A first approach to chalcid wasps (Hymenoptera, Chalcididae) of the entomological museum UNAB with new records for Colombia

Primera aproximación al conocimiento de las avispas calcídidas (Hymenoptera, Chalcididae) del Museo Entomológico UNAB con nuevos reportes para Colombia

Alba Lucía Pérez-Benavides[1] and Francisco Serna[1]*

ABSTRACT

The entomological museum of Universidad Nacional, Faculty of Agricultural Sciences, Bogota, (UNAB) Colombia, conserves several arthropod collections. These collections are considered of great interest to several agricultural and silvicultural production systems in the eastern Andes and the nearby Amazon region (Caqueta and Putumayo provinces) of the country. As a contribution to the knowledge of the diversity of parasitoid wasps associated to agroecosystems (cacao in agroforestry systems, mainly) of these geographical areas, the current research presents a first approach to the study of Chalcididae wasps at this museum. The curatorial status was organized, the represented genera identified, and the geographic occurrences in extension and altitude graphically represented. The Central Taxonomic Collection (CTC) is the main collection at UNAB. It contains 214 specimens of the family Chalcididae that correspond to the genera *Brachymeria, Conura, Dirhinus, Haltichella, Notaspidium, Stypiura, Ecuada,* and *Parastypiura*, with records from 17 provinces. The genera *Ecuada* and *Parastypiura,* as well as 11 species of *Conura,* are recorded for the country for the first time.

Key words: neotropics, taxonomy, geographic occurrence, agroecosystems, parasitoids.

RESUMEN

El museo entomológico de la Universidad Nacional Agronomía Bogotá (UNAB) en Colombia contiene colecciones de artrópodos de importancia en sistemas de producción agrícola y silvícola, provenientes en su mayoría de las regiones de los Andes orientales y la Amazonia cercana del país. Como aporte al conocimiento de la diversidad de avispas parasitoides asociadas a agroecosistemas (cacao en agroforestería, principalmente) de estas áreas geográficas, el presente trabajo presenta una primera aproximación al estudio de las avispas Chalcididae de este museo. Se organizó el estatus curatorial, los géneros representados fueron identificados, y las ocurrencias geográficas en extensión y altitud gráficamente representadas. La Colección Taxonómica Central (CTC) del museo UNAB cuenta con 214 especímenes de la familia, que corresponden a los géneros *Brachymeria, Conura, Dirhinus, Ecuada, Haltichella, Notaspidium, Parastypiura* y *Stypiura*, con registros para 17 departamentos. Los géneros *Ecuada* y *Parastypiura*, así como 11 especies de *Conura* se registran por primera vez para el país.

Palabras clave: neotrópico, taxonomía, ocurrencia geográfica, agroecosistemas, parasitoides.

Introduction

The family Chalcididae (Hymenoptera: Chalcidoidea) contains 1,469 described species including 90 genera (Noyes, 2017). The family is cosmopolitan in distribution, with a higher diversity found in Neotropical lowlands (Delvare and Boucek, 1992; Delvare, 1995), from where 23 genera and 472 species are known (Noyes, 2017). Colombia has five registered subfamilies, including Chalcidinae, Dirhininae, Epitraninae, Haltichellinae, and Smicromorphinae (Boucek, 1988; Delvare, 2004; Noyes, 2017).

Recent studies regarding diversity recognition of Chalcididae from Colombia were carried out under the "Colombia Biodiversa" project (NSF, 2006), cataloging a total of 54 species and nine (9) morphospecies belonging to the following 13 genera: *Aspirrhina, Brachymeria, Conura, Dirhinus, Halsteadium, Haltichella, Hockeria, Hontalia, Melanosmicra, Notaspidium, Psilochalcis, Stypiura,* and *Trigonura*. Likewise, several checklists of Chalcididae from the country have been compiled (Arias and Delvare, 2003; Arias, 2004; Delvare and Arias, 2005). Recently, Noyes (2017) made the Universal Chalcidoidea Database

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[1] Museo Entomológico UNAB, Sistemática de Insectos Agronomía, SIA, Facultad de Ciencias Agrarias, Universidad Nacional de Colombia, Bogotá (Colombia).
* Corresponding author: fjsernac@unal.edu.co

available online, reporting 64 species within nine genera from the country, including the genera *Ceyxia, Pilismicra* and *Zavoya*, which were not documented previously.

The entomological museum UNAB (Universidad Nacional Agronomia Bogota) started in 2001 (Vergara *et al*., 2008; Serna *et al*., 2017). This museum preserves several arthropod collections of interest to agriculture and forestry production systems mainly from the eastern Andes and nearby Amazon regions from Colombia. It contains approximately 180,000 specimens, including 153,000 pinned or point mounted, 10,430 slide-mounted, 18,400 larvae preserved in ethanol, and 96 Type specimens (Serna *et al*., 2017). The main objective of this study was to make a first approach to the status of the Chalcididae taxa represented in the UNAB entomological museum, depicting its geographical occurrence.

Materials and methods

Curatorial procedures followed the ones published by Borror *et al.* (1989) and the methodology used was the one established at UNAB by Vergara *et al.* (2008), Martínez and Serna (2015), Malagón-Aldana *et al.* (2017), and Pérez-Benavides *et al.* (2016, 2017). Specimens were point mounted, labeled with information regarding hosts and taxonomic identification, and incorporated into ward boxes with a green cardboard label containing the corresponding taxon name and a catalog number [UNAB #]. Specimen data were digitalized in Excel, including the taxonomy, ecology, and geographical information. Ward boxes containing the specimens were placed into Cornell drawers and compactor shelving cabinets at the Central Taxonomic Collection (CTC).

Morphological characters were studied using a NIKON SMZ-1 stereomicroscope. Photographs were taken with a Canon 5D Mk II camera with EF 100 mm f2.8, incorporating macro lenses, and extensor tubes. For the specimen identification, the taxonomic keys proposed by Burks (1960), Halstead (1990), Delvare (1992, 1992a), Boucek (1956, 1992), and Navarro-Tavares (2013) were used. Identifications were confirmed by reviewing diagnoses and descriptions on the abovementioned publications.

To represent geographical occurrences of the taxa identified, maps were constructed using QGIS (QGIS Development Team, 2015). Complementary data regarding elevations (m: meters above the sea level) were graphically represented. Abbreviations for several data categories recorded on labels are as follows: Fca., small farm; Hda., large farm; No. Catal., Catalog number; Vda., subdivision; Cgto., district; Qda., stream; Ins. Policía: a political division, similar to Cgto (Martínez and Serna, 2015).

Results and discussion

At the UNAB entomological museum, 214 specimens of Chalcididae were found and processed, in total eight genera were found: *Brachymeria, Conura, Dirhinus, Ecuada, Haltichella, Notaspidium, Parastypiura,* and *Stypiura* (Tab. 1).

TABLE 1. Chalcididae taxa represented in the CTC of the entomological museum of UNAB and number of specimens found per taxon.

TAXA	Number of specimens at the CTC in UNAB
CHALCIDINAE	**207**
Conura	178
Brachymeria	25
Stypiura	3
Parastypiura	1
HALTICHELLINAE	**8**
Dirhinus	2
Ecuada	1
Haltichella	3
Notaspidium	2

Geographic occurrence

Specimens of Chalcididae in the CTC at UNAB were collected mostly in the Southwestern and Central regions of Colombia. The results confirm that this family is found in 52 municipalities of the country, in the provinces of Amazonas, Antioquia, Arauca, Caldas, Caqueta, Casanare, Cesar, Cundinamarca, La Guajira, Meta, Nariño, Putumayo, Quindio, Risaralda, Santander, Tolima, and Valle del Cauca. The genus *Conura* (Figs. 1A and B) corresponds to the most widely distributed taxon and contains the largest number of specimens in the Chalcid collection.

Furthermore, genera records from each province are as follows: Cundinamarca: *Conura, Brachymeria,* and *Dirhinus* (Fig. 1A-D), Caqueta: *Conura, Brachymeria, Notaspidium, Haltichella,* and *Stypiura* (Fig. 1A-D), Caldas: *Ecuada* (Fig. 1D), and Antioquia: *Parastypiura* (Fig. 1D).

Altitude distribution

Chalcididae specimens were found in a gradient from 8 to 2,150 m a.s.l. (Fig. 2), with an average of 378 m a.s.l., agreeing with the records published by Delvare (1995), who attributed a higher distribution of this family in Neotropical lowland areas. *Conura* was collected from 8 to 1,949 m

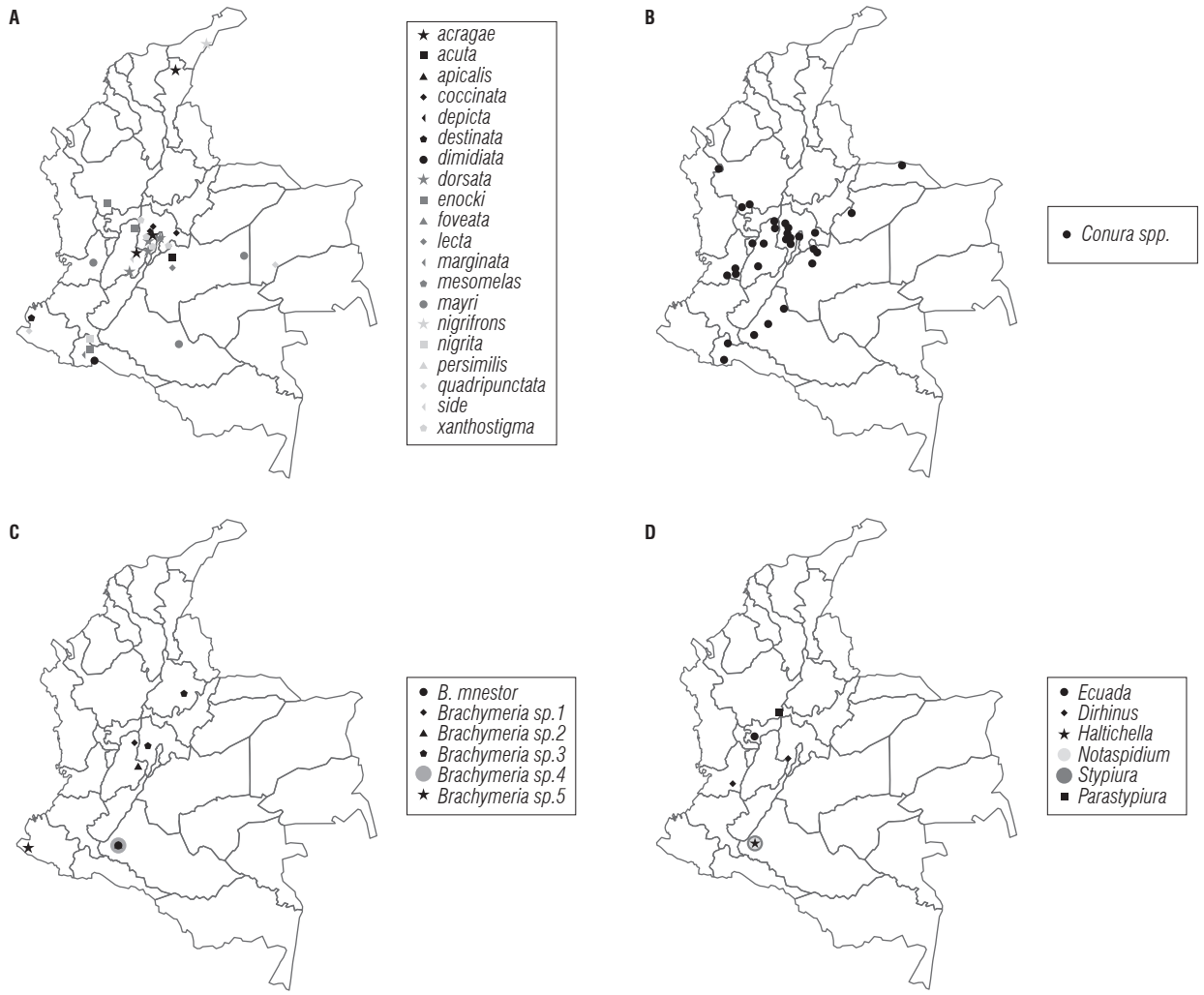

FIGURE 1. Geographic occurrence of Chalcididae in Colombia represented in the CTC of UNAB. A) species of *Conura*, B) morphospecies of *Conura*, C) species and morphospecies of *Brachymeria*, D) genera *Ecuada, Dirhinus, Haltichella, Notaspidium, Stypiura,* and *Parastypiura*.

