Jimmy Jair Cabra García

Revisão e análise filogenética do gênero
Glenognatha Simon, 1887 (Araneae,
Tetragnathidae)

Revision and phylogenetic analysis of the
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(Araneae, Tetragnathidae)

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Dissertação apresentada ao Instituto
de Biociências da Universidade de
São Paulo, para a obtenção de Título
de Mestre em Ciências Biológicas,
na Área de Zoologia.

Orientador(a): Antonio D. Brescovit

São Paulo

2013

Ficha Catalográfica

Cabra García, Jimmy Jair

Revisão e análise filogenética do
gênero *Glenognatha* Simon, 1887
(Araneae, Tetragnathidae).
400p.

Dissertação (Mestrado) - Instituto de
Biociências da Universidade de São Paulo.
Departamento de Zoologia.

1. Aranhas 2. Taxonomia 3.
Sistemática I. Universidade de São Paulo.
Instituto de Biociências. Departamento de
Zoologia.

Comissão Julgadora:

Prof. Dr.

Prof. Dr.

Prof. Dr. Antonio D. Brescovit

Orientador

DISCLAIMER

New taxon names and nomenclatural changes referred to this dissertation are disclaimed and unavailable for nomenclatural purposes (ICZN Art. 8.3)

*To my parents, Jaime and Patricia†,
my aunt Fanny, my grandmother Mery,
my brothers Alex and Jhon, Alexandra
and my beloved Viviana
for their unconditional love and support.*

Acknowledgments

First, I would like to express my immense gratitude to Dr. Antonio D. Brescovit for his advice, patience, support and encouragement since the first time I contacted him.

I am grateful to my lab mates Yuji Lemos, André Marsola Giroti, João L. Chavari, Victor Passanha, Hector Gonzalez-Filho, Amanda Coronato, Rafael Prezzi Indicatti and Alexander Sánchez-Ruiz for the many rich discussions on systematics and morphology, and for their valuable friendship and support. Special thanks to Yuji and André for his generosity and intelligent advice and to João for his spontaneity and continuous encouragement.

I am specially thankful to Dr. Gustavo Hormiga for receiving me at the George Washington University and sharing with me ideas, advice, literature and encouragement. Thanks to Ligia Benavides, Jesus Ballesteros, Thiago Moreira, Daniela Andriamalala and Bob Kallal for their patient and help at Hormiga Lab. I deeply thank Ligia for hosting me in Washington and for her help and support.

I am sincerely grateful to Dr. Fernando Álvarez-Padilla and Dr. Dimitar Dimitrov for discussion on *Glenognatha* characters and encouragement. Dr. Dimitrov also kindly share unpublished SEM images of his own research. Special thanks go to Dr. Martin Ramírez, Cristian Grismado and Matías Izquierdo for sharing with me ideas and morphology knowledge in my visit to Argentina. I deeply thank Lina Almeida for her advice in the SEM mounting techniques and Dra. Cristina A. Rheims for her advice in drawing techniques. Thanks to Flávio Yamamoto and Rafael Prezzi Indicatti for sharing their excellent *Glenognatha* photographs.

I would like to give special thanks to Nancy Lo Man Hung and David Candiani for hosting me in my visit to Porto Alegre and for their help and support. I am sincerely grateful to Cristiano Sampaio and Tarciana Barbosa for their friendship and support.

I also would like to thank the following curators, staff and museums for the loan of specimens: N. I. Platnick (AMNH), C. Griswold (CAS), F. Zhang (HU), D. Battesti

(IBSP), E. Flórez (ICN), C. L. Scioscia, M. Ramírez, C. Grismado and M. Izquierdo (MACN), E. H. Buckup, Maria Aparecida Marques and R. Ott (MCN), A. A. Lise (MCTP), L. Leibensperger and G. Giribet (MCZ), C. Rollard (MNHN), A. B. Kury and Carla Barros (MNRJ), A. B. Bonaldo (MPEG), R. Jocqué (MRAC), D. Silva (MUSM), R. Pinto da Rocha (MZSP), L. Baert (RBINS), L. Q. Matias (UFCE), A. Santos (UFMG), J. Coddington and Dana DeRoche (USNM) and J. Dunlop (ZMB).

Special thanks to J. Mendez and D. Rodríguez for their valuable help during fieldwork. I also would like to thank Jairo Moreno and Nicolas Hazzi for providing fresh material and natural history data.

I am grateful to my friends in Colombia Julian, Javier, Leonel, Carim, Maria, Luz Angela and Laura for their unconditional support and friendship.

Finally, I am immensely grateful to my father, aunt, grandmother, brothers and Alexandra for their unconditional love, confidence, support and encouragement. I could not have ended this dissertation without them. Also, I specially would like to thank Viviana for her infinite love, her patience and constant support.

Funding for this research have been provided by a FAPESP magister grant (processo No. 2011/14253-2), a FAPESP-BEPE grant (processo No. 2012/16412-3), a FAPESP thematic-project grant (processo No. 2011/50689-0) and an Ernst Mayr travel grant (Museum of Comparative Zoology, Harvard University).

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1. ABSTRACT

A taxonomic revision and phylogenetic analysis of the spider genus *Glenognatha* Simon, 1887 is presented. The analysis is based on a data set including 24 *Glenognatha* species plus eight outgroup representatives of three additional tetragnathine genera and one metaine, scored for 82 morphological characters. Eight unambiguous synapomorphies support the monophyly of *Glenognatha*, all free of homoplasy. Some internal clades within the genus are well-supported and its relationships are discussed. The genus *Glenognatha* has a broad distribution occupying the Nearctic, Neotropic, Afrotropic, Indo-Malaya and Oceania ecozones. As revised here, *Glenognatha* comprises 27 species, four of them only known from males. New morphological data are provided for the description of thirteen previously described species. Eleven species are newly described: *G. sp. nov. 1*, *G. sp. nov. 3*, *G. sp. nov. 4* and *G. sp. nov. 7* from southeast Brazil, *G. sp. nov. 6*, *G. sp. nov. 9* and *G. sp. nov. 10* from the Amazonian region, *G. sp. nov. 2*, *G. sp. nov. 5* and *G. sp. nov. 8* from northern Andes and *G. sp. nov. 11* from central Mexico and Southern United States. Females of *G. minuta* Banks, 1898, *G. gaujoni* Simon, 1895 and *G. glorieae* (Petrunkévitch, 1930) and males of *G. globosa* (Petrunkévitch, 1925) and *G. hirsutissima* (Berland, 1935) are described for the first time. Three new combinations are proposed in congruence with the phylogenetic results: *G. argyrostilba* (O. P.-Cambridge, 1876), *G. dentata* (Zhu & Wen, 1978) and *G. tangi* (Zhu, Song & Zhang, 2003), all previously included in *Dyschiriognatha*. The following taxa are newly synonymized: *Dyschiriognatha montana* Simon, 1897, *Glenognatha mira* Bryant, 1945 and *Glenognatha maelfaiti* Baert, 1987 with *Glenognatha argyrostilba* (O. P.-Cambridge, 1876) and *Glenognatha centralis* Chamberlin, 1925 with *Glenognatha minuta* Banks, 1898. A key to species of *Glenognatha* and distribution maps are provided.

2. RESUMO

A revisão taxonômica e análise cladística do gênero *Glenognatha* Simon, 1887 é apresentada. A análise é baseada em uma matriz que inclui 24 espécies de *Glenognatha*, oito representantes do grupo externo, incluindo três gêneros da subfamília Tetragnathinae e um de Metainae, e 82 caracteres morfológicos. Oito sinapomorfias não ambíguas sustentam a monofilia de *Glenognatha*, todas não homoplásticas. Alguns clados internos dentro do gênero são bem suportados e suas relações são discutidas. O gênero *Glenognatha* apresenta uma ampla distribuição ocupando as regiões Neártica, Neotropical, Afrotropical, Indo-Malaya, Australasia e Oceania. Vinte e sete espécies de *Glenognatha* são reconhecidas, quatro delas somente conhecidas por machos. Novos dados morfológicos são fornecidos para a descrição de treze espécies previamente conhecidas. Onze espécies novas são descritas: *G. sp. nov. 1*, *G. sp. nov. 3*, *G. sp. nov. 4* e *G. sp. nov. 7* do sudeste do Brasil, *G. sp. nov. 6*, *G. sp. nov. 9* e *G. sp. nov. 10* da região Amazônica, *G. sp. nov. 2*, *G. sp. nov. 5* e *G. sp. nov. 8* do norte da cordilheira dos Andes e *G. sp. nov. 11* da região central do México e sul dos Estados Unidos. As fêmeas de *G. minuta* Banks, 1898, *G. gaujoni* Simon, 1895 e *G. glorieae* (Petrunkévitch, 1930) e os machos de *G. globosa* (Petrunkévitch, 1925) e *G. hirsutissima* (Berland, 1935) são descritos por primeira vez. São propostas três novas combinações em congruência com os resultados da análise cladística: *Glenognatha argyrostilba* (O. P.-Cambridge, 1876), *Glenognatha dentata* (Zhu & Wen, 1978) e *Glenognatha tangi* (Zhu, Song & Zhang, 2003), todas previamente incluídas no gênero *Dyschiriognatha*. Quatro sinonímias são propostas: *Dyschiriognatha montana* Simon, 1897, *Glenognatha mira* Bryant, 1945 e *Glenognatha maelfaiti* Baert, 1987 com *Glenognatha argyrostilba* (O. P.-Cambridge, 1876) e *Glenognatha centralis* Chamberlin, 1925 com *Glenognatha minuta* Banks, 1898. É apresentada uma chave para a identificação e mapas de distribuição para as espécies.

3. INTRODUCTION

3.1 Tetragnathidae

The orb-weaving spider family Tetragnathidae currently includes 47 genera and 947 species (Platnick, 2013). This family is particularly diverse in the Neotropical region which has 47% of the described genera. Most members of the family build horizontal orbicular webs on vegetation adjacent to rivers or streams (Levi, 2005), yet the group presents great morphological and ethological diversity (Levi, 1980; Eberhard, 1982; Hormiga *et al.*, 1995; Álvarez-Padilla *et al.*, 2009). Although tetragnathids have received increasing attention from systematic biologists in the last ten years, there is still great gaps of knowledge concerning the real richness of the family; probably only half or fewer of the species of Tetragnathidae have been described, as is the case in many other spider families (Alvarez-Padilla & Hormiga, 2011).

