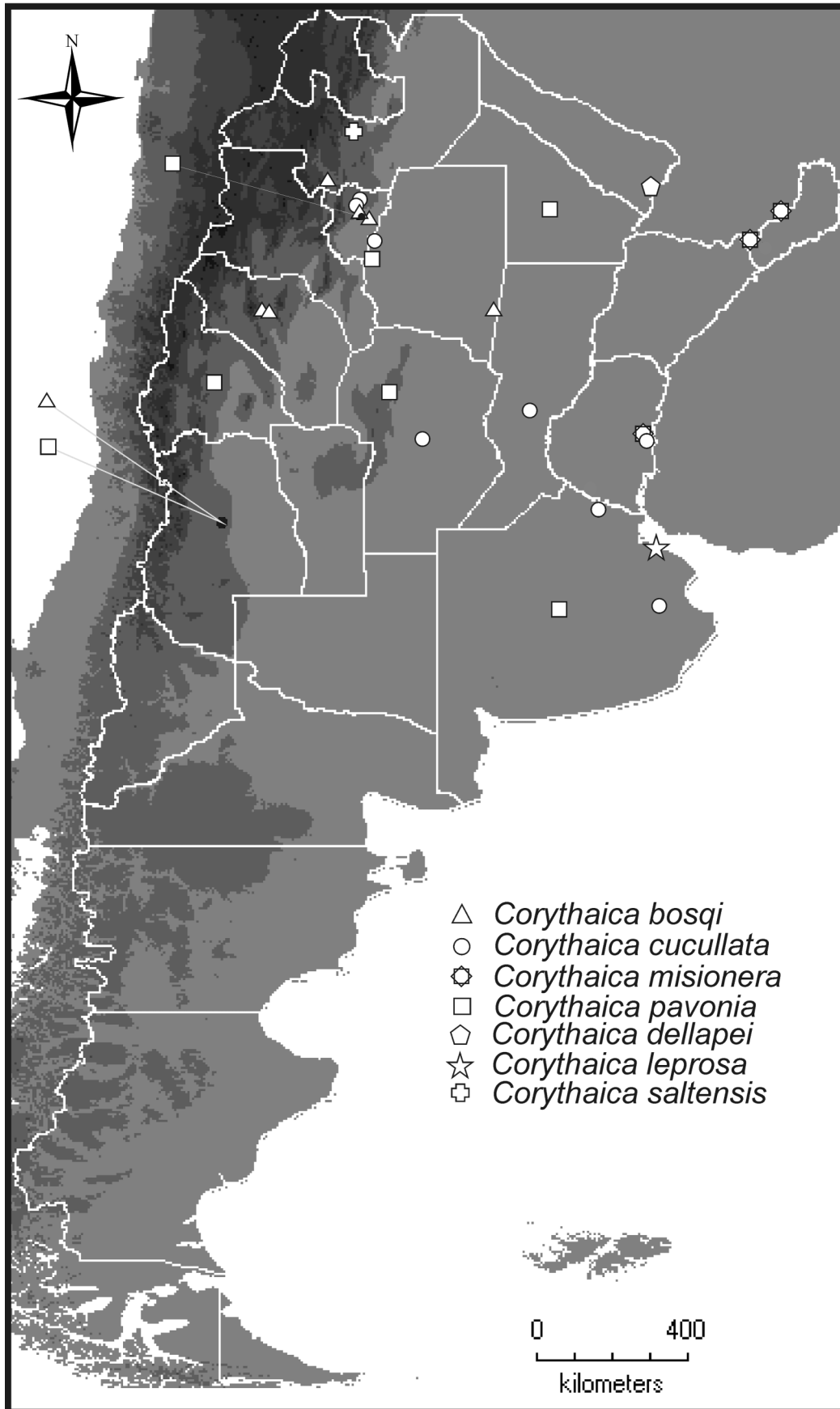


Figure 6. Distribution of *Corythaica bosqi* Monte, *C. cucullata* (Berg), *C. misionera* Ajmat, *C. pavonia* Ajmat, *C. dellapei* sp. n., *C. leprosa* sp. n. and *C. saltensis* sp. n.

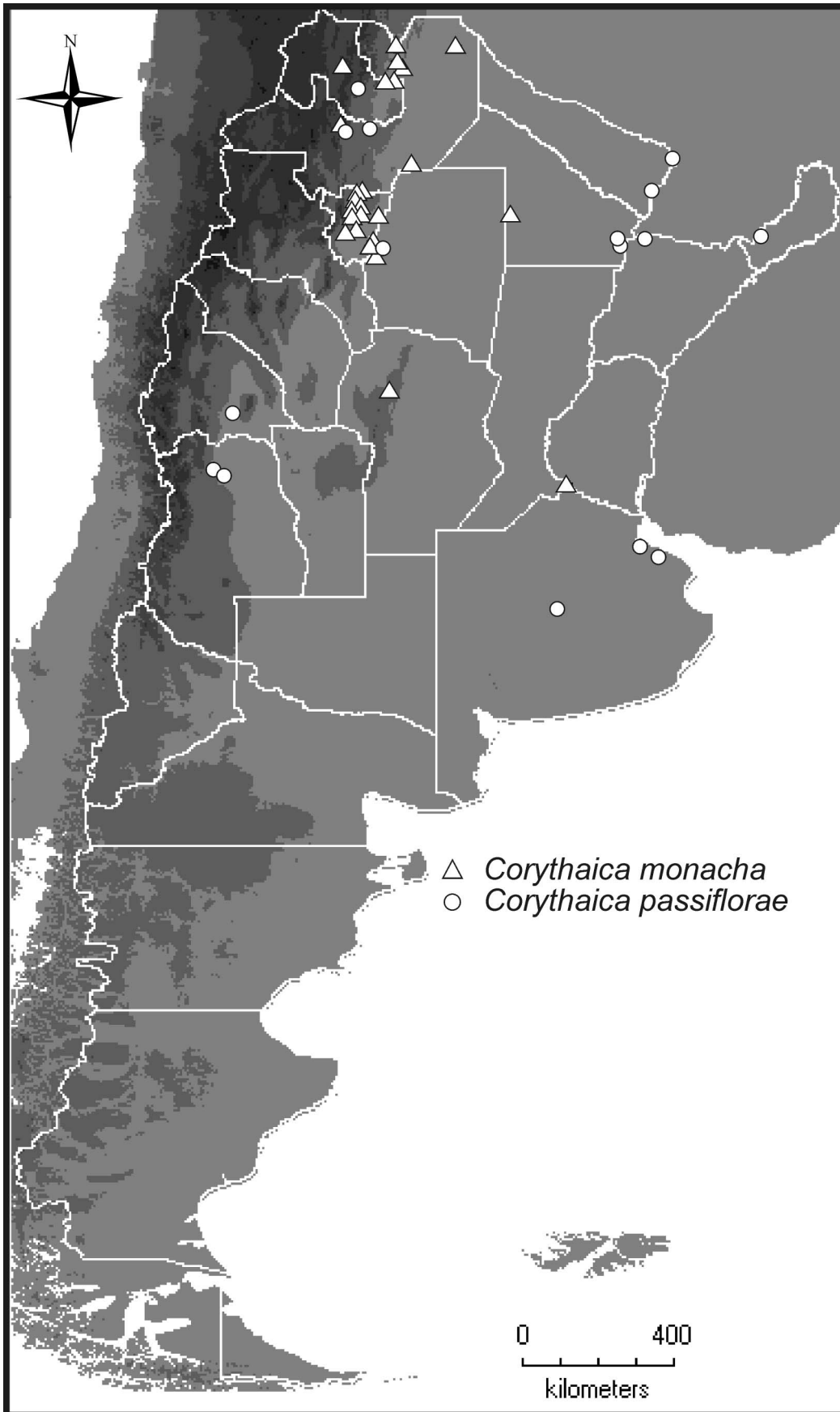


Figure 7. Distribution of *Corythaica monacha* Stål and *C. passiflorae* (Berg).

Plata, and that the neotype designated by Kogan is in fact *C. passiflorae*, we conclude that the neotype designated by Kogan should not be considered valid. As a consequence, all specimens fitting this concept should be consider *C. passiflorae*, and the name *C. cyathicollis* should not be used until at least one specimen that fits the description and illustration of Costa is found.

In order to be certain that the name used corresponds to *C. passiflorae* in the following synonymical list we include only those references where Berg's holotype was studied or an illustration of the specimen is presented:

***Corythaica passiflorae* Berg**

Leptobyrsa passiflorae Berg 1884: 102; Pennington 1921: 20.

Corythaica passiflorae: Drake 1928: 72; Drake & Poor 1938: 108 (they refer to Berg's holotype); Monte 1942: 110.

Corythaica monacha: Monte 1937: 30, 42 (figure 9).

Corythaica planaris: Monte 1942: 110.

Corythaica cyathicollis: Poor Hurd 1945: 84, 99 (plate I: figure 5); Kogan 1960: 62, 64 (figures 3–8); Ajmat 2000: 205 (figure 2a, b), 210.

Key to the Argentinean species

1. Cu vein inconspicuous 2
 - Cu vein conspicuous 5
2. Paranota broadly rounded 3
 - Paranota subangulate or angulate 4
3. Maximum width of hemelytra at middle of the discoidal area, margins of the hemelytra straight after broadening *C. pavonia*
 - Maximum width of hemelytra at anterior third of the discoidal area, margins of the hemelytra smoothly constricted after broadening *C. saltensis* sp. n.
4. Paranota subangulate, hemelytra smoothly constricted after broadening, basal fold followed by a smooth concavity *C. dellapei* sp. n.
 - Paranota angulate, hemelytra straight after broadening, basal fold followed by a deep concavity *C. monacha*
5. Species very small, total length less than 2.3 mm, costal area mostly uniseriate *C. bosqi*
 - Total length 2.5 mm or more, costal area biseriate or mostly biseriate 6
6. Paranota broadly rounded *C. cucullata*
 - Paranota angulate 7

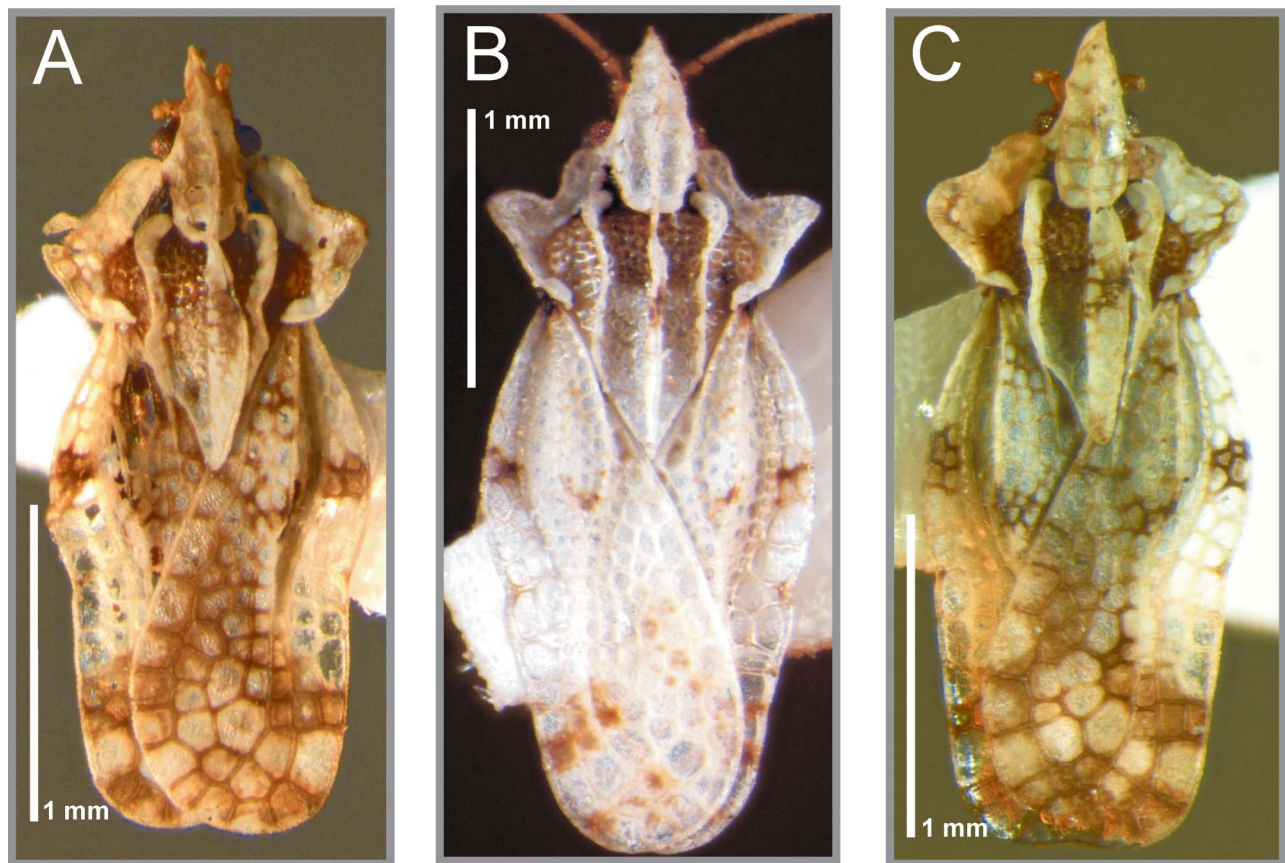


Figure 8. (Color online) A, *Corythaica dellapei* sp. n.; B, *Corythaica leprosa* sp. n.; C, *Corythaica saltensis* sp. n.

7. Costal area uni-biseriate, subcostal area triseriate at its widest part *C. passiflorae*
 – Costal area entirely biseriata, subcostal area tetraseriate at its widest part 8
8. Rostrum reaching metasternum, median carina medially biseriata, basal fold wide, forming a perpendicular angle with the body axis
 *C. misionera*
 – Rostrum reaching mesosternum, median carina medially uniseriate, basal fold narrow, forming an obtuse angle with the body axis
 *C. leprosa* sp. n.

Conclusions

Considering the three new species here described and that *C. passiflorae* is raised from synonymy, the genus *Corythaica* now comprises 21 species, 14 of them known from the Neotropical region and nine from Argentina (Figures 6, 7). In the Taxonomy section, we mentioned that *C. cyathicollis* is considered a major pest for several crops, but because of all the confusion with *C. monacha* and *C. passiflorae*, the distribution and host plants of these three species must be re-evaluated.

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