a.s.l., with an average of 467 m a.s.l., and *Brachymeria* was found from 13 to 2,046 m a.s.l., with an average of 302 m a.s.l. These genera were more often collected in agroforestry areas. Further assessments showed that the genera *Dirhinus, Ecuada, Haltichella, Notaspidium, Parastypiura* and *Stypiura* were restricted to more specific elevations (Fig. 2), and specimens are not common in collections. *Ecuada* was found up to 2,150 m a.s.l., contrasting with the much narrower elevation range reported by Boucek (1992) from 400 up to 850 m a.s.l.

Worldwide, *Conura* and *Brachymeria* are the richest genera in terms of species described within the family, accounting for 303 and 313, respectively (Noyes, 2017). However, identification of species into these genera is difficult. In the literature, taxonomic identification keys are scarce and incomplete, and numerous current descriptions are in

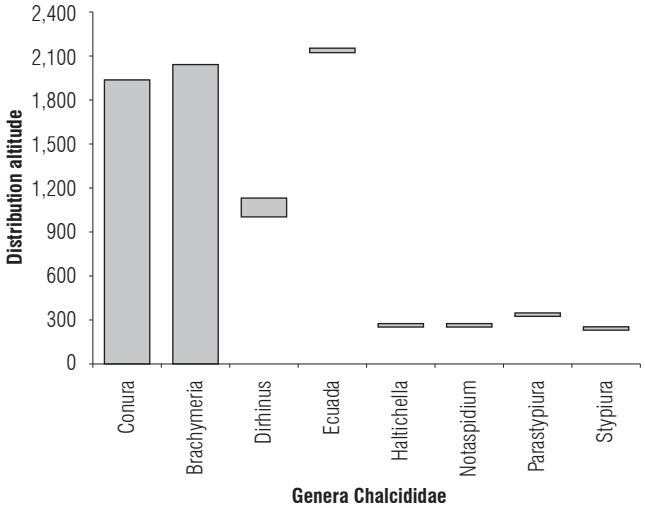

FIGURE 2. Elevation ranges (distribution altitude, m a.s.l.) of genera Chalcididae from Colombia represented in the CTC of UNAB.

need of taxonomic revisions. For the genus *Brachymeria*, Burks (1960) and Delvare (1992) offer identification keys for species commonly found in the Neotropical region.

Nonetheless, Delvare (1992) provided a key for the species groups of *Conura*, being currently the most comprehensive tool for species identification within this genus. This author recorded 75 species in the *Conura* genus for Colombia (the Noyes checklist 2017, and "the Insect Survey of a Megadiverse Country: Colombia" - National Science Foundation, NSF 2006), including *acragae, adela, aequalis, amoena, annulipes, apaiis, apicalis, ashmilis, attacta, belti, biannulata, bipunctata, blanda, camescens, carinata, compactilis, contributa convexa, correcta, cressoni, dares, debilis, decisa, delicata, depicta, desmieri, destinata, discolor, distincta, dorsimaculata, eubule, expleta, femorata, ferruginea, flava, flavicans, foveata, fulvovariegata, fusiformis, hirtifemora, immaculata, incongrua, lecta, lenkoi, lobata, maculata, maculipennis, magdelenensis, marcosensis, masus, media, miniata, morleyi, nigrifrons, nigrita, odontotae, oiketicusi, paya, philippia, pintoi, pseudofulvovariegata, pygmaea, quadrilineata, quadripunctata, rasplusi, rufoscutellaris, side, surumuae, toluca, transidiata, transitiva, tygen, unilineata, vau*, and *xanthostigma*.

Despite this wide survey, the results obtained from the UNAB survey increased the abovementioned checklist in 11 species, including *acuminata, acuta, albomaculata, coccinata, dimidiata, dorsata, enocki, mayri, mesomelas, marginata*, and *persimilis*, for a total list of 86 *Conura* species reported for Colombia.

Based on published checklists, Chalcids from Colombia comprise a total of 15 genera and 102 species (Fernández 1995; NSF 2006; Noyes 2017). However, in the UNAB entomological museum some specimens represent new records for Colombia. Among these, the genera *Ecuada* and *Parastypiura,* as well as records of 11 species of the genus *Conura,* updated the checklist of Chalcididae for Colombia to 17 genera and 115 species. Furthermore, regarding Chalcididae published-collections containing curated-voucher specimens (point mounted, labeled, identified, and cataloged), the central taxonomical collection of the UNAB entomological museum constitutes the largest Chalcididae collection in Colombia. Authors such as Fernández (1995), NSF (2006), and Noyes (2017) highlight that most Chalcididae specimens representing previously published inventories from Colombia have been deposited into collections outside the country. Hence, representative Colombian Chalcididae collections in the country are scarce, and, therefore, it is important to compile, update, and disseminate the information included in these collections.

The status of the Chalcididae subfamily deposited in the central taxonomic collection of the entomological museum of UNAB, including the number of specimens, geographical data in Colombia and new records for the country are listed below.

CHALCIDINAE

Conura Spinola, 1837

Conura acragae Delvare, 1993

Material examined: 4 specimens. **Caldas**, Belalcazar, Hda. Beltran, 900 m, 4°57' N, 75°47' W, 25-Sep-2010, J.M. Perilla [**UNAB** 3526]. **Tolima**, Espinal, 323 m, 4°9' N, 74°56' W, 9-Jun-1979, F. Riveros [**UNAB** 3526]. **Cundinamarca**, La Mesa, 1,298 m, 4°38'0.5" N, 74°27'57" W, 12-Sep-2003, C. Matiz [**UNAB** 3526]. **Cesar**, Valledupar, Fca. San Miguel, 169 m, 10°27' N, 73°15' W, 6-Apr-2012, G. Villamizar [**UNAB** 3526].

Conura acuminata (Ashmead, 1904)

Material examined: 1 specimen. **Meta**, Villavicencio, Universidad de los Llanos, 467 m, 4°04' N, 73°34' W, 20-Sep-2012, R. Tejedor [**UNAB** 1034].

Conura acuta (Fabricius, 1804)

Material examined: 2 specimens. **Tolima**, Carmen de Apicala, 328 m, 4°8' N, 74°43' W, 27-Jul-1994, A. Torres [**UNAB** 3528]. **Meta**, Guamal, 525 m, 3°52' N, 73°46' W, 29-Mar-1994, J.G. Ortiz [**UNAB** 3528].

Conura albomaculata (Ashmead, 1904)

Material examined: 1 specimen. **Caqueta**, San Vicente del Caguan, Vda. Palestro, Fca. El Limonar, 270 m, 2°7'11.40" N, 74°45'0.82" W, 30-Mar-2016, L. Pérez [**UNAB** 1865].

Conura apicalis (Ashmead, 1904)

Material examined: 2 specimens. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 20-Mar-2015, L. Pérez; J. Martínez [**UNAB** 1872]. **Cundinamarca**, Sasaima, 1,203 m, 4°57' N, 74°26' W, 28-Sep-1975, L.H. Ramirez [**UNAB** 1872].

Conura coccinata (Cresson, 1872)

Material examined: 4 specimens. **Cundinamarca**, La Vega, Laguna El Tabacal, 1,337 m, 5°1' N, 74°19' W, 12-Aug-2012, C. Sosa [**UNAB** 1035]. **Cundinamarca**, La Vega, Vda. El Vino, 1,230 m, 5°1' N, 74°20' W, 30-Sep-2011, J. Cante [**UNAB** 1035]. **Cundinamarca**, La Mesa, Vda. San Javier,

1,142 m, 4°40' N, 74°27' W, 1-Jun-1997, A. Alessandri [**UNAB** 1035]. **Cundinamarca**, Ubala, Vda. El Puerto, 1,949 m, 4°44' N, 73°32' W, 20-Jan-1998, M. García [**UNAB** 1035].

Conura decisa (Walker, 1862)

Material examined: 9 specimens. **Arauca**, Arauca, Caño Limon, 125 m, 7°5' N, 70°45' W, 12-Jun-1990, H. Urrego [**UNAB** 1886]. **Tolima**, Natagaima, 323 m, 3°37' N, 75°5' W, 1-May-1996, Moncaleano [**UNAB** 1886]. **Cundinamarca**, Ricaurte, 284 m, 4°16' N, 74° 46' W, 30-Sep-1972, M. Ospina [**UNAB** 1886]. **Cundinamarca**, Villeta, 829 m, 5°0'51" N, 74°28'33" W, 2-Jun-2014, A. Becerra [**UNAB** 1886]. **Meta**, Puerto Lopez, Fca. Hato grande, 184 m, 4°5› N, 72°57' W, 19-Oct-2012, J. Carrasco [**UNAB** 1886]. **Putumayo**, Villa Garzon, Vda. San Fidel, Fca. La Cuca, 362 m, 0°50'15" N, 76°38'5.9" W, 25-Mar-2015, D. Gómez [**UNAB** 1886]. **Putumayo**, Mocoa, Vda. Rumiyaco, Fca. Heraldo Vallejo, 700 m, 1°07'48.6" N, 76°39'55.8" W, 4-Mar-2016, L. Vargas [**UNAB** 1886]. **Putumayo**, Mocoa, Vda. Caliyaco, Tropical Amazonian Botanical Garden, 584 m, 1°7'6" N, 76°37'58" W, 18-Sep-2015, D. Jurado [**UNAB** 1886]. **Putumayo**, Villa Garzon, Vda. San Rafael, Fca. El Escondite, 317 m, 0°47'41.6" N, 76°35'82" W, 29-feb-2016, C. Mora [**UNAB** 1886].

Conura depicta (Walker, 1864)

Material examined: 1 specimen. **Nariño**, Tumaco, Vda. Cajapi, Km 30 via Tumaco-Pasto, UNAL, 10 m, 1°36'36.2" N, 78°43'12.8" W, 22-Sep-2015, L. Pérez [**UNAB** 1871].

Conura destinata (Walker, 1864)

Material examined: 1 specimen. **Nariño**, Francisco Pizarro, Salahonda, 8 m, 2°02'14" N, 78°39'30.56" W, 4-Mar-2016, E. Ortegón [**UNAB** 1887].

Conura dimidiata (Fabricius, 1804)

Material examined: 3 specimens. **Valle del Cauca**, Yotoco, Vda. Muñecos, Cgto. El Dorado, Fca. la Union, 1,522 m, 3°51' N, 76°26' W, 27-Nov-2013, S. Calderón [**UNAB** 1032]. **Putumayo**, Villa Garzon, Vda. San Rafael, Fca. El Escondite, 317 m, 0°47'42" N, 73°35'8" W, 19-Sep-2015, K. Rodriguez [**UNAB** 1032]. **Putumayo**, Puerto Asis, Vda. Brisas de Hong Kong, 270 m, 0°28'55.6" N, 76°30'17.7" W, 25-Mar-2015, S. Córdoba [**UNAB** 1032].

Conura dorsata (Cresson, 1872)

Material examined: 5 specimens. **Tolima**, Natagaima, Vda. Yaco, 349 m, 3°29' N, 75°10' W, 2-Jun-2014, J. Rojas [**UNAB** 1889]. **Tolima**, Melgar, Villa Sofia neighborhood, 349 m, 4°12' N, 74°37' W, 1-Mar-2014, O. Cristancho [**UNAB** 1889]. **Cundinamarca**, La Vega, 1,217 m, 4°38'9.87" N, 74°5'19.56" W, 11-May-2014, A. Gamba [**UNAB** 1889]. **Cundinamarca**, Anapoima, 716 m, 4°33' N, 74°32' W, 6-Jan-2014, E. Fernandez [**UNAB** 1889]. **Risaralda**, Santa Rosa de Cabal, Vda. El Guayabal, Fca. Yoyaricuma, 1,750 m, 4°87' N, 75°62' W, 10-May-2012, E. Quintero [**UNAB** 1889].

Conura enocki (Ashmead, 1904)

Material examined: 3 specimens. **Antioquia**, Tarso, Vda. Condor, Fca. Peña Bonita, 1,266 m, 5°52'1" N, 75°49'1" W, 23-Sep-2012, J. Perilla [**UNAB** 1866]. **Tolima**, Piedras, Hda. El Chaco, 426 m, 4°57' N, 74°53' W, 5-Oct-2012, L. Buitrago [**UNAB** 1866]**. Putumayo**, Villa Garzon, Vda. San Fidel, Fca. La Cuca, 352 m, 0°50'15" N, 76°38'5.9" W, 27-Mar-2015, S. García [**UNAB** 1866].

Conura foveata (Kirby, 1883)

Material examined: 1 specimen. **Tolima**, Melgar, 323 m, 4°12' N, 74°38' W, 9-Jul-1978, A. Sánchez [**UNAB** 1888].

Conura lecta (Cresson, 1872)

Material examined: 1 specimen. **Meta**, Granada, 345 m, 3°33'34" N, 73°42'21" W, 1-Nov-2015, D. Guevara [**UNAB** 3562].

Conura marginata (Ashmead, 1904)

Material examined: 1 specimen. **Putumayo**, Orito, Vda. El Yarumo, km 35, Fca. El Limonar, 325 m, 0°39'36.7" N, 76°47'24.1" W, 26-Mar-2015, S. García [**UNAB** 3527].

Conura mayri (Ashmead, 1904)

Material examined: 1 specimen. **Meta**, Puerto Gaitan, Fca. La Fazenda, 149 m, 3°50' N, 71°15' W, 28-May-2009, J. García; I. Quiroga [**UNAB** 1869].

Conura mesomelas (Walker, 1862)

Material examined: 1 specimen. **Putumayo**, Mocoa, Vda. Caliyaco, Jardin Botanico Tropical Amazonico, 584 m, 1°7'6" N, 76°37'58" W, 18-Sep-2015, A. Pantoja [**UNAB** 3465].

Conura nigrifrons (Cameron, 1884)

Material examined: 1 specimen. **La Guajira**, Maicao, 52 m, 11°22' N, 72°14' W, 4-Dec-1995, J. Vargas [**UNAB** 3558].

Conura persimilis (Ashmead, 1904)

Material examined: 1 specimen. **Tolima**, Natagaima, Vda. Yaco, 349 m, 3°29' N, 75°10' W, 2-Jun-2014, J. Rojas [**UNAB** 1867].

Conura nigrita (Howard, 1894)

Material examined: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 20-Mar-2015, L. Pérez [**UNAB** 3429].

Conura quadripunctata (Fabricius, 1804)

Material examined: 3 specimens. **Nariño**, Tumaco, Vda. Cajapi, Km 30 vía Tumaco-Pasto, UNAL, 10 m, 1°36›36.2" N, 78°43'12.8" W, 22-Sep-2015, L. Pérez [**UNAB** 1868]. **Cundinamarca**, Fusagasuga, 1,728 m, 4°20' N, 74°21' W, 20-Apr-2000, J. Otálora [**UNAB** 1868]. **Amazonas**, Leticia, Parque Nacional Natural Amacayacu (Amacayacu Natural National Park), 100 m, 3°29' N, 70°12' W, 12-Jun-1995, F. Fernández [**UNAB** 1868].

Conura side (Walker, 1843)

Material examined: 1 specimen. **Tolima**, Saldaña, Vda. Santa Marta, Qda. Papayal, 410 m, 3°56' N, 75°1' W, 4-Apr-2002, J. Martínez [**UNAB** 1870].

Conura xanthostigma (Dalman, 1820)

Material examined: 9 specimens. **Cundinamarca**, La Mesa, 1,198 m, 4°9' N, 72°60' W, 11-Nov-2012, L. Zubieta [**UNAB** 1037]. **Cundinamarca**, Puente Quetame, 1,361 m, 4°18' N, 73°51' W, 24-Nov-2012, L. Guerrero [**UNAB** 1037]. **Cundinamarca**, Sasaima, Vda. Santa Ana, 1,376 m, 4°55' N, 74°26' W, 17-May-2014, T. Cárdenas [**UNAB** 1037]. **Cundinamarca**, Anolaima, 1,657 m, 4°46' N, 74°28' W, 2-Nov-2012, D. Ramírez [**UNAB** 1037]. **Cundinamarca**, Tibacuy, Vda. La Vuelta, 1,600 m, 4°20' N, 74°27' W, 1-May-2010, R. Forero [**UNAB** 1037]. **Cundinamarca**, Cachipay, Laguna Verde, 1,600 m, 4°743' N, 74°26' W, 21-Feb-1998, V. Bernal; K. Turriago [**UNAB** 1037]. **Cundinamarca**, Quipile, Vda. El Retiro, 1,400 m, 4°39' N, 74°35' W, 14-Jun-2015, S. García [**UNAB** 1037]. **Tolima**, Honda, 214 m, 5°12'11" N, 74°44'17" W, 27-Mar-2010, D. Salinas [**UNAB** 1037]. **Valle del Cauca**, Yotoco, Vda. Muñecos, Cgto. El Dorado, Fca. La unión, 1,522 m, 3°50'49.84" N, 76°26'24.5" W, 27-Nov-2013, L. Pérez [**UNAB** 1037].

***Conura* spp.**

***Conura* sp.1**: 14 specimens. **Cundinamarca**, El Colegio, Margen occidental del rio Cauca (west margin of the Cauca river), 990 m, 4°35' N, 74°27' W, 1-Sep-2012, F. Ariza [**UNAB** 1033]. **Cundinamarca**, Silvania, 1,470 m, 4°24' N, 74°23' W, 15-Mar-1997, C. R. Bojacá [**UNAB** 1033]. **Cundinamarca**, La Mesa, 1,200 m, 4°37'49" N, 74°27'45" W, 30-Apr-2011, D. López [**UNAB** 1033]. **Antioquia**, Puente Iglesias, 569 m, 5°49' N, 75°42' W, 14-Apr-2012, J. Ordoñez [**UNAB** 1033]. **Antioquia**, Betania, 1,550 m, 5°44' N, 75°58' W, 10-Jan-1994, A. Avella [**UNAB** 1033]. **Arauca**, Arauca, Caño Limon, 125 m, 7°5' N, 70°45' W, 12-Jun-1990, Y. Urrego [**UNAB** 1033]. **Caqueta**, Florencia, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 12-Sep-2014, L. Pérez [**UNAB** 1033]. **Meta**, Villavicencio, Universidad de los Llanos (Unillanos), 467 m, 4°9'12" N, 73°38'06" W, 11-May-2011, A. Romero [**UNAB** 1033]. **Putumayo**, Mocoa, Vda. Rumiyaco, Fca. Heraldo Vallejo, 700 m, 1°07'48.6" N, 76°39'55.8" W, 4-Mar-2016, M. Vanegas [**UNAB** 1033]. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 700 m, 1°11'28.1" N, 76°38'48" W, 20-Mar-2015, L. Pérez [**UNAB** 1033]. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 700 m, 1°11'28.1" N, 76°38'48" W, 28-Feb-2016, L. Riveros [**UNAB** 1033]. **Putumayo**, Orito, Vda. El Yarumo, km 35, Fca. El Limonar, 325 m, 0°39'36.7" N, 76°47'24.1" W, 26-Mar-2015, J. Martínez [**UNAB** 1033]. **Quindío**, Armenia, 1,900 m, 4°32' N, 75°40' W, 18-Oct-2001, A. Sarmiento [**UNAB** 1033]. ***Conura* sp.2**: 4 specimens. **Meta**, Villavicencio, 467 m, 4°15' N, 73°64' W, 17-Oct-2012, L. Zubieta [**UNAB** 1036]. **Cundinamarca**, San Juan de Rioseco, La Mesita, 1,303 m, 4°37' N, 74°21' W, 24-May-2012, C. Pinilla [**UNAB** 1036]. **Cundinamarca**, Guaduas, 992 m, 5°4' N, 74°34' W, 14-Oct-2012, A. Gámez [**UNAB** 1036]. **Caqueta**, Florencia, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 12-Sep-2014, L. Perez [**UNAB** 1036]. ***Conura* sp.3**: 1 specimen. **Meta**, Villavicencio, Ins. Policia La Cuncia, 1,420 m, 4°04' N, 73°32' W, 19-Sep-2012, N. Tejedor [**UNAB** 1038]. ***Conura* sp.4**: 1 specimen. **Antioquia**, Puente Iglesias, west margin of the Cauca river, 569 m, 5°49' N, 75°42' W, 13-Mar-2012, C. Pinilla [**UNAB** 1039]. ***Conura* sp.5**: Material examined: 1 specimen. **Cundinamarca**, Anapoima, 710 m, 4°33' N, 74°32' W, 4-Mar-2012, C. Pinilla [**UNAB** 1040]. ***Conura* sp.6**: 1 specimen. **Santander**, Puente Nacional Nogales, 331 m, 4°57' N, 74°54' W, 12-Oct-2012, S. Dussán [**UNAB** 1349]. ***Conura* sp.7**: 2 specimens. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 1350]. ***Conura* sp.8**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 1351]. ***Conura* sp.9**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 257 m, 1°30'37' N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 1352]. ***Conura* sp.10**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 1353]. ***Conura* sp.11**: 1 specimen. **Caqueta**, El Doncello, Vda. Anayacito, Granja Copoazu, 337 m, 1°40'2.33" N, 75°16'57" W, 1-Sep-2014, F. Serna [**UNAB** 1354]. ***Conura* sp.12**: 1 specimen. **Meta**, Villavicencio, 467 m, 4°15' N, 73°64' W, 17-Oct-2012, L. Zubieta [**UNAB** 3530]. ***Conura* sp.13**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37' N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 3531]. ***Conura* sp.14**: Material examined: 5 specimens. **Caqueta**, Florencia, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W,

12-Sep-2014, L. Pérez [**UNAB** 3532]. ***Conura* sp.15**: 1 specimen. **Caqueta**, El Doncello, Vda. Anayacito, Granja Copoazu, 337 m, 1°40'2.33" N, 75°16'57" W, 22-Sep-2014, M. Bermúdez [**UNAB** 3533]. ***Conura* sp.16**: 9 specimens. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Mar-2016, L. Pérez [**UNAB** 3534]. Endoparasitoid on Pieridae chrysalid on plants of *Duranta* sp. (Verbenaceae). ***Conura* sp.17**: 1 specimen. **Putumayo**, Mocoa, Vda. Rumiyaco, Fca. Heraldo Vallejo, 700 m, 1°07'48.6" N, 76°39'55.8" W, 4-Mar-2016, D. Cárdenas [**UNAB** 3535]. ***Conura* sp.18**: 2 specimens. **Putumayo**, Orito, Vda. El Yarumo km 35, Fca. El Limonar, 325 m, 0°39'36.7" N, 76°47'24.1" W, 26-Mar-2015, J. Martínez [**UNAB** 3536]. ***Conura* sp.19**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 12-Sep-2014, M. Bermúdez [**UNAB** 3537]. ***Conura* sp.20**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 20-Mar-2015, L. Pérez [**UNAB** 3538]. ***Conura* sp.21**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 22-Mar-2015, L. Pérez [**UNAB** 3539]. ***Conura* sp.22**: 1 specimen. **Putumayo**, Mocoa, Vda. Caliyaco, Tropical Amazonian Botanical Garden, 584 m., 1°7'6" N, 76°37'58.7" W, 18-Sep-2015, A. Pantoja [**UNAB** 3540]. ***Conura* sp.23**: 1 specimen. **Caqueta**, San Vicente del Caguan, Vda. Palestro, Fca. El Limonar, 270 m, 2°7'11.40" N, 74°45'0.82" W, 20-Mar-2016, L. Pérez [**UNAB** 3541]. ***Conura* sp.24**: 1 specimen. **Putumayo**, Orito, Vda. El Yarumo, km 35, Fca. El Limonar, 325 m, 0°39'36.7" N, 76°47'24.1" W, 26-Mar-2015, N. Pérez [**UNAB** 3542]. ***Conura* sp.25**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 22-Mar-2015, L. Pérez [**UNAB** 3543]. ***Conura* sp.26**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 22-Mar-2015, L. Pérez [**UNAB** 3544]. ***Conura* sp.27**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 13-Oct-2014, M. Bermúdez [**UNAB** 3545]. ***Conura* sp.28**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 21-Mar-2015, J. Martínez [**UNAB** 3546]. ***Conura* sp.29**: 1 specimen. **Amazonas**, Leticia, Km 22, via Tarapacá, 82 m, 4°07'12" N, 69°56'26" W, 18-Aug-1997, D. Campos [**UNAB** 3547]. ***Conura* sp.30**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 620 m, 1°11'28.1" N, 76°38'48.3" W, 18-Sep-2015, J. Jiménez [**UNAB** 3548]. ***Conura* sp.31**: 1 specimen. **Putumayo**, Mocoa, Vda. Pueblo Viejo, Fca. Villa Loca, 352 m, 1°11'28.1" N, 76°38'48.3" W, 20-Mar-2015, L. Pérez [**UNAB** 3549]. ***Conura* sp.32**: 1 specimen. **Casanare**, Yopal, Utopia campus, Universidad de La Salle, 249 m, 5°19'33.4" N, 72°17'47.4" W, 7-Aug-2015, H. Córdoba [**UNAB** 3550]. ***Conura* sp.33**: 4 specimens. **Cundinamarca**, Villeta, 801 m, 5°00'11.9" N, 74°28'41.6" W, 16-May-2010, M. Pineda [**UNAB** 3551]. **Cundinamarca**, Villeta, 850 m, 5°00' N, 74°28' W, 5-May-1991, C. Navia [**UNAB** 3551]. **Cundinamarca**, Mesitas, Vda. San Jose, 983 m, 4°35'14" N, 74°26'58" W, 4-Dec-2004, S. Cubillos [**UNAB** 3551]. **Tolima**, Ibague, El Rodeo, 1,250 m, 4°28' N, 75°18' W, 8-May-2004, O. Guataquira [**UNAB** 3551]. ***Conura* sp.34**: 3 specimens. **Valle del Cauca**, Santiago de Cali, 995 m, 3°26' N, 76°31' W, 1-Apr-1971, G. Cayón [**UNAB** 3553]. **Valle del Cauca**, El Cerrito, Semillas del Valle S.A, 987 m, 3°41'1" N, 76°19'30" W, 14-Oct-2003, E. Ortiz [**UNAB** 3553]. **Tolima**, Chaparral, Barrio Beltran (Beltran neighborhood), Granja Sixto Iriarte (Sixto Iriarte Farm), 854 m, 3°43'39" N, 75°29'16" W, 27-Aug-2003, A. Diaz [**UNAB** 3553]. ***Conura* sp.35**: 1 specimen. **Meta**, San Martin, Fca. El Caduceo, 405 m, 3°41'1" N, 73°41' W, 5-Jun-2012, J. Rodriguez [**UNAB** 3554]. ***Conura* sp.36**: 1 specimen. **Tolima**, Mariquita, Cataratas del rio Medina (Medina river waterfalls), 495 m, 5°11' N, 74°53' W, 16-Nov-1999, Lic. Biologia (Biology bachelor) [**UNAB** 3555]. ***Conura* sp.37**: 2 specimens. **Tolima**, Ibague, Vda. La Esperanza, 1,000 m, 4°28' N, 75°18' W, 18-Nov-2003, O. Guataquira [**UNAB** 3556]. **Antioquia**, Puente Iglesias, Margen occidental del rio Cauca (west margin of the Cauca river), 569 m, 5°49'54" N, 75°42'37" W, 13-Apr-2012, O. Ortiz [**UNAB** 3556]. ***Conura* sp.38**: *Conura* sp.38, 1 specimen. **Cundinamarca**, Ubala, Vda. El Puerto, 1,949 m, 4°44' N, 73°32' W, 20-Jan-1998, M. García [**UNAB** 3557]. ***Conura* sp.39**: 1 specimen. **Amazonas**, Leticia, Km 22 via Tarapaca, 82 m, 4°07'12" N, 69°56'26" W, 18-Aug-1997, D. Campos [**UNAB** 3559]. ***Conura* sp.40**: 2 specimens. **Cundinamarca**, Mesitas, Vda. San Jose, 983 m, 4°35'14" N, 74°26'58" W, 4-Dec-2004, S. Cubillos [**UNAB** 3560]. **Cundinamarca**, Anolaima, 1,607 m, 4°46'00" N, 74°28'00" W, 23-Mar-2011, A. Silva [**UNAB** 3560]. ***Conura* sp.41**: 1 specimen. **Antioquia**, Dabeiba, Bomba "Terpel" ("Terpel" fuel station), 395 m, 7°00' N, 76°39' W, 29-Mar-2014, J. Velásquez [**UNAB** 3561]. ***Conura* sp.42**: 5 specimens. **Valle del Cauca**, Palmira, Instituto Colombiano Agropecuario (ICA) (Colombian Agriculture Institute), 1,001 m, 3°32' N, 76°17' W, 12-Jun-1905, L. Nuñez [**UNAB** 3563]. **Valle del Cauca**, Santiago de Cali, zoologico de Cali (Cali zoo), 1,035 m, 3°26' N, 76°33' W, 27-Oct-2014, W. Hernández [**UNAB** 3563]. **Cundinamarca**, La Vega, 1,217 m, 4°38' N, 74°5'19.56" W, 11-May-2014, A. Gamba [**UNAB** 3563]. **Cundinamarca**, Anapoima, 710 m, 4°33' N, 74°32' W, 10-Nov-2012, F. Ariza [**UNAB** 3563].

Cundinamarca, Sasaima, 1,376 m, 4°55' N, 74°26' W, 23-Oct-1990, Rodríguez [**UNAB** 3563].

Brachymeria mnestor (Walker, 1841)

Material examined: 2 specimens. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Mar-2016, L. Pérez [**UNAB** 3525].

Comments from the authors: several Pieridae chrysalids in *Duranta* sp. (Verbenaceae) plants were collected and then placed into breeding chambers. From these, a single parasitoid of *B. mnestor* emerged from each of the two chrysalids.

Brachymeria spp.

***Brachymeria* sp.1**: 6 specimens. **Santander**, Puente Nacional, Nogales, 331 m, 4°57' N, 74°54' W, 12-Oct-2012, S. Dussán [**UNAB** 1041]. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 257 m, 1°29'59" N, 75°39'47" W, 25-Nov-2014, C. Motta [**UNAB** 1041]. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 1041]. ***Brachymeria* sp.2**: 7 specimens. **Tolima**, Espinal, Corpoica Nataima, 420 m, 4°9' N, 74°53' W, 23-Apr-2012, M. Cárdenas [**UNAB** 1345]. **Caqueta**, Florencia, Macagual Amazonian Research Center, 274 m., 1°29'58.70" N, 75°39'46.44" W, 12-Sep-2014, L. Perez [**UNAB** 1345]. **Caqueta**, El Doncello, Vda. Anayacito, 337 m, 1°40'2.33" N, 75°16'57" W, Sep-2014, F. Serna [**UNAB** 1345]. ***Brachymeria* sp.3**: 8 specimens. **Cundinamarca**, Anolaima, Vda. San Rafael, 2,046 m, 4°49' N, 74°26' W, 13-Sep-2012, J. Rivera [**UNAB** 1346]. **Santander**, San Gil, 1,117 m, 6°33' N, 73°8' W, 3-Oct-2012, D. Ramírez [**UNAB** 1346]. ***Brachymeria* sp.4**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75° 39'46.44" W, 12-Sep-2014, L. Pérez [**UNAB** 1348]. ***Brachymeria* sp.5**: 1 specimen. **Nariño**, Tumaco, Vda. Cajapi, Km 30, via Tumaco-Pasto, 13 m, 1°36'36.2" N, 78°43'12.8" W, 22-Sep-2015, L. Pérez [**UNAB** 1817].

Stypiura sp.

Material examined: 3 specimens. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 233 m, 1°30'37" N, 75°40'21" W, 25-Oct-2014, M. Bermúdez [**UNAB** 1356]. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m., N 1°29'58.7", W 75°39›46.44", 2-Sep-2016, L. Pérez [**UNAB** 1356].

Parastypiura sp. (Figs. 3A and B)

Material examined: 1 specimen. **Antioquia**, Puerto Triunfo, Reserva Natural cañon del Rio Claro (Natural Reserve of the Claro River Canyon), 350 m, 5°52' N, 74°38' W, 1-Jun-1985, R. Vélez [**UNAB** 1823].

Comment by the authors: this is the first record of the genus for Colombia.

FIGURE 3. Specimen of the genus *Parastypiura* from the CTC of the UNAB entomological museum: A) lateral view, B) dorsal view.

FIGURE 4. Specimen of the *Ecuada producta* from the CTC of the UNAB entomological museum: A) lateral view, B) dorsal view, C) frontal view.

HALTICHELLINAE

Dirhinus sp.

Material examined: 1 specimen. **Cundinamarca**, Arbelaez, Vda. Hato Viejo, Fca. Parcela, 1,140 m, 4°50'1.5" N -74°27'38.2" W, 22-Mar-2016, D. Cubillos [**UNAB** 3552].

Dirhinus (*Dirhinus*) sp.

Material examined: 1 specimen. **Valle del Cauca**, Palmira, Corpoica, Banco de Germoplasma (Germplasm Bank), 1,003 m, 3°31'47" N, 76°18'13" W, 15-Oct-2003, E. Ortiz [**UNAB** 1824].

Ecuada producta Boucek, 1992 (Figs. 4A-C)

Material examined: 1 specimen. **Caldas**, Manizales, Jardin Botanico (Botanical Garden of Manizales), 2,150 m, 5°6'15" N, 75°33'10" W, 29-Mar-2010, D. Salinas [**UNAB** 3529].

Comment by the authors: this is the first record of the genus for Colombia.

Haltichella ornaticornis Cameron, 1884

Material examined: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 2-Sep-2016, L. Pérez [**UNAB** 2530].

Haltichella spp.

***Haltichella* sp.1**: Material examined: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 2-Sep-2016, L. Pérez [**UNAB** 2531]. ***Haltichella* sp.2**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 2-Sep-2016, L. Pérez [**UNAB** 2532]. ***Haltichella* sp.3**: 1 specimen. **Caqueta**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 13-Sep-2014, L. Pérez [**UNAB** 1190].

Notaspidium sp.

Material examined: 1 specimen. **Caquetá**, Florencia, Vda. La Viciosa, Macagual Amazonian Research Center, 274 m, 1°29'58.70" N, 75°39'46.44" W, 13-Sep-2014, L. Pérez [**UNAB** 1189].

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