Recent phylogenetic analyzes (Álvarez-Padilla, 2007; Dimitrov & Hormiga, 2009, Álvarez-Padilla *et al.*, 2009; Alvarez-Padilla & Hormiga, 2011; Dimitrov & Hormiga, 2011), support the monophyly of Tetragnathidae by the following synapomorphies: copulatory duct length less than half of the spermathecae length, femora IV mesal surface without basal macrosetae, male palpal patella with one macrosetae, male palpal tibia length approximately two times the widest point of the tibia, piriform gland spigot bases separated from the spigot shaft leaving a torus, tegulum oval to spherical and cymbial tarsal organ larger than the bases of surrounding macrosetae.

Based mainly on genitalia characters tetragnathids can be divided into four subfamilies: Tetragnathinae, Leucauginae, Metainae and Nanometinae (Álvarez-Padilla *et al.*, 2009; Álvarez-Padilla & Hormiga, 2011). The taxonomic composition of these subfamilies (except Metainae) has been rather stable in phylogenetic analysis regardless of data partitions and analytical approaches (Álvarez-Padilla & Hormiga, 2011). The subfamily Tetragnathinae which includes the genera *Antillognatha* Bryant, 1945; *Cyrtognatha* Keyserling, 1881; *Doryonychus* Simon, 1900; *Dyschiriognatha* Simon, 1893; *Glenognatha* Simon, 1887; *Hispanognatha* Bryant, 1945; *Tetragnatha* Latreille, 1804 and *Pachygnatha* Sundevall, 1823, is particularly interesting among tetragnathids due to the evolution of a secondary haplogyne condition, in which fertilization ducts

have been lost and there has been an overall simplification of female genitalia (Dimitrov *et al.*, 2007).

Taxonomic revisions of tetragnathid genera with species distributed in the Neotropical region are scarce. In the case of Tetragnathinae, the only current revision of a group distributed in the Neotropics, was made by Dimitrov & Hormiga (2009) for the genus *Cyrtognatha*. These authors established eight new combinations, described 11 new species and proposed *Agriognatha* O. P. Cambridge, 1896 as a junior synonym of *Cyrtognatha*. In addition, the monophyly of *Cyrtognatha* was tested and its position within Tetragnathinae discussed. The results obtained in this study highlight the importance of conducting systematic studies within Tetragnathinae.

3.2 Taxonomic history of the genus *Glenognatha*

The genus *Glenognatha* was erected by Simon (1887) with the type species *G. emertoni* Simon 1887, based on a male specimen collected in Arizona. Simon (1887) recognized the affinity of this species with species of the genus *Pachygnatha*, but stated that the well-developed tracheal spiracle, analogous with *Anyphaena* Sundevall, 1833, distinguished this new species from *Pachygnatha*. Before the erection of *Glenognatha*, Keyserling (1883) described the species *Pachygnatha australis* from males and females collected in Pacasmayo, Peru, which were subsequently transferred to *Glenognatha* by Simon (1894).

After these pioneers works, in the late nineteenth century and the first half of the twentieth century, 15 *Glenognatha* species were proposed. Seven of these species were described in Islands; five in French Polynesia: *G. nigromaculata* (Berland, 1933); *G. hirsutissima* (Berland, 1935); *G. argenteoguttata* (Berland, 1935); *G. chamberlini* (Berland, 1942) and *G. phalangiops* (Berland, 1942), and two in Caribbean islands: *G. gloriae* (Petrunkévitch, 1930) (Puerto Rico) and *G. mira* Bryant, 1945 (Hispaniola). The eight remaining species were described in Argentina (*G. lacteovittata* (Mello-Leitão, 1944)), Ecuador (*G. gaujoni* Simon, 1895), United States of America (*G. foxi* (McCook, 1894)), Guyana (*G. caporiaccoi* Platnick, 1993), Mexico (*G. minuta* Banks, 1898 and *G. spherella* Chamberlin & Ivie, 1936) and Panama (*G. centralis* Chamberlin, 1925 and *G. globosa* (Petrunkévitch, 1925)). Twelve of the previously named species are known only from the type locality. Moreover, several species were initially described in other

genera such as *Dyschiriognatha* (*G. nigromaculata*), *Hivaoa* Berland, 1935 (*G. nigromaculata*, *G. hirsutissima*, *G. argenteoguttata*, *G. chamberlini* and *G. phalangiops*), *Diplocephalus* Bertha, 1883 (*G. foxi* and *G. gloriae*), *Mimognatha* Banks, 1929 (*G. foxi* and *G. gloriae*), *Oedothorax* Bertkau, 1883 (*G. lacteovittata*), *Theridion* Walckenaer, 1805 (*G. foxi*), *Mysmena* Simon, 1894 (*G. foxi*) and *Cyrtognatha* (*G. globosa*).

In the second half of the twentieth century the last four species of the genus were described, comprising 21 known species to date. Levi (1980) described *G. iviei* Levi, 1980 from Mississippi (USA) and conducted a taxonomic revision of *Glenognatha* species from north of Mexico. In this paper, an updated diagnosis of the genus and a key to the identification of species in the study area (*G. foxi*, *G. emertoni* and *G. iviei*) were provided. Levi's diagnosis highlights the unusual tracheal system of *Glenognatha* (divided median trunks) and the advance position of the tracheal spiracle, as important characters to differentiate the genus. Detailed drawings of the male genitalia and the first schematic illustrations of female genitalia were also presented. Baert (1987) described *G. maelfaiti* Baert, 1987 from Galapagos Islands, highlighting the importance of the conductor and cheliceral teeth to distinguish the species. Hormiga & Döbel (1990) described *G. heleios* Hormiga, 1990 from New Jersey (USA) and provided illustrations of the type material of *G. centralis* and *G. minuta*. These authors stated that the diagnosis and description of *Glenognatha* might change with the study of new material, since the analysis of an undescribed species from Venezuela, revealed morphological variation underrepresented in the description suggested by Levi (1980): higher number of cheliceral teeth and presence of pleural bars. Finally, Bosmans & Bosselaers (1994) described *G. smilodon* Bosmans & Bosselaers, 1994 from Cameroon and suggested the possible synonymy between *Dyschiriognatha* and *Glenognatha*.

In the morphological atlas of Tetragnathidae (Álvarez-Padilla & Hormiga, 2011), new diagnosis and description of *Glenognatha* were provided, including scanning electron micrographs of somatic and genital structures. Nevertheless, as stated by the authors, the description and diagnosis were based on *G. foxi* plus information included in Levi (1980) and Hormiga & Döbel (1990) and do not cover all the variation observed across the described species.

3.3 Phylogenetics

Although the monophyly of *Glenognatha* has never been tested, the species *G. foxi* has been widely used in studies dealing with intra-family phylogenetic relationships of Tetragnathidae (Álvarez-Padilla, 2007; Dimitrov & Hormiga, 2009, Álvarez-Padilla *et al.*, 2009; Alvarez-Padilla & Hormiga, 2011; Dimitrov & Hormiga 2011). In all cases *Glenognatha* fall inside the Tetragnathinae subfamily and *Pachygnatha* is recovered as its sister group, regardless of different data partitions (morphology, behavior, molecules) and analytical approaches (equal weights, successive and implied weighting).

4. OBJECTIVES

Due to the lack of a complete taxonomic revision, the differentiation between the described species of *Glenognatha* is ambiguous, the proportion of nominal species that could be synonymous is unknown and there is not a solid base to test the monophyly of the genus. In addition, the only antecedent of revisionary work within the genus (Levi, 1980; Hormiga & Döbel, 1990) suggests a largely undescribed richness of the group, especially in the tropics. The aims of the present dissertation are revise the species of *Glenognatha*, propose a phylogenetic hypothesis among the species, develop a dichotomous key for identification of the species and elaborate maps of the geographical distribution.

5. MATERIALS AND METHODS

5.1 Specimens

A total of 5255 *Glenognatha* specimens (2150 ♀, 2601 ♂ and 504 immatures), from the major arachnological collections around the world were examined. Research visits were conducted in eight museums in order to separate *Glenognatha* specimens from unsorted material.

Collections examined:

- AMNH American Museum of Natural History, New York (N. I. Platnick)
- BMNH The Natural History Museum, London (J. Beccaloni)
- CAS California Academy of Sciences, San Francisco (C. Griswold)
- HU Hebei University, Hebei (F. Zhang)

IBSP	Instituto Butantan, São Paulo (D. Battesti)
ICN	Instituto de Ciencias Naturales, Bogotá (E. Flórez)
MACN	Museo Argentino de Ciencias Naturales Bernardino Rivadavia, Buenos Aires (C. L. Scioscia)
MCN	Museu de Ciências Naturais, Fundação Zoobotânica do Rio Grande do Sul, Porto Alegre (E. H. Buckup)
MCTP	Museu de Ciências e Tecnologia, PUCRS, Porto Alegre (A. A. Lise)
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge (L. Leibensperger; G. Giribet)
MNHN	Muséum National d'Histoire Naturelle, Paris (C. Rollard)
MNRJ	Museu Nacional Universidade Federal do Rio de Janeiro, Rio de Janeiro (A. B. Kury)
MPEG	Museu Paraense Emilio Goeldi, Belém (A. B. Bonaldo)
MRAC	Musée Royal de l'Afrique Centrale, Tervuren (R. Jocqué)
MUSM	Museo de Historia Natural, Universidad Nacional Mayor de San Marcos, Lima (D. Silva)
MZSP	Museu de Zoologia, Universidade de São Paulo, São Paulo (R. Pinto da Rocha)
RBINS	Royal Belgian Institute of Natural Sciences, Brussels (L. Baert)
UFCE	Universidade Federal do Ceará, (Fortaleza L. Q. Matias)
UFMG	Universidade Federal de Minas Gerais, Belo Horizonte (A. Santos)
USNM	National Museum of Natural History, Smithsonian Institution, Washington, D.C (J. Coddington)
ZMB	Museum für Naturkunde der Humboldt- Universität, Berlin (J. Dunlop)

5.2 Taxonomy

General taxonomic methods and description formats follow Hormiga (1994; 2000; 2002) and Dimitrov & Hormiga (2009). Specimens were examined and illustrated using a Leica MZ12 stereoscopic microscope with a camera lucida; further details were studied using a Zeiss Axio Scope compound microscope with a drawing tube. Nonchitinous abdominal tissue was digested with the SIGMA Pancreatin LP1750 enzyme complex (Álvarez-Padilla & Hormiga, 2008) or Ultrazyme® enzymatic eye lens cleaner to study internal structures such as tracheae and female genitalia. Expansion of the male palp was accomplished by immersing it in a concentrated

solution of KOH (10%) and then transferring the palp to tap water for five minutes. The male and female genitalia were examined using lactic acid as a clearing agent, then positioned for illustration on a temporary slide (Coddington, 1983). Depending on the available material, at least five female specimens were dissected for each species.

For the male palp illustrations, the left palp was used. Hairs and macrosetae are not depicted in the final drawings. All drawings were scanned and edited with the help of the program Inkscape 0.48. Digital images of the specimens were taken using a Leica MZ 16A stereoscopic microscope with a LEICA DFC 500 digital camera. Extended focal range images were composed with Leica Application Suite version 2.5.0. In addition, Scanning Electron micrographs (SEM) were taken using a Zeiss DSM 940 at Instituto de Biociências – Universidade de São Paulo and a LEO 1430 VP at the Biological Department – George Washington University. For SEM, abdomen, cephalothorax, male palps and internal structures like trachea and female genitalia, were cleaned ultrasonically, transferred to 100% ethanol, and left to dehydrate for ca. 24 hours. Then were critically point dried, mounted, and coated with gold-palladium for observation.

Measurements (in millimeters) were taken using a scale reticle in the dissecting microscope. As stated by Hormiga (2002), the measurements of the abdomen and the total length are only approximations, because the abdomen size changes more easily in preserved specimens and its relative position in relation with the cephalothorax could vary across individuals. The distance between tracheal spiracle and spinnerets was measured from the posterior margin of the spiracle up to the posterior margin of the abdominal cuticle (Ramírez, 2003). Coloration patterns are described based on specimens preserved in 80% ethanol.

Topological terms for cheliceral views and terms to express the position of the cheliceral teeth have not been standardized in *Glenognatha* taxonomy (see Levi, 1980; Hormiga & Döbel, 1990; Ramírez, 1996; Bosmans & Bosselaers, 1994). In this work I used a standardized terminology for the teeth on the cheliceral margins and employed standardized topological terms for cheliceral views (Fig. 1), considering Okuma (1987) and Gillespie (2002). This standardization was made to facilitate hypothesis of primary homology among structures.

A.

B.

Figure 1. **A**, topological terms used in cheliceral descriptions. **B**, female chelicerae of *Glenognatha gaujoni* indicating terminology for teeth. At: anterior tooth, CFO: cheliceral fang outgrowth, EA: ectal apophysis, Prt: promarginal tooth, Ret: retromargial tooth.

The anatomical abbreviations used in text and figures are:

Male palp

C conductor

CB cymbium

CRA conductor retrolateral apophysis

E embolus

EMg embolic medial groove

ED ejaculatory duct

F fundus

P paracymbium

PBp paracymbium basal portion

PDp paracymbium distal portion

T tegulum

TO Tarsal organ

Female genitalia

CD copulatory duct

Go Gonopore

LSD Long-stem ducts

S spermathecae

UEc uterus externus chamber

UEs uterus externus sac

Spinnerets

AC aciniform gland spigots

AG aggregate gland spigots

ALS anterior lateral spinnerets

CY cylindrical gland spigots

FL flagelliform spigot

MAP major ampullate gland spigot

mAP minor ampullate gland spigot

PI piriform gland spigots

PLS posterior lateral spinnerets

PMS posterior median spinnerets

Somatic morphology

ALE anterior lateral eyes

AME anterior median eyes

AT Anterior tooth

BL book lung
 CFO Cheliceral fang outgrowth
 CB Cheliceral boss
 DTS Distance between tracheal spiracle and spinnerets
 DTE Distance between tracheal spiracle and epigastric furrow
 EA Ectal apophysis
 LT Lateral tracheae
 MT Median trunks
 PLE posterior lateral eyes
 PME posterior median eyes
 Prt1 – Prtn Numbers of promarginal teeth from apical end
 PT Posterior tooth
 Ret1 – Retn Numbers of retromarginal teeth from apical end
 TAG Tracheal atrium gland
 TS Posterior tracheal spiracle

5.3 Specimens data

Names for districts, provinces, altitude and coordinates, not included in the original labels, were obtained from Google Earth (Lat/Lon-WGS84). Data inferred from a secondary source are in [square brackets] in the material examined section.

5.4 Natural history data

In order to observe and document natural history aspects of *Glenognatha* species, field trips were conducted into three municipalities in southwestern Colombia. Webs were dusted with cornstarch (Eberhard, 1976) and photographed with a Sony Cybershot DSC-W610 camera. In addition, a comprehensive literature search was made in order to compile previous known data.

5.5 Ingroup

After the taxonomic revision conducted in this work, the known richness of *Glenognatha* was reduced from 21 to 18 species, due to three synonymies. Because of lost types and unavailable material in the examined collections, five described species of *Glenognatha* (*G. caporiaccoi*, *G. phalangiops*, *G. nigromaculata*, *G. chamberlini* and *G. argenteoguttata*) were not included in the ingroup. The final sample consists of 24

Glenognatha species (13 described and 11 undescribed). Characters were scored following direct observation on specimens. See appendix 1 for a list of examined material for character scoring.

5.6 Outgroup

The outgroup selection was based on the phylogenetic hypothesis of Álvarez-Padilla & Hormiga (2011). In the preferred topology of this study *Glenognatha* falls into the subfamily Tetragnathinae and *Pachygnatha* is obtained as its sister group. In addition, the genus *Tetragnatha* is recovered as sister of the clade *Glenognatha* + *Pachygnatha* and the genus *Cyrtognatha* as sister to all these genera. The outgroup consists of a total of seven species, four representing the aforementioned genera (*Pachygnatha autumnalis* Marx, 1884, *Pachygnatha clercki* Sundevall, 1823, *Tetragnatha versicolor* Marx, 1884 and *Cyrtognatha espanola* (Bryant, 1945)), and three species of the genus *Dyschiriognatha* (*D. argyrostilba* (O. P.-Cambridge, 1876), *D. dentata* Zhu & Wen, 1978 and *D. tangi* Zhu, Song & Zhang, 2003), that has been suggested as closely related to *Glenognatha* (Bosmans & Bosselaers, 1994). *Chrysometa alajuela* Levi, 1986 was used to root the cladogram according with its position in the Metainae subfamily (Álvarez-Padilla & Hormiga, 2011). Characters were scored following direct observation on specimens, with the exception of *C. espanola* and *Ch. alajuela* that were scored according with the detailed studies of Álvarez-Padilla & Hormiga (2011) and Dimitrov & Hormiga (2009). See appendix 1 for a list of examined material for character scoring.

5.7 Characters

The data set for phylogenetic analysis comprises 42 new characters here proposed and 40 previously used (Miller & Hormiga, 2004; Dimitrov & Hormiga, 2009; Álvarez-Padilla & Hormiga, 2011) (Appendix 2). Characters were grouped into five sets: spinnerets spigots and epiandrous fusules, male palpal morphology, female genitalia, cephalothorax morphology (including legs) and abdomen morphology (including tracheal system). Four continuous characters were included in the analysis. Non-parametric tests and visualization of graphed data were conducted in an attempt to discretize these characters in valid states (Ramírez, 2003; Scharanschkin & Doyle, 2006; de Bivort *et al.*, 2010) For this purpose, measurements of three specimens per species, covering the known range of distribution and depending on the available

material, were taken. All the measurements were size-corrected by dividing by the carapace length. Kruskal-Wallis and Mann-Whitney tests were conducted in Statistica 7.0 (Statsoft, 2004) in order to test significant differences ($p < 0.05$) between character states.

Mesquite v. 2.75 (Maddison & Maddison, 2011) was used to edit the data matrix. Winclada v. 1.00.08 (Nixon 2002) was used for characters state optimizations and tree editing. The nine multistate characters were treated as non-additive (Fitch, 1971) and ambiguous character optimizations were resolved to favor reversal or secondary loss over convergence (ACCTRAN). Character definitions follow Sereno (2007). Due to its descriptive value and its possible utility in future phylogenetic studies autapomorphies were considered in the analysis.

5.8 Phylogenetic analysis

Analysis were run in TNT v. 1.1 (Goloboff *et al.*, 2008) using the traditional search and new technology search options. In order to facilitate the reproduction of each analysis, script files with commands and instructions for each case were created (Ojanguren-Affilastro & Ramírez, 2009).

Heuristic tree searches. Heuristic searches, under equal weights (EW), consisted of 5000 replicates of random addition sequences (RAS), followed by tree bisection-reconnection branch swapping (TBR), holding 100 trees per iteration (*commands: mult=tbr repl 5000 hold 100;*). Minimum length = 0 was used as a collapsing rule in all searches. If the most parsimonious resolutions were found in few replications, more aggressive searches iterating with cycles of the Parsimony Ratchet were used (Ojanguren-Affilastro & Ramírez, 2009, Frick & Sharff, 2013) (*commands: ratchet:iter 1000; mult=ratchet repl 1000 tbr hold 500;*).

Sensitivity analysis. In order to assess the clade sensitivity to the variation in analytical parameters (Giribet, 2003; Goloboff *et al.*, 2008), parsimony analysis under implied weights (IW) were performed. This weighting method assigns higher weight to those characters with less homoplasy (higher fit), and the sum of weights over all characters (total fit) is maximized during tree search (Ramírez, 2003). The fit of a character is calculated as: $f = k / (s+k)$, where s = number of homoplastic steps and k is a user-defined concavity constant. Although Ramírez (2003) used a sensitivity analysis as

a metacriterion to determine an optimal value for k , recent publications agree to explore different concavities in order to produce more conservative conclusions (Goloboff *et al.*, 2008; Mirande, 2009; Ojanguren-Affilastro & Ramírez, 2009; Vega *et al.*, 2009; Mendes, 2011; Daza *et al.*, 2012; Magalhães & Santos 2012).

The sensitivity of the results to differences in the strength of the weighting function was analyzed performing heuristic searches with $k = 1-15, 20, 50$ and 100. The search parameters were the same as the equal weight analysis. The frequency of each group under these weighting regimes was reported in the preferred tree.

Measures of tree support. Three measures of group support were calculated: Absolute Bremer support (ABS) (Bremer, 1988, 1994), group frequencies under jackknifing (JK) and symmetric resampling (SR) (Goloboff *et al.*, 2003). For ABS, heuristic searches by TBR swapping retaining suboptimal trees were conducted. Under equal weight analysis, a rough precedent search setting suboptimal to 20 was made to find the upper limit of supports (*commands: hold 10000; sub 20; bb = fillonly tbr; bsupport;*). Then 20 cycles were run increasing the suboptimal stepwise in 1 and the tree buffer in 1000 each cycle (Gravish-Regev *et al.*, 2013) (*commands: sub 1; hold 1000; bb = fillonly tbr; sub 2; hold 2000; bb = fillonly tbr; ... sub 20; hold 20000; bb = fillonly tbr; bsupport;*). For ABS under implied weights analysis, values are reported in units of fit. A rough precedent search setting suboptimal to 2 was made to find the upper limit of supports (*commands: hold 10000; sub 2; bb = fillonly tbr; bsupport;*). Then 20 cycles were run increasing the suboptimal stepwise in 0.1 units of fit and the tree buffer in 1000 each cycle (*commands: sub 0.1; hold 1000; bb = fillonly tbr; sub 0.2; hold 2000; bb = fillonly tbr; ... sub 2; hold 20000; bb = fillonly tbr; bsupport;*).

For the Jackknife support, I performed 1000 pseudoreplicates of 10 random sequence additions, keeping 10 trees each, using TBR swapping (*commands: mult:noratchet repl 100 tbr hold 10; resample jak repl 1000 freq from 0 [mult];*). A probability of elimination $P=0.36$ was used. Symmetrical resampling was calculated as described for Jackknife support and the results are reported in differences of group frequency values (GC) (Goloboff *et al.*, 2003).

Taxon removal. In order to explore the effect of high percentages of missing data per taxon in the analysis, two matrices were analyzed: complete matrix, which include all terminals and reduced matrix, which exclude species only known from males (*G. iviei*, *G. smilodon*, *G. sp. nov. 9* and *G. sp. nov. 10*).

6. RESULTS AND DISCUSSION

6.1 Topologies

Equal weight analysis. Heuristic searches for the complete matrix resulted in 92 most parsimonious trees (MPTs), with 161 steps, CI=0.57 and RI=0.72 (143 steps, CI=0.51, RI=0.72 removing uninformative characters). As evidenced by the strict consensus tree (Fig. 2), all topological differences between MPTs are the consequence of dissimilar hypothesis of relationships within *Glenognatha*. Searches for the reduced matrix, generated eight MPTs with 154 steps, CI = 0.58 and RI = 0.72 (137 steps, CI = 0.53, RI = 0.73 removing uninformative characters). The strict consensus of these eight trees (Fig. 3) is quite similar to that obtained with the complete matrix (Fig. 2).

Despite conflicting relationships within *Glenognatha*, equally weighted analysis recovered its monophyly with high support values (Figs. 2-3). In addition, several monophyletic groups are recovered within the genus; one including the three representatives of the genus *Dyschiriognatha*.

Sensitivity analysis. Results of the heuristic searches with the defined k values are presented in Table 1. The analysis of the complete matrix under implied weighting resulted in four similar topologies (Figs. 4-5). The main differences across these trees are related with the position of *G. foxi*, *G. hirsutissima*, *G. sp. nov. 1*, *G. sp. nov. 9* and *G. sp. nov. 10*. Only with $k \geq 8$ a fully resolved tree was found (Fig. 5B), this topology was also obtained under equal weights. The analysis of the reduced matrix resulted in three alternative topologies (Fig. 6). Only with $k \geq 4$ a fully resolved tree was obtained (Fig. 6C). Overall, these hypotheses were very similar to that found with the complete matrix.

Considering the stability of the results and the full compatibility with the most stable topology obtained with the reduced matrix analysis (Fig. 6C), the tree generated under $k = 8$ for the complete matrix was chose as the preferred hypothesis. Support

values and sensitivity of this tree to concavity changes are presented in figure 7. Character optimizations are presented in figure 8.

Figure 2. Strict consensus of 92 most parsimonious trees found under equal weights analyzing the complete matrix (L=187, CI=0.49, RI=0.62). Numbers above branches are Jackknife percentages (left) and Symmetric resampling GC values (right). Numbers below branches are Bremer support values.

Figure 3. Strict consensus of eight most parsimonious trees found under equal weights analyzing the reduced matrix (L=173, CI=0.52, RI=0.64). Numbers above branches are Jackknife percentages (left) and Symmetric resampling GC values (right). Numbers below branches are Bremer support values.

Table 1. Summary statistics from the implied weighting analysis. K: concavity constant, N: number of most parsimonious trees, L: tree length, F: total fit.

Complete matrix				Reduced matrix		
K	N	L	F	N	L	F
1	2	164	45.75	6	157	44.86
2	8	164	50.34	6	157	49.15
3	1	162	53.07	2	155	51.74
4	1	162	54.91	1	154	53.49
5	1	162	56.24	1	154	54.77
6	1	162	57.25	1	154	55.73
7	1	162	58.05	1	154	56.49
8	1	161	58.69	1	154	57.10
9	1	161	59.23	1	154	57.61
10	1	161	59.68	1	154	58.03
11	1	161	60.06	1	154	58.40
12	1	161	60.40	1	154	58.71
13	1	161	60.69	1	154	58.98
14	1	161	60.94	1	154	59.22
15	1	161	61.17	1	154	59.43
20	1	161	62.01	1	154	60.21
50	1	161	63.70	1	154	61.79
100	1	161	64.33	1	154	62.38

Figure 4. Strict consensus of the most parsimonious trees obtained analyzing the complete matrix under implied weighting. **A**, under $k = 1$ ($L=165$, $CI=0.55$, $RI=0.70$), **B**, under $k = 2$ ($L=170$, $CI=0.54$, $RI=0.68$).

Figure 5. Strict consensus of the most parsimonious trees obtained analyzing the complete matrix under implied weighting. **A**, under $k = 3-7$ ($L=162$, $CI=0.56$, $RI=0.71$), **B**, under $k \geq 8$ ($L=161$, $CI=0.57$, $RI=0.72$).

Figure 6. Strict consensus of the most parsimonious trees obtained analyzing the reduced matrix under implied weighting. **A**, under $k = 1-2$ ($L=162$, $CI=0.55$, $RI=0.69$), **B**, under $k = 3$ ($L=158$, $CI=0.57$, $RI=0.71$), **C**. Under $k \geq 4$ ($L=154$, $CI=0.58$, $RI=0.72$).

Figure 7. Topology obtained analyzing the complete matrix under $k = 8$. Numbers above branches are Jackknife percentages (left) and Symmetric resampling GC values (right). Numbers below branches are Bremer support values in units of fit (left) and sensitivity frequencies (right).

Figure 8. Topology obtained analyzing the complete matrix under $k = 8$. Filled and open circles represent nonhomoplasious and homoplasious transformations, respectively. Character numbers are placed over the branches and the states are shown below the branches. Letters denote clade names.

Figure 8. Continued.

Figure 8. Continued.

6.2 Character description

Character descriptions include length (**L**), consistency index (**CI**), retention index (**RI**) and Fit (**F**) values for the preferred tree (complete matrix analysis under $k=8$). For characters used in previous works I added the reference to its most recent usage by means of the following code: Miller & Hormiga, 2004=MH04, Arnedo *et al.*, 2009=AHS09, Dimitrov & Hormiga, 2009=DH09, Lopardo *et al.*, 2011= LGH11 and Álvarez-Padilla & Hormiga, 2011 =APH11. New characters are marked with an asterisk (*). Underlined characters correspond to those where a state have been added, erased or changed.

Spinnerets spigots and epiandrous fusules

1. PMS, nubbin: (L=1, CI=1, RI=1) (APH11)

(0) present (Fig. 9).

(1) absent.

Figure 9. *Glenognatha gaujoni*. Female posterior median spinnerets (arrow, nubbin).

Two types of cuticular protuberances can be distinguished in the spinning field of adult araneoid spiders: nubbins and tartipores. The former refer to a partially formed nonfunctional vestigial spigot and the latter to a cuticular scar with a collared opening after molting (Moon 2012). Considering my taxonomic sampling, the loss of the PMS nubbin optimizes as synapomorphic for the genus *Pachygnatha*. Nevertheless, several independent losses have been occurred outside Tetragnathidae in members of the “reduced piriform clade” (symphytognathoid, linyphioids, theridioids, and cyatholipoids families) (Álvarez-Padilla & Hormiga 2011).

2. Female, PLS mesal cylindrical spigot base, size relative to the distal spigot:

(L = 1, CI=1, RI=1, F=1) (APH11)

(0) same size (Álvarez-Padilla & Hormiga, 2011: fig. 26D);

(1) larger (Fig. 10).

Figure 10. *Glenognatha gaujoni*. Female posterior lateral spinnerets (arrow, mesal cylindrical spigot).

An enlarged mesal cylindrical spigot is a synapomorphy for *Pachygnatha* + *Glenognatha*. However, this condition is also found outside Tetragnathidae in Symphytognathidae + Anapidae and Linyphiidae + Pimoidae (Griswold *et al.*, 1998).

3. PMS, aciniform gland spigots, quantity: (L = 2, CI=1, RI=1, F=1) (AHS09)

(0) one (Fig.11A);

(1) two (Fig. 11B);

(2) three.

Figure 11. Female posterior median spinnerets. **A**, *Glenognatha lacteovittata*. **B**, *Glenognatha gaujoni*. (arrow, aciniform spigots).

The number of aciniform gland spigots is variable in Tetragnathidae (Álvarez-Padilla & Hormiga 2011) and other araneoid families like Linyphiidae (Miller & Hormiga 2004). In the present analysis, two AC spigots is a synapomorphy for *Pachygnatha* + *Glenognatha*. The reduction to one spigot supports the clade A.

4. Female, aggregate spigots: (L = 1, CI=1, RI=1, F=1) (APH11)

(0) present (Fig. 12).

(1) absent.

Figure 12. *Glenognatha australis*. Female posterior lateral spinnerets. AG: aggregate gland spigots.

The aggregate gland spigots coat the flagelliform fiber with sticky glue as it is spun (Griswold *et al.*, 2005). Aggregate glands are synapomorphic for Araneoidea with several secondary losses (Griswold *et al.*, 2005). The absence of aggregate spigot supports *Pachygnatha*.

5. Female, flagelliform spigots: (L = 1, CI=1, RI=1, F=1) (APH11).

(0) present (Fig. 13).

(1) absent.

Figure 13. *Glenognatha emertoni*. Female posterior lateral spinnerets. FL: flagelliform gland spigot.

Flagelliform glands produce the axial fibers onto which the viscid silk is dropped (Álvarez-Padilla & Hormiga, 2011). In the present analysis, the absence of flagelliform spigot supports *Pachygnatha*.

6. PLS aciniform gland spigots, arrangement*: (L = 1, CI=1, RI=1, F=1)

(0) two or more irregular lines (Fig. 14A);

(1) one almost straight line (Figs. 14B).

Figure 14. Female posterior lateral spinnerets. **A**, *Glenognatha lacteovittata*. **B**, *Glenognatha* sp. nov. 7 (arrow, aciniform spigots).

Most tetragnathids have two or more irregular lines of aciniform spigots in the PLS spinning field (Álvarez-Padilla & Hormiga, 2011 figs. 56D, 77E, 100D, 109F, 114G). PLS aciniform gland spigots arranged in an almost straight line is synapomorphic for the clade B. Specimens with one or two mesally displaced spigots were coded as (1) (Fig. 12). The disposition of aciniform spigots in the PLS could be related with web architecture as noted by Hormiga *et al.* (2007) and Eberhard (2010). Detailed web-building behavioral data could reveal the possible functional significance of these contrasting arrangements within *Glenognatha*.

7. PLS, macrosetae on the retrolateral surface: (L = 1, CI=1, RI=1) (DH09)

(0) absent;

(1) present (Dimitrov & Hormiga, 2009: figs. 28G, 28J, 35E).

The presence of conspicuous macrosetae on the retrolateral surface of the PLS is autapomorphic for the genus *Cyrtognatha* (Dimitrov & Hormiga, 2009)

8. Epiandrous fusules, quantity: (L = 1, CI=1, RI=1, F=1) (LGH11)

(0) six or more (Fig. 15A).

(1) four (Fig. 15B).

Figure 15. Epiandrous fusules. **A**, *Glenognatha* sp. nov. 5. **B**, *Dyschiriognatha dentata*.

A high number (six or more, state 0) of epiandrous fusules is the widespread pattern in tetragnathids (Álvarez-Padilla & Hormiga, 2011 figs. 56F, 82G, 100F, 109F, 114F). A reduced number of these fusules (state 1) optimizes as a synapomorphy of the clade B.

9. Epiandrous fusules, arrangement: (L = 1, CI=1, RI=1) (APH11)

(0) one transverse line (Fig. 16);

(1) two main clusters (Álvarez-Padilla & Hormiga, 2011: fig. 109C).

Figure 16. *Glenognatha* sp. nov. 2. Epiandrous fusules.

Epiandrous fusules arranged in two main cluster optimizes as an autapomorphy for *T. versicolor*.

10. Epiandrous fusules, pits: (L = 1, CI=1, RI=1, F=1) (APH11)

(0) absent (Fig. 17);

(1) present.

Figure 17. *Glenognatha globosa*. Epiandrous fusules.

Epiandrous fusules bases not immersed in pits (state 0) optimizes as synapomorphic for *Pachygnatha* + *Glenognatha*.

11. Epiandrous fusules, base distal margin, shape: (L = 1, CI=1, RI=1, F=1)

(APH11)

(0) sharp edge;

(1) round edge (Fig. 18).

Figure 18. *Glenognatha gaujoni*. Epiandrous fusules.

Rounded edge of the base of the fusules (state 1) optimizes as synapomorphic for the clade including *Cyrtognatha*, *Tetragnatha*, *Pachygnatha* and *Glenognatha*.

12. Epiandrous plate, posterior edge, elevation relative to the surrounding cuticle:

(L = 1, CI=1, RI=1, F=1) (APH11)

(0) not swollen;

(1) swollen (Fig. 19).

Figure 19. *Glenognatha globosa*. Epiandrous fusules (arrow, posterior edge).

Posterior edge differentiated from the surrounding cuticle (state 1), optimizes as synapomorphic for the clade including *Cyrtognatha*, *Tetragnatha*, *Pachygnatha* and *Glenognatha*.

Male papal morphology

13. Cymbium, median region, form: (L = 1, CI=1, RI=1) (APH11)

(0) entire, not constricted;

(1) constricted (Fig. 20).

Figure 20. *Glenognatha* sp. nov. 5. Male left palp (arrow, cymbium constriction).

Constricted cymbium is synapomorphic for the subfamily Tetragnathinae (Dimitrov & Hormiga, 2009; Álvarez-Padilla & Hormiga, 2011).

14. Cymbium, process: (L = 1, CI=1, RI=1) (APH11)

(0) absent (Fig. 21);

(1) present (Álvarez-Padilla & Hormiga, 2011: fig. 21A).

Figure 21. *Glenognatha globosa*. Male left palp. CB: cymbium.

In Tetragnathidae the cymbium could carry a wide variety of processes located in specific regions and variable in form (Álvarez-Padilla & Hormiga, 2011). Besides the paracymbium, no other cymbial processes is present in the subfamily Tetragnathinae. The presence of cymbium process optimizes as an autapomorphy for *Chrysometa*.

15. Paracymbium, shape: (L = 2, CI=1, RI=1, F=1) (APH11)

- (0) semicircular, with protuberances;
- (1) cylindrical, longer than wide;
- (2) l-shaped, with two nearly perpendicular portions, the distal one in opposite direction to the cymbium (Fig. 22).

Figure 22. *Glenognatha* sp. nov. 8. Male left palp (arrow, paracymbium).

The variable morphology of the paracymbium has been widely used in phylogenetic studies within Araneoidea (Hormiga et al. 1995; Griswold *et al.* 1998; Hormiga, 2000; Agnarsson 2004; Miller & Hormiga 2004; Kuntner *et al.*, 2008; Álvarez-Padilla & Hormiga, 2011; Lopardo *et al.*, 2011). Nevertheless, character states definitions have been challenging and in most cases different states have been created to encompass the morphological diversity (Kuntner *et al.*, 2008). In my taxonomic sample, a three state character statement covers all the observed diversity. A paracymbium composed of two nearly perpendicular portions provides unambiguous support for *Glenognatha*.

16. Paracymbium, distal portion, length*: (L = 1, CI=1, RI=1, F=1)

- (0) short, shorter than 1.4 times the basal portion maximum width (Fig. 23, 24A);
- (1) long, longer than 2 times the basal portion maximum width (Fig. 23, 24B).

Figure 23. Character 16 states. The box plot shows median (squares), 50% (box limits) and minimum and maximum (brackets) of all values. PDP: paracymbium distal portion. PBP: paracymbium basal portion. (U=0.00, $p<0.001$, $n=75$).

Figure 24. Paracymbium. **A**, *Glenognatha lacteovittata*. **B**, *Glenognatha* sp. nov. 6. PDP: paracymbium distal portion. PBP: paracymbium basal portion.

In *Glenognatha* the paracymbium is composed of two nearly perpendicular portions (Fig. 24). The basal one is articulated with the cymbium base and is nearly parallel to the cymbium axis in retrolateral view. The distal portion is in opposite

direction in relation with the cymbium. The length of the distal portion is taken relative to the maximum width of the basal portion as depicted in figure 24A. Long distal portion of the paracymbium optimizes as a synapomorphy of clade B.

17. Paracymbium, apophysis: (L = 6, CI=0.16, RI=0.37, F=0.615) (APH11)

(0) absent (Fig. 25A);

(1) present (Fig. 25B).

Figure 25. Paracymbium. **A**, *Glenognatha* sp. nov. 7. **B**, *Glenognatha heleios* (arrow, apophysis).

Highly homoplastic. The presence of apophysis in the paracymbium appears as the plesiomorphic condition. There have been several reversals to this condition within *Glenognatha* in the clade C and G.

18. Paracymbium, setae, distribution: (L = 2, CI=1, RI=1, F=1) (APH11)

(0) only on the distal portion (Fig. 26);

(1) evenly distributed;

(2) only on the margins.

Figure 26. *Glenognatha gaujoni*. Male left palp (arrow, paracymbium setae).

Evenly distributed setae is the plesiomorphic condition. Setae distributed only in the distal region optimizes as synapomorphic for *Glenognatha*.

19. Conductor, basal apophysis: (L = 1, CI=1, RI=1, F=1) (DH09)

(0) present (Dimitrov & Hormiga, 2009 fig. 6)

(1) absent (Fig. 27);

Figure 27. *Glenognatha* sp. nov. 4. Embolus and conductor. E: embolus. C: conductor.

As defined by Dimitrov & Hormiga (2009) the conductor basal apophysis starts near the conductor base and runs under the embolus. It is interesting to note that these authors suggest the presence of this apophysis in *Glenognatha* (Dimitrov & Hormiga,

2009, p. 13), however the character was coded as absent in the data matrix of the paper (state 0). I agree with this codification and I considered the conductor apophysis present in *Glenognatha* as a different character due to its relative position (see character 20). Representatives of *Tetragnatha* and *Pachygnatha* examined, present a prolateral extension of the conductor base that extends under the embolus. I considered this projection homologous to the conductor basal apophysis defined by Dimitrov & Hormiga (2009).

20. Conductor, retrolateral apophysis: (L = 1, CI=0.5, RI=0, F=0.889) (DH09)

(0) absent;

(1) present (Fig. 28).

Figure 28. *Glenognatha* sp. nov. 3. Embolus and conductor. CRa: conductor retrolateral apophysis.

The presence of a retrolateral apophysis optimizes as synapomorphic for Tetragnathinae with a reversal in *Cyrtognatha*. This apophysis is located near the conductor base and emerges as a retrolateral projection above the embolus.

21. Conductor, retrolateral apophysis, morphology*: (L = 1, CI=1, RI=1, F=1)

(0) rounded, not folded (Álvarez-Padilla & Hormiga, 2011: figs. 108C, F);

(1) prolaterally folded (Fig. 29).

Figure 29. *Glenognatha lacteovittata*. Conductor. CRa: conductor retrolateral apophysis.

Unfolded apophysis is the plesiomorphic condition. A folded retrolateral apophysis optimizes as synapomorphic for *Glenognatha*.

22. Conductor, texture*: (L = 2, CI=1, RI=1)

(0) smooth (Fig. 30A);

(1) with small pointed projections (Fig. 30B)

(2) with folds (Fig. 30C)

Figure 30. Embolus and conductor. **A**, *Glenognatha* sp. nov. 1. **B**, *Glenognatha* sp. nov. 6. **C**, *Dyschiriognatha dentata*. E: embolus. C: conductor.

Smooth conductor is the widespread condition in *Glenognatha* species and members of the outgroup. Conductor with folds is autapomorphic for *D. dentata* and with small pointed projections is autapomorphic for *G. sp. nov. 6*.

23. Conductor, retrolateral margin, morphology* (L = 2, CI=0.5, RI=0, F=0.889)

(0) entire (Fig. 31A);

(1) serrated (Fig. 31B).

Figure 31. Embolus and conductor. **A**, *Glenognatha* sp. nov. 2. **B**, *Dyschiriognatha dentata*. E: embolus. C: conductor.

Serrated retrolateral margin of the conductor appears independently in *D. dentata* and *G. sp. nov. 9*.

24. Conductor, retrolateral projection*: (L = 1, CI=1, RI=1, F=1)

(0) absent (Fig. 32A);

(1) present (Fig. 32B).

Figure 32. Conductor. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha australis* (arrow, retrolateral projection). E: embolus. C: conductor.

The presence of a retrolateral projection in the conductor optimizes as a synapomorphy of clade F. This projection emerges in the region where the cylindrical conductor base flattens into a folded lamina and is located below the retrolateral apophysis (Fig. 32B).

25. Conductor, apical portion, morphology*: (L = 2, CI=0.5, RI=0.5, F=0.889)

(0) without prolateral fold or if present wider than long (Fig. 33A);

(1) with a prolateral fold longer than wide (Fig. 33B).

Figure 33. Conductor. **A**, *Glenognatha* sp. nov. 4. **B**, *Glenognatha lacteovittata* (arrow, prolateral fold).

Long prolateral fold in the apical portion of the conductor appears independently in the clade *G. lacteovittata* + *G. sp. nov. 5* and in the species *G. smilodon*.

26. Embolus, metine embolic apophysis (L = 2, CI=1, RI=1) (APH11)

(0) absent;

(1) present (Álvarez-Padilla & Hormiga, 2011: figs. 60A-B).

The presence of metine embolic apophysis optimizes as an autapomorphy for *Ch. alajuela*.

27. Embolus, tip, curvature relative to the palp longitudinal axis*: ($L = 6$, $CI=0.16$, $RI=0.16$, $F=0.615$)

(0) straight to 90° curved (Fig. 34A);

(1) 135° to 180° curved (Fig. 34B).

Figure 34. Embolus and conductor. **A**, *Glenognatha* sp. nov. 3. **B**, *Glenognatha* sp. nov. 8. E: embolus. C: conductor.

Highly homoplastic. A strong curved embolic tip appears independently in members of clades A, C, E, G and J.

28. Embolus, tip, orientation*: ($L = 5$, $CI=0.2$, $RI=0.2$, $F=0.667$)

(0) anterior to retrolateral (Fig. 35A);

(1) prolateral (Fig. 35B).

Figure 35. Embolus and conductor. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha* sp. nov. 1. E: embolus. C: conductor.

Highly homoplastic. Embolic tip prolaterally oriented appears independently in members of clades G and H.

29. Embolus, subapical, region*: (L = 2, CI=1, RI=1, F=1)

(0) uncoiled (Fig. 36A);

(1) coiled (Fig. 36B);

(2) twice coiled (Fig. 36C).

Figure 36. Embolus. **A**, *Glenognatha* sp. nov. 4. **B**, *Glenognatha spherella*. **C**, *Glenognatha lacteovittata*. E: embolus. C: conductor.

Uncoiled embolus tip is the plesiomorphic condition. Embolus twice coiled optimizes as autapomorphic for *G. lacteovittata* and coiled embolus as synapomorphic for *G. glorieae* + *G. spherella*.

30. Embolus, tip, morphology: (L = 1, CI=1, RI=1, F=1) (MH04)

(0) terminating in embolic opening (Fig. 37A);

(1) with projection beyond embolic opening (Fig. 37B).

Embolus tip with a projection beyond embolic opening optimizes as synapomorphic for the clade E.

Figure 37. **A**, *Glenognatha minuta*. **B**, *Glenognatha* sp. nov. 2 (arrow, projection beyond embolic opening). E: embolus. C: conductor.

31. Embolus, texture*: (L = 3, CI=0.66, RI=0.5, F=0.88)

(0) smooth (Fig. 38A);

(1) with scale-like projections (Fig. 38B);

(2) with pointed projections (Fig. 38C).

Figure 38. Embolus. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha gaujoni* (arrow, scale-like projections). **C**, *Glenognatha lacteovittata* (tooth-like and filiform projections).

Smooth embolus is the plesiomorphic condition. Scale-like projections optimizes as autapomorphic for *G. gaujoni* and pointed projections appears independently in *G. lacteovittata* + *G. sp. nov. 5* and *D. dentata*.

32. Embolic medial groove*: (L = 1, CI=1, RI=1, F=1)

(0) absent;

(1) present (Fig. 39).

Figure 39. *Glenognatha* sp. nov. 1. Male left palp (arrow, embolic median groove)

The presence of an embolic medial groove optimizes as synapomorphic for *Glenognatha*. This groove originates near the embolus base and runs medially until the subapical portion (Fig. 38A).

33. Embolic medial groove, configuration*: (L = 1, CI=1, RI=1, F=1)

(0) limited to the inner surface of the embolus (Fig. 40A).

(1) expanded to the outer surface of the embolus (Fig. 40B);

Figure 40. Male left palp. **A**, *Glenognatha* sp. nov. 5. **B**, *Glenognatha* sp. nov. 3 (arrow, embolic median groove).

An embolic groove limited to the inner surface is the plesiomorphic condition. Expanded groove optimizes as synapomorphic for the clade B. It is interesting to note that species coded with the state 1 also exhibit a well-developed inner membrane that covers the groove (Fig. 38A). The functional and evolutionary significance of these contrasting configurations among *Glenognatha* species are unknown. Copulatory behavior and histological data are needed in order to suggest possible selection pressures shaping this morphological variation.

34. Embolus, laminar projection*: (L = 1, CI=1, RI=1)

(0) absent;

(1) present (Fig. 41).

Figure 41. *Glenognatha smilodon*. Embolus (arrow, laminar projection).

A laminar projection in the embolus is an autapomorphic character of *G. smilodon*.

35. Male, palpal patella, macrosetae: (L = 1, CI=1, RI=1, F=1) (APH11)

(0) none (Fig. 42);

(1) one.

Figure 42. *Glenognatha* sp. nov. 1. Male left palp.

Absence of male palpal patella macrosetae optimizes as synapomorphic for *Pachygnatha* + *Glenognatha*. Nevertheless, as noted by Hormiga *et al.* (1995), coding this character for *Pachygnatha* is problematic due to interspecific variation within the genus. These authors mentions that *P. clercki* present macrosetae, but this was not observed in the examined specimens of the present study. A phylogenetic revision of the genus *Pachygnatha* is needed in order to establish the plesiomorphic condition and clarify the evolution of the character in the clade *Pachygnatha* + *Glenognatha*.

36. Male, palpal tibia, length: (L = 5, CI=0.2, RI=0.33, F=0.66) (APH11)

(0) short, shorter than 1.5 times the maximum width of the tibia (Fig. 43, 44A);

(1) long, longer than 1.9 times the maximum width of the tibia (Fig. 43, 44B).

Figure 43. Character 36 states. The box plot shows median (squares), 50% (box limits) and minimum and maximum (brackets) of all values, ($U=0.00$, $p<0.001$, $n=85$).

Figure 44. A, *Glenognatha foxi*. B, *Glenognatha gaujoni*.

The length of the tibia is taken relative to its maximum width as depicted in figure 44B. Long palpal tibia appear independently in *T. versicolor*, *P. clercki*, clade E and J.

Female genitalia

37. Epigynum: (L = 1, CI=1, RI=1) (APH11)

(0) present

(1) absent (Fig. 45A, B);

Figure 45. *Glenognatha gaujoni*. **A**, Gonopore. **B**, Body, ventral view (arrow, gonopore).

The secondary haplogyne condition is a synapomorphy for Tetragnathinae (Dimitrov *et al.*, 2007; Álvarez & Hormiga, 2011). In this condition, a general simplification of female genital structures have been occurred, including the loss of copulatory ducts and epigynum. In the present analysis only one character (epigynum) have been coded to characterize this condition.

38. Spermathecae: (L = 3, CI=0.33, RI=0.72, F=0.8) (APH11)

(0) present (Fig. 46A).

(1) absent (Fig. 46B);

Figure 46. Internal genitalia. **A**, *Glenognatha lacteovittata*. **B**, *Glenognatha gloriae*. S: spermathecae.

Spermathecae have been lost independently in three clades within *Glenognatha*. According with dissection and observation of species without spermathecae after copulation (*G. globosa* and *G. sp. nov.* 8), the sperm storage function appears to be assumed by the enlarged uterus externus sac.

39. Spermathecae, separation: (L = 1, CI=1, RI=1, F=1) (APH11)

(0) separated more than two spermathecae diameters (Fig. 47);

(1) under two diameters apart.

Figure 47. *Glenognatha minuta*. Internal genitalia. S: spermathecae. UE: uterus externus.

Separated spermathecae optimizes as synapomorphic for the clade *Cyrtognatha* (*Pachygnatha*, *Glenognatha*). Under DELTRAN optimizes as synapomorphic for *Pachygnatha* + *Glenognatha*.

40. Spermathecae, chambers, quantity ($L = 2$, $CI=0.5$, $RI=0.5$, $F=0.88$) (APH11)

(0) each spermathecae consisting of a single chamber (Fig. 48);

(1) two chambers

Figure 48. *Glenognatha foxi*. Spermathecae. S: Spermathecae. CD: copulatory duct.

Spermathecae divided into two chambers appears independently in *T. versicolor* and *Pachygnatha*.

41. Accessory gland base, form ($L = 1$, $CI=1$, $RI=1$, $F=1$) (APH11)

(0) subequal to the duct;

(1) widely enlarged (Fig. 49).

Figure 49. *Glenognatha minuta*. Spermathecae (arrow, enlarged gland base). LSD: long-stem ducts.

Accessory glands base subequal to duct is the plesiomorphic condition. Enlarged accessory gland bases optimizes as synapomorphic for *Glenognatha*. If DELTRAN optimization is used the character is synapomorphic for the clade B.

42. Accessory gland, distribution (L = 2, CI=1, RI=1, F=1) (APH11)

- (0) evenly over the spermathecae;
- (1) near the copulatory ducts (Fig. 50);
- (2) near the fertilization ducts.

Figure 50. *Glenognatha heleios*. Spermathecae and copulatory duct. CD: copulatory ducts. LSD: long-stem ducts. S: spermathecae.

Accessory gland ducts located near the copulatory ducts optimizes as a synapomorphy for *Glenognatha*. Coding this character is difficult since the limit between copulatory duct and spermathecae can only be objectively assigned using histological techniques. In the present analysis, this differentiation was based in the cuticle texture observed through SEM images or light microscopy montages. If DELTRAN optimization is used the character is synapomorphic for the clade B.

43. Uterus externus, enlarged sac (L = 1, CI=1, RI=1) (APH11)

- (0) absent;
- (1) present (Fig. 51A, B).

Figure 51. *Glenognatha argyrostilba*. Internal genitalia. **A**, Dorsal view. **B**, Lateral view. S: Spermathecae. UEs: uterus externus sac.

The presence of an enlarged uterus externus sac is synapomorphic for Tetragnathinae.

44. Uterus externus sac, morphology*: (L = 6, CI=0.33, RI=0.73, F=0.66)

(0) entire (Fig. 52A);

(1) with a median projection (Fig. 52B)

(2) divided into two or more distinct chambers (Fig. 52C).

Figure 52. Uterus externus lateral view. **A**, *Glenognatha argyrostilba*. **B**, *Glenognatha* sp. nov. 2 (arrow, median projection). **C**, *Glenognatha* sp. nov. 1 (arrows, chambers). S: spermathecae.

Haplogyne female spiders typically possess an ectodermal genital cavity (also called uterus externus, bursa copulatrix, vulva or vagina) and spatially separated spermathecae (*receptacula seminis*) in which a single duct connects the spermathecal lumen with the genital cavity (“cul-de-sac” type) (Uhl, 1994; Uhl, 2000). In *Glenognatha* the uterus externus can be divided in two regions: a) the uterus externus chamber (ectodermal genital cavity) which carries tendons for muscular attachment and the copulatory ducts and b) the uterus externus sac (UEs) which exhibit a variable morphology. In the present analysis, three states were created to cover this variation. Uterus externus sac divided in chambers (state 2) optimizes as synapomorphic for the clade D, although within this clade entire UEs (state 0) and with median projection (state 1) have appeared independently.

45. Uterus externus sac, apical chamber, form*: (L = 1, CI=1, RI=1, F=1)

(0) laminar (Fig. 53A).

(1) tubiform (Fig. 53B).

Figure 53. Uterus externus distal chamber. **A**, *Glenognatha* sp. nov. 1 (arrow, distal chamber). **B**, *Glenognatha* sp. nov. 8 (arrow, distal chamber). S: spermathecae.

Uterus externus sac with a tubiform apical chamber optimizes as synapomorphic for the clade E. If DELTRAN optimization is used the character appears as synapomorphic for the group *G. gaujoni* (*G. globosa*, *G. sp. nov. 8*).

46. Uterus externus, thin projections*: (L = 2, CI=0.5, RI=0, F=0.88)

(0) absent;

(1) present (Fig. 54).

Figure 54. *Dyschiriognatha dentata*. Internal genitalia (arrows, uterus externus projections).

The presence of filiform projections in the uterus externus appears independently in *D. dentata* and *P. clercki*.

47. Female genitalia, posterior sac: (L = 2, CI=0.5, RI=0, F=0.88) (APH11)

(0) absent;

(1) present (Álvarez-Padilla & Hormiga, 2011: fig. 24D).

Posterior sac in the female genitalia optimizes at the base of Tetragnathinae with a reversal in the clade *Pachygnatha* + *Glenognatha*. Under DELTRAN optimization posterior sac appears independently in *Tetragnatha* and *Cyrtognatha*.

Cephalothorax morphology, chelicerae and legs

48. Female, lateral eyes, position relative to each other: (L=1, CI=1, RI=1) (APH11)

(0) separated;

(1) together on a single tubercle (Fig. 55).

Figure 55. *Glenognatha* sp. nov. 1. Cephalothorax lateral view (arrow, lateral eyes).

Lateral eyes together is the plesiomorphic condition. Separated female lateral eyes is an autapomorphy of *T. versicolor*.

49. Male clypeus, height relative to AME diameter: (L=5, CI=0.4, RI=0, F=0.72) (APH11).

(0) less than one diameter;

(1) between one and two diameters (Fig. 56A);

(2) more than 2.5 diameters (Fig. 56B).

Figure 56. Male cephalothorax, frontal view. **A**, *Glenognatha globosa*. **B**, *Glenognatha hirsutissima*.

Highly homoplastic. Low clypeus (state 0) is autapomorphic for *C. espanola*, highest clypeus (state 2) appear independently in the clade A, C and H.

50. Carapace, lateral surface, setae-bearing depressions*: (L=2, CI=0.5, RI=0.75, F=0.88)

(0) absent (Fig. 57A);

(1) present (Fig. 57B).

Figure 57. Female cephalothorax, lateral view. **A**, *Dyschiriognatha dentata* (arrow, setae-bearing depression). **B**, *Glenognatha* sp. nov. 2.

Setae-bearing depressions occur independently in *Pachygnatha* and the clade C. In the latter group these depressions are scattered in the lateral surfaces of the carapace and on the clypeus.

51. Carapace, lateral surface, irregular depressions*: (L=1, CI=1, RI=1, F=1)

(0) absent (Fig. 58A);

(1) present (Fig. 58B).

Figure 58. Female cephalothorax, lateral view. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha argyrostilba* (arrows, irregular depressions).

In members of the clade C, besides rounded setae-bearing depressions, there are irregular depressions scattered on the lateral surfaces of the carapace. The presence of such depressions optimizes as a synapomorphy for this clade.

52. Sternum, texture*: (L=2, CI=0.5, RI=0.66, F=0.88)

(0) smooth (Fig. 59A);

(1) with rounded setae-bearing depressions (Fig. 59B).

Figure 59. Female sternum **A**, *Glenognatha* sp. nov. 1. **B**, *Glenognatha argyrostilba*.

Rounded setae-bearing depressions in the sternum occur independently in *Pachygnatha* and the clade *D. dentata* + *D. argyrostilba*.

53. Sternum, configuration*: (L=4, CI=0.25, RI=0.62, F=0.72)

(0) not projected between coxae (Fig. 60A);

(1) projected between coxae II-III (Fig. 60B).

Figure 60. Female sternum **A**, *Glenognatha lacteovittata*. **B**, *Glenognatha* sp. nov. 8 (arrow, sternum projection).

Highly homoplastic. Sternum projections occur independently in *T. versicolor*, *Pachygnatha*, clade C and the group *G. gaujoni* (*G. globosa*, *G. sp. nov.* 8).

54. Chelicerae, anteroectal surface, setae-bearing tubercles: (L=1, CI=1, RI=1, F=1)

(AHS 2009)

(0) absent (Fig. 61A);

(1) present (Fig. 61B).

Figure 61. Female chelicerae, lateral view. **A**, *Glenognatha gaujoni*. **B**, *Dyschiriognatha dentata* (arrow, setae bearing tubercles).

Cheliceral anteroectal setae-bearing tubercles optimizes as synapomorphic for the group *D. dentata* + *D. argyrostilba*.

55. Male, chelicerae, orientation: (L=5, CI=0.2, RI=0.6, F=0.66) (DH09)

(0) not projected (Fig. 62A);

(1) projected (Fig. 62B).

Figure 62. Male cephalothorax, lateral view. **A**, *Glenognatha spherella*. **B**, *Glenognatha* sp. nov. 7.

Highly homoplastic. Projected male cephalothorax appear independently in *T. versicolor*, clade E, *G. sp. nov.* 6, *G. sp. nov.* 1 and the group ((*G. sp. nov.* 7, *G. sp. nov.* 11) (*G. emertoni*, *G. minuta*)).

56. Male, chelicerae, anterior tooth: (L=5, CI=0.2, RI=0.55, F=0.66) (DH09)

(0) absent (Fig. 63A);

(1) present (Fig. 63B).

Figure 63. Male left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 7. **B**, *Glenognatha foxi*. AT: anterior tooth.

Male anterior tooth optimizes at the base of Tetragnathinae with a reversal in the group *Pachygnatha* + *Glenognatha*. Within the latter clade the anterior tooth appears as a secondary condition in *P. clercki* and in the clade G with a subsequent reversal in *G. smilodon*. Under DELTRAN optimization the anterior tooth appears independently in *T. versicolor*, *C. espanola*, *P. clercki* and the clade G. According with the topological convention defined (Fig. 1), I changed the name dorsal tooth proposed by Dimitrov & Hormiga (2009) to anterior tooth in the character definition.

57. Male, chelicerae, anterior tooth size relative to the Prt1*: (L=2, CI=0.5, RI=0.5, F=0.88)

(0) subequal or shorter (Fig. 64A);

(1) longer (Fig. 64B).

Figure 64. Male left chelicerae, anterior view. **A**, *Glenognatha heleios*. **B**, *Glenognatha* sp. nov. 6. AT: anterior tooth.

Short anterior tooth (state 1) appears independently in *C. espanola* and within the clade G.

58. Male, chelicerae, fang outgrowth: (L=4, CI=0.25, RI=0.78, F=0.72) (DH09)

(0) absent (Fig. 65A);

(1) present (Fig. 65B).

Figure 65. Male left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 11. **B**, *Glenognatha gaujoni*. CFO: cheliceral fang outgrowth.

Male cheliceral fang outgrowth optimizes as synapomorphic for *C. espanola* + *Pachygnatha* + *Glenognatha*. Independent reversals occurred in *G. globosa* + *G. sp. nov. 8*, *G. sp. nov. 9* + *G. sp. nov. 10* and the clade H.

59. Male, chelicerae, anteromesal macrosetae*: (L=1, CI=1, RI=1)

(0) absent (Fig. 66A);

(1) present (Fig. 66B).

Figure 66. Male left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 8. **B**, *Glenognatha hirsutissima* (arrow, macrosetae).

Anteromesal macrosetae on the male chelicerae is autapomorphic for *G. hirsutissima*.

60. Male, chelicerae, anteromarginal projection*: (L=2, CI=0.5, RI=0; F=0.88)

(0) absent (Fig. 67A);

(1) present (Fig. 67B).

Figure 67. Male left chelicerae, anterior view. **A**, *Glenognatha globosa*. **B**, *Glenognatha emertoni* (arrow, anteromarginal projection).

Anteromarginal projection in the male chelicerae appears independently in *T. versicolor* and *G. emertoni*.

61. Male, Prt1, size relative to other promarginal teeth*: (L=2, CI=0.5, RI=0.75; F=0.88)

(0) subequal or shorter (Fig. 68A);

(1) conspicuously enlarged (Fig. 68B).

Figure 68. Male left chelicerae, anterior view. **A**, *Glenognatha spherella*. **B**, *Glenognatha* sp. nov. 3. Prt1: promarginal tooth 1.

Conspicuously enlarged promarginal tooth 1 support the clade G. Reversal to the plesiomorphic state occur in the group *G. foxi* (*G. sp. nov.* 9, *G. sp. nov.* 10).

62. Male, Prt1, shape*: (L=2, CI=1, RI=1; F=1)

- (0) straight to moderately curved (Fig. 69A);
- (1) curved, with two direction changes from the base to the apical portion (Fig. 69B);
- (2) apical portion strongly curved (Fig. 69C).

Figure 69. Male left chelicerae, anterior view. **A**, *Glenognatha minuta*. **B**, *Glenognatha heleios*. **C**, *Glenognatha iviei*. Prt1: promarginal tooth 1.

Straight Prt1 is the widespread condition in *Glenognatha*. Curved tooth optimizes as synapomorphic for the group *G. smilodon* (*G. heleios*, *G. iviei*), within this clade a strongly curved tooth is autapomorphic for *G. iviei*.

63. Male, Ret2, size relative to Ret1*: (L=2, CI=1, RI=1; F=1)

(0) small, shorter to 2.8 times the Ret1 length (Fig. 70, 71A);

(1) big, at least 3.8 times longer than the Ret1 length (Fig. 70, 71B).

Figure 70. Character 63 states. The box plot shows median (squares), 50% (box limits) and minimum and maximum (brackets) of all values, (U=0.00, $p < 0.001$, $n=85$). Ret1: Retromarginal tooth 1. Ret2: Retromarginal tooth 2.

Figure 71. Male left chelicerae, posterior view. **A**, *Glenognatha* sp. nov. 6. **B**, *Glenognatha emertoni*. Ret1: retromarginal tooth 1. Ret2: retromarginal tooth 2.

The length of the Ret2 is taken relative to the length of the Ret1. Teeth length was measured along the midline from the base to the tip. Long Ret2 optimizes as synapomorphy for the clade J.

64. Male, Ret2, shape in posterior view*: (L=3, CI=0.33, RI=0.66; F=0.8)

(0) straight or mesally curved (Fig. 72A);

(1) ectally curved (Fig. 72B).

Figure 72. Male left chelicerae, posterior view. **A**, *Glenognatha gaujoni*. **B**, *Glenognatha* sp. nov. 11. Ret2: retromarginal tooth 2.

Retromarginal tooth 2 ectally curved appears independently in *D. dentata* and the clade J.

65. Male, Ret 3, size relative to Ret1*: (L=1, CI=1, RI=1; F=1)

(0) small, shorter to two times Ret1 length (Fig. 73, 74A);

(1) big, at least three times longer than the Ret1 length (Fig. 73, 74B).

Figure 73. Character 65 states. The box plot shows median (squares), 50% (box limits) and minimum and maximum (brackets) of all values, ($U=0.00$, $p<0.001$, $n=85$). Ret1: Retromarginal tooth 1. Ret3: Retromarginal tooth 3.

Figure 74. Male left chelicerae, posterior view. **A**, *Glenognatha* sp. nov. 3. **B**, *Glenognatha* sp. nov. 7. Ret1: retromarginal tooth 1. Ret3: retromarginal tooth 3.

The length of the Ret3 is taken relative to the length of the Ret1. Teeth length was measured along the midline from the base to the tip. Long Ret3 optimizes as synapomorphy for the group (*G. sp. nov. 7*, *G. sp. nov. 11*) (*G. emertoni*, *G. minuta*).

66. Male, Rte1, position relative to the Rt2* (L=4, CI=0.25, RI=0.66; F=0.72)

(0) aligned (Fig. 75A);

(1) posteriorly displaced (Fig. 75B).

Figure 75. Male left chelicerae, mesal view. **A**, *Glenognatha heleios*. **B**, *Glenognatha australis*. Ret1: retromarginal tooth 1. Ret3: retromarginal tooth 3.

Aligned retromarginal teeth is the plesiomorphic condition. Ret1 posteriorly displaced appears as synapomorphic for *Glenognatha*. Within the genus, several reversals occurred in *G. heleios* + *G. iviei*, *G. hirsutissima* and *G. emertoni* + *G. minuta*.

67. Male, Prt2, position relative to Prt1 and Prt3*: (L=6, CI=0.16, RI=0.44; F=0.61)

(0) closer to Prt1 than to Prt3 or subequally distant from both (Fig. 76A);

(1) closer to Prt3 than to Prt1 (Fig. 76B);

Figure 76. Male left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 3. **B**, *Glenognatha argyrostilba*. Prt: promarginal tooth.

Highly homoplastic. Male Prt2 closer to Prt3 than to Prt1 optimizes ambiguously as synapomorphic for *Cyrtognatha* (*Pachygnatha*, *Glenognatha*). Within the latter genus a basal reversal occurred. Under DELTRAN optimization this condition appears independently several times.

68. Female, chelicerae, anterior tooth*: (L=2, CI=0.5, RI=0; F=0.88)

(0) absent (Fig. 77A);

(1) present (Fig. 77B).

Figure 77. Female left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 6. **B**, *Glenognatha gaujoni*. AT: anterior tooth.

Female anterior tooth optimizes as synapomorphic for the clade *G. gaujoni* (*G. globosa*, *G. sp. nov.* 8,) with a reversal in the latter species.

69. Female, chelicerae, fang outgrowth*: (L=2, CI=0.5, RI=0; F=0.88)

(0) absent (Fig. 78A);

(1) present (Fig. 78B).

Figure 78. Female left chelicerae, mesal view. **A**, *Glenognatha* sp. nov. 7. **B**, *Glenognatha gaujoni*. CFO: cheliceral fang outgrowth.

Female cheliceral fang outgrowth appears independently in *G. gaujoni* and the clade *G. foxi* (*G. sp. nov.* 9, *G. sp. nov.* 10).

70. Female, chelicerae, ectal apophysis*: (L=2, CI=0.5, RI=0; F=0.88)

(0) absent (Fig. 79A);

(1) present (Fig. 79B).

Figure 79. Female left chelicerae, anterior view. **A**, *Glenognatha globosa* **B**, *Glenognatha gaujoni*. EA: ectal apophysis.

Female ectal apophysis optimizes as synapomorphic for the clade *G. gaujoni* (*G. globosa*, *G. sp. nov.* 8,) with a reversal in *G. globosa*.

71. Female, chelicerae, anterior bulge*: (L=1, CI=1, RI=1; F=1)

(0) absent (Fig. 80A);

(1) present (Fig. 80B).

Figure 80. Female left chelicerae, mesal view. **A**, *Glenognatha sp. nov.* 6. **B**, *G. emertoni* (arrow, anterior bulge).

Female cheliceral anterior bulge optimizes as synapomorphic for *G. emertoni* + *G. minuta*.

72. Female, chelicerae, anteromarginal projection*: (L=2, CI=0.5, RI=0.5; F=0.88)

(0) absent (Fig. 81A);

(1) present (Fig. 81B).

Figure 81. Female left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 11. **B**, *Glenognatha emertoni* (arrow, anteromarginal projection).

Female cheliceral anteromarginal projection appears independently in *T. versicolor* and the group *G. emertoni* + *G. minuta*.

73. Female, chelicerae, posterior bulge*: (L=2, CI=0.5, RI=0.66; F=0.88)

(0) absent (Fig. 82A);

(1) present (Fig. 82B).

Figure 82. Female left chelicerae, mesal view. **A**, *Glenognatha* sp. nov. 6. **B**, *Glenognatha* sp. nov. 4 (arrows, posterior bulges).

Female cheliceral posterior bulge appears independently in clade A and *G. spherella*.

74. Female, chelicerae, posterior bulge, quantity*: (L=1, CI=1, RI=1)

(0) one;

(1) two (Fig. 83).

Figure 83. *Glenognatha lacteovittata*. Female left chelicerae, posterior view (arrows, cheliceral bulges).

Two cheliceral posterior bulges is autapomorphic for *G. lacteovittata*.

75. Female, Prt1, base*: (L=1, CI=1, RI=1)

(0) not swollen (Fig. 84A);

(1) swollen (Fig. 84B).

Figure 84. Female left chelicerae, anterior view. **A**, *Glenognatha* sp. nov. 8. **B**, *Glenognatha* sp. nov. 7 (arrow, Prt1 base swollen). Prt1: promarginal tooth 1.

Enlarged Prt1 base is autapomorphic for *G.* sp. nov. 7.

76. Chelicerae, retromarginal teeth, quantity: (L=2, CI=0.5, RI=0.5; F=0.88)
(AHS09)

(0) three to five (Fig. 85A);

(1) seven or more (Fig. 85B).

Figure 85. Female left chelicerae, mesal view. **A**, *Glenognatha minuta*. **B**, *Glenognatha globosa*. Ret: retromarginal teeth.

High number of retromarginal teeth appears independently in *T. versicolor* and the clade *G. globosa* + *G. sp. nov.* 8.

77. Femur IV, trichobothria: (L=1, CI=1, RI=1) (APH11)

(0) absent;

(1) present (Fig. 86A-B).

Figure 86. Femur IV. **A**, *Glenognatha tangi*. **B**, *Glenognatha sp. nov.* 8. (arrows, trichobothria).

In the present analysis, trichobothria on the femur IV is synapomorphic for Tetragnathinae. Nevertheless, this condition also appear in Leucauginae members (Alvarez-Padilla & Hormiga, 2011).

78. Femur IV, trichobothria, distribution: (L=1, CI=1, RI=1) (APH11)

(0) less than one third of femur (Fig. 87);

(1) more than one third of femur.

Figure 87. *Glenognatha tangi*. Femur IV (arrow, trichobothria).

Trichobothria occupying more than one third of the femur IV is autapomorphic for *C. espanola*. However, this condition is also present in Leucauginae members (Alvarez-Padilla & Hormiga, 2011).

79. Femur, ventral macrosetae*: (L=1, CI=1, RI=1)

(0) absent;

(1) present (Fig. 88).

Figure 88. *Glenognatha hirsutissima*. Female ventral view (arrows, femur spines).

Strong ventral macrosetae in the femur is autapomorphic for *G. hirsutissima*.

Abdomen morphology and tracheal system

80. Abdomen, cuticle, microsculpture: (L=1, CI=1, RI=1, F=1) (APH11)

(0) made of flaps;

(1) made of cylinders (Fig. 89).

Figure 89. *Glenognatha* sp. nov. 1. Female abdomen cuticle.

Cuticle microsculpture made of cylinders optimizes as synapomorphic for *Pachygnatha* + *Glenognatha*.

81. Median tracheal trunks, configuration (L=1, CI=1, RI=1, F=1) (APH11)

- (0) entire (not branched) or bifurcated;
- (1) ramified into numerous tracheoