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# A new species of the genus *Mazaeras* Walker, 1855 (Lepidoptera: Erebidae: Arctiinae)

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During several days of entomological expedition, as part of a thesis on the phylogeny of Phaegopterina, the first author collected in Northwestern Argentina (provinces of Jujuy and Salta) a series of *Mazaeras* species previously treated as *Mazaeras janeira* (Schaus, 1892). The second author, after an expedition in the southern Bolivia (departments of Chuquisaca and Santa Cruz), had a series of specimens of the same taxon also identified as *M. janeira* (Schaus, 1892). Examination of the male genitalia of the Argentinean specimens showed several differences with the male genitalia of the lectotype of *M. janeira*. Molecular analysis with specimens of the two taxa confirmed the discrimination. The new species is described and a comparison based both on morphological characters and DNA barcodes with closely related species is provided. The new species can be found in northwestern Argentina (Salta and Jujuy provinces) and southern Bolivia (Santa Cruz, Chuquisaca and Tarija departments) in Yungas montane forest. *Mazaeras yungasensis* **n. sp.** can be found between 467m to 2540m (data from Instituto Fundación Miguel Lillo (IFML), Museo de La Plata (MLP), Museo de Zoología de la Universidad Nacional de Córdoba (MZUC) and personal collection: Benoit Vincent (BVC) and Michel Laguerre (MLC) (Fig. 11).

Genitalia were prepared using a hot KOH solution (10%). Illustrations images of abdomen and genital male were taken with a camera attached to a stereoscopic microscope Zeiss Stemi 2000-C stereomicroscope. The morphology analyses were made with specimens of IFML, MLP, MZUC, BVC and MLC. Genitalic terminology follows Vincent *et al*. (2014).

One specimen of *Mazaeras yungasensis* **n. sp.** and one specimen of *M. janeira* were sequenced by the second author for provided barcode sequences to confirm the discrimination of these taxa. The sequences were obtained according to the protocol described in Vaglia *et al*. (2008). Distances between specimens were calculated using Kimura-2-parameters (K2P) model (Kimura, 1980).

***Mazaeras yungasensis* Beccacece & Vincent, new species**
Figs. 1, 3, 5, 7, 9, 10

**Type material.** Holotype male: Argentina, Jujuy, Parque Nacional Calilegua, camino a San Francisco, Km 31, puente Río Jordán, 1415 m, 28–XI–2013, S 23°38'54.6" W 64°56'14.1", H. Beccacece; B. Vincent; A. Chalup; G. Acosta leg. [IFML]. Paratypes: 2 males: Argentina, Jujuy, Parque Nacional Calilegua, Mesada Las Colmenas, 21/23-XI-1995, A. Chalup; M. E. Villagrán leg. [IFML]. 1 male, Argentina, Jujuy, Parque Nacional Calilegua, Mesada Las Colmenas, 24/25-I-1996, M. E. Villagrán leg. [IFML]. 1 male: Argentina, Jujuy, Parque Nacional Calilegua, Mesada las Colmenas, 20-XII-1997, C. Molineri; M. Villagrán leg. [IFML]. 1 male: Argentina, Salta, camino a Angosto del Pescado, Km 13 desde Puente International, 467 m, 02–XII–2013, S 22°41'05.7" W 64°24'09.9", H. Beccacece; B. Vincent; F. Navarro; M. J. Barrionuevo leg. [MZNC]. 2 males: Argentina, Jujuy, Parque Nacional Calilegua—a 1Km de Mesada de las Colmenas, 1272m, 25–X–2011, S 23°41'56,26" W 64°52'23,9", A. Zapata leg. [MZUC]. 1 male: Argentina, Salta [MLP]. 3 males: Bolivia, Chuquisaca, Route de Monteagudo à Padilla Km 70, 1836 m, 01–XI–2007, S 19°30'41,9" W 64°10'17,8", B. Vincent leg. [BVC]. 1 male: idem, Barcode ID ARCTD 867-13, Sample ID BEVI1792. [BVC]. 3 males: Bolivia, Santa Cruz, Parc National Amboro, Route de Samaipata à Santa Cruz, Km 6, 2037 m, 28–X–2007, S 18°07'06,7" W

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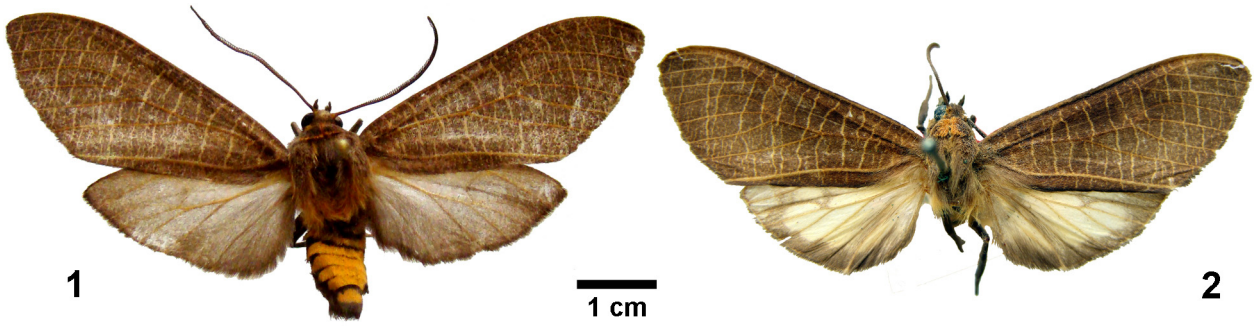
643°48'02,9'', B. Vincent leg. [BVC]. 1 female: idem, genital prep. BV 446; [BVC]. 1 male and 1 female: Bolivia, Santa Cruz, Route de Padilla à Camiri pK 82, 1300m, 12–XI–1998, M. Laguerre leg. [MLC]. 1 female and 5 males: Bolivia, Chuquisaca, Route de Valle Grande à Padilla, 1 km avant Nuevo Mundo, 2150 m, 10–XI–1998, M. Laguerre leg. [MLC]. 1 female: Bolivia, Chuquisaca, Route Ipati à Padilla, 10 km avant Monteagudo, 1245m, 28–X–2000, S 19°47.959, W 63°53.930, M. Laguerre leg. [MLC]. 1 male: Bolivia, Tarija, Route de Villa Montes à Tarija, pK 155, 1600 m, M. Laguerre leg. [MLC].




**FIGURES 1–2**. Adult dorsal view. 1. *Mazaeras yungasensis* n. sp. male holotype, 2. *Mazaeras janeira* lectotype male.

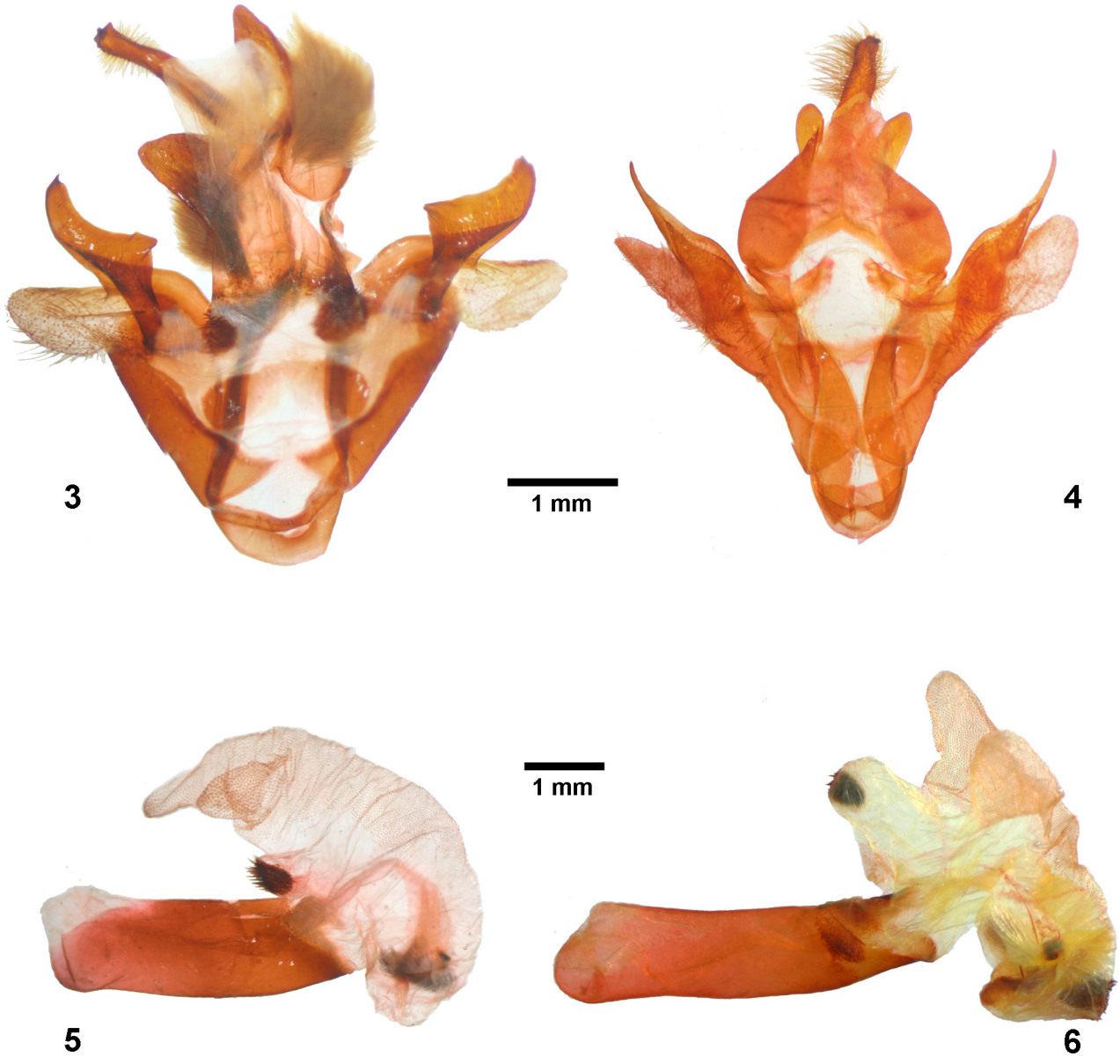
**Etymology.** The name is derived from the meridional Yungas area, western slopes of the Andes, between 300 and 3500 m altitude, from northern Peru to northwestern Argentina (Morrone, 2014).

**Description.** Male (Fig. 1). Wingspan 56–60 mm (n=10). *Head*. Dark brown dorsally, except the base of the scape yellowish brown. Antennae, dark brown. Pectination dark brown, 0.4 mm length in the middle section of the antenna. Palpi dark brown, the third segment shorter than the second segment, globose eyes, proboscis well developed. *Thorax*. Patagia and tegulae dark brown with margins yellowish brown dorsally and dark brown ventrally, except the union of coxae yellowish brown. *Legs*. Dark brown dorsally, except the coxae which is yellowish brown. *Forewing*—length 24.5 mm–28 mm (n= 10). Dark brown ground-color with thin transverse lines, clearer, forming a ornamentation like crackle varnish. Nervation slightly contrasting, yellowish color. Transverse lines absent ventrally. *Hindwing*—Dark brown with the inner margin paler dorsally and dark brown ventrally. *Abdomen*. Underneath brownish with transverse yellowish band dorsally, except the first segment yellowish orange; pleura brownish black; greyish brown ventrally with a pair of subtriangular ventral apodemes in the intersegmental A7–A8 and apical part of this segment convex. *Male genitalia* (Fig. 3, 5, 7, 9). Uncus thin basally, club-shaped and lateraly compressed, strongly curved in the middle, setose distally and pointed at the tip. On both side of the uncus insertion, presence of a pair of high subtriangular protuberances, with long bristles yellowish covering the apex. Protuberances reach half the middle of the uncus. Vinculum rounded ribbon-shaped with a medial constriction present in the upper margin. Saccus rounded like tongue-shaped, not developed. Juxta sclerotized like an inverted U-shaped. Manicae membranous with a pair of lateral patch of spicules (Fig. 9). Symmetrical valves, wide at the base, shorter than uncus. Sacculus membranous, setose, shorter than costa. Costa strongly sclerotized, with a thin and slightly serrated end, extended laterally by a lamellar projection sclerotized and twisted. Anal tube membranous. Aedeagus slightly curved, short and robust (Fig. 5); caecum reduced, rounded. Vesicae membranous with tiny spicules, semi-moon like, with two finger-like apical processes and a globose basal process. Two cornuti present with medium size spines, one located in a diverticuli base of the apical process and other in the middle of the basal process.

*Female*. Same as male except for the following characters: forewing female darker than male forewing; length 27 mm–28 mm (n= 3). Hindwing uniformly dark brown. *Female genitalia* (Fig. 10). Papillae anales trapezoid and setose. Pseudopapillae anales wholly fused. Anterior apophyses straight, 0.8mm length; posterior apophyses slightly curved, 1.3 mm length. Ductus bursae extremely short and slightly sclerotized. Corpus bursae large, flat, ovoid, inner shell completely covered by little papilla, constricted in its central portion at the insertion of ductus seminalis. Bulla seminalis with a single chamber, same size as the corpus bursae.

**Remarks.** *Mazaeras yungasensis* **n. sp.** is similar to *Mazaeras janeira* (Schaus, 1892) (Fig. 2, 4, 6, 8) described from Rio de Janeiro in Brazil. Habitus and male genitalia of lectotype is figured by Watson (1973). This taxon is the senior synonym of *Mazaeras distincta* (Rothschild, 1935) described from Alto da Serra, state of São Paulo in Brazil. *M. janeira* can be distinguished from *M. yungasensis* **n. sp.** by the following differences: Pectinations in the middle section of the antenna, 0.7 mm length; abdomen orange with the first segment unspotted, the following three with large transverse black bands, the other segments with black spots medio-dorsally; a pair of subtriangular ventral apodemes in

the intersegmental A7–A8 wider. Apical part of the segment A7–A8 concave; forewing with the reniform spot formed by a slight discoloration of the ground color and the apex more rounded; hindwing with non-uniform color: yellowish white, black on the margins; male genitalia with the uncus not club-shaped with, along its entire length, many long bristles; tegumen smallest and more convex, with shorter subtriangular protuberances, without a dense tangle of long yellowish hairs; manicae without spicules patch laterally; costa of the valvae with apex much finer, without a lamellar projection sclerotized and twisted; juxta with a depression in the middle apical region; saccus showing a medial concave depression rounded; aedeagus longer and thinner with a sclerotized spot of small spicules apically and a caecum penis more developed; cornuti located in the medium of the basal process bigger.



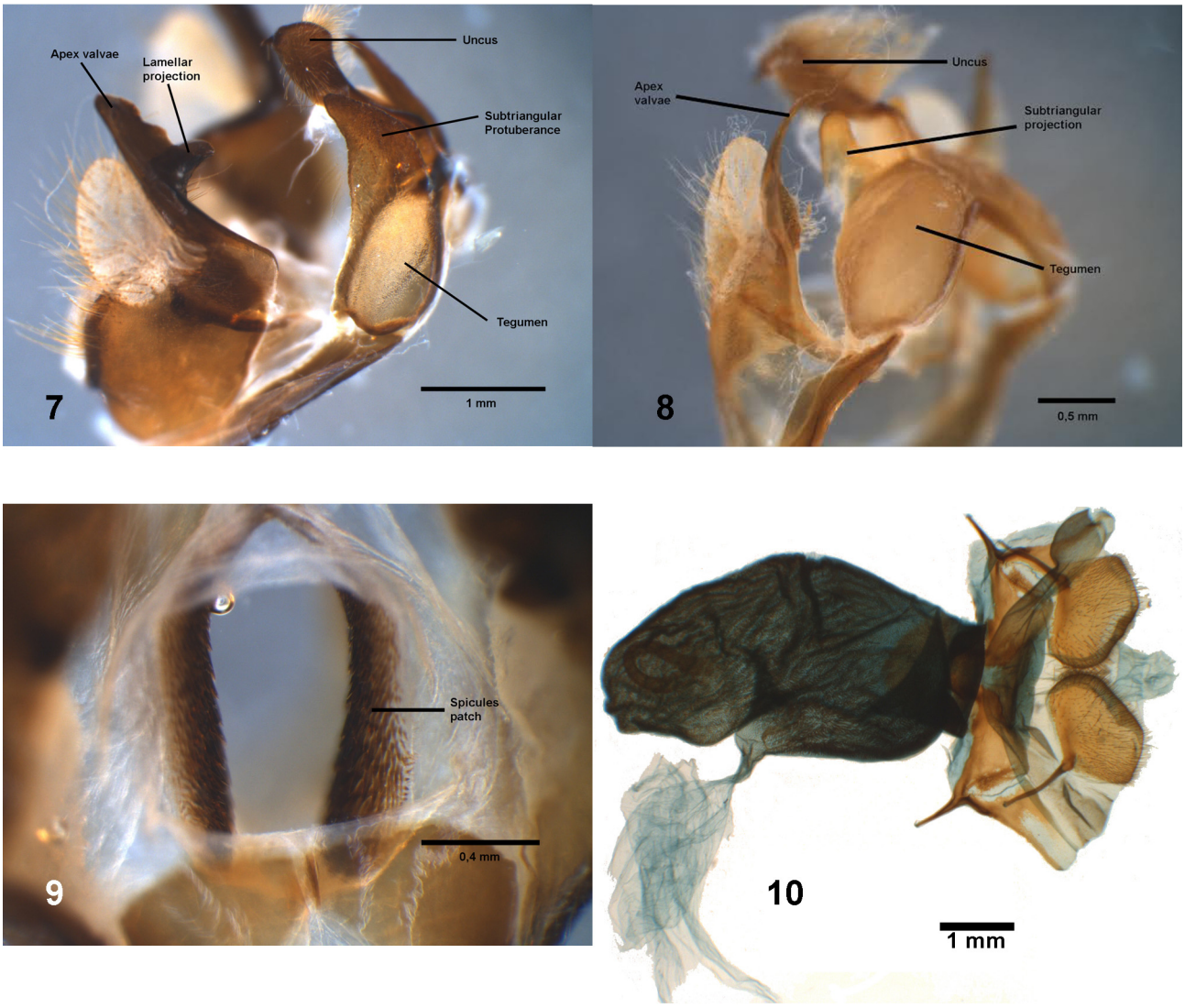

**FIGURES 3–6. 3–4**. Ventral view of male genitalia. 3. *Mazaeras yungasensis* n. sp. male holotype 4. *Mazaeras janeira*. **5–6**. Lateral view of penis. 5. *Mazaeras yungasensis* n. sp. male holotype. 6. *Mazaeras janeira*.

*Mazaeras yungasensis* **n. sp.** is also similar to *Opharus palmeri* Druce, 1909 described from San Antonio in Colombia. This taxon can be distinguished from *M. yungasensis* **n. sp.** by the following differences: head, patagia, tegulae and thorax orange yellowish; forewing with brown ground color; hindwing with base slightly yellowish; tegumen without subtriangular protuberances; valvae longer, without a lamellar projection sclerotized and twisted and with a rounded apex; vesicae smallest with a large patch of fine cornuti.

*Mazaeras yungasensis* **n. sp.** is also similar to *Elysius disciplaga* (Walker, 1856) described from Brazil. This taxon is

the senior synonym of *Elysius breviuscula* Walker, [1865] described from Mexico and *Elysius aperta* Edwards, 1884 described from Jalapa, state of Veracruz in Mexico. *Elysius disciplaga* can be distinguished from *M. yungasensis* **n. sp.** by the following differences: forewing without transverse lines forming a crackle varnish, reniform spot conspicuous and with a rounded apex; hindwing with non-uniform color: discal area whitish; uncus wide, flared at the base, bearing two lateral subtriangular projections; tegumen with two very large cup-shaped projections, the edges of these projections are highly serrated; valves short, very large with a truncated apical end.

One specimen of *Mazaeras yungasensis* **n. sp.** and one specimen of *M. janeira* provided barcode sequences of cytochrome oxidase subunit I (COI) mitochondrial gene. The K2P distances for DNA barcode sequences show 4.11 % of divergence between the two taxa. No recent specimen of *Opharus palmeri* has been available for extracting and sequencing COI. No specimen of this species is recorded in IBol Lepidoptera campaign. One specimen of *Elysius disciplaga* from Paraguay, Alto Parana, provided a barcode sequence COI. The K2P distances for DNA barcode sequences with the specimens of *Mazaeras yungasensis* **n. sp.** and specimen of *Mazaeras janeira* show 6.93 % and 5.71 % of divergence respectively from *E. disciplaga*. This percentage of divergence is strong and significantly higher than the distances observed between species of Lepidoptera, particularly within Arctiini (Hajibabaei *et al.* 2006; Vincent & Laguerre, 2013). These results confirm the discrimination of these taxa and the novelty of *Mazaeras yungasensis* **n. sp.**




**FIGURES 7–10. 7–8**. Dorsal view of male genitalia. 7. *Mazaeras yungasensis* n. sp. male holotype 8. *Mazaeras janeira*. **9**. Manicae of male genitalia of *Mazaeras yungasensis* n. sp. male holotype. **10**. Female genitalia of *Mazaeras yungasensis* n. sp. paratype.

The placement of the new species in the genus *Mazaeras* Walker, 1855 is not entirely satisfactory. The genus *Mazaeras* Walker, 1855 includes eight species and one subspecies (Vincent & Laguerre, 2014). However, *Mazaeras yungasensis* **n. sp.** and *M. janeira* have a habitus very different from *Mazaeras conferta*, the type species of the genus, with a reddish thorax, forewings ocher orange, pinkish hindwings and a yellow abdomen decorated with three longitudinal lines of punctuation. The genus *Sychesia* comprises three species and eleven subspecies (Vincent & Laguerre, 2014) which have a homogeneous habitus characterized by antenna highly bipectinate, forewings black and marked by a small clear punctuation at the location of the reniform spot, a yellow abdomen decorated with two longitudinal lines of punctuation. So, the placement of *Mazaeras yungasensis* **n. sp.** and *M. janeira* within the genus *Sychesia* is not justified. The genus *Elysius* Walker, 1855, especially with the species *Elysius disciplaga* has some species with similar habitus with the two species. However, they remain far from *Elysius conspersus* Walker, 1855, the type species of the genus, which owns a thorax orange, brown forewings decorated with large orange spots and white hindwings. The placement of these two species as members of *Mazaeras* Walker, 1855 still needs more evidence.

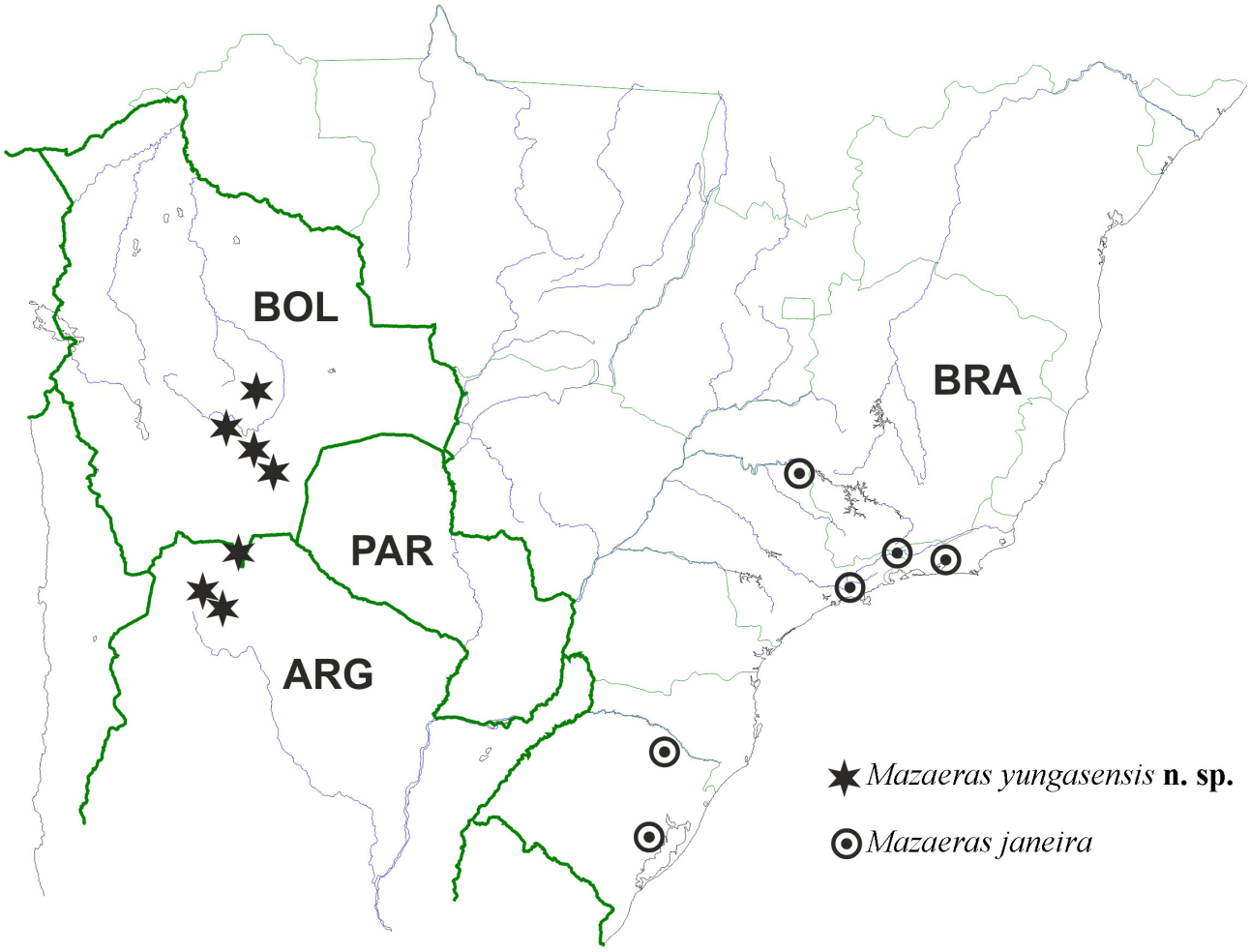



**FIGURE 11**. Distribution of examined specimens of *M. yungasensis* n. sp. and *M. janeira.*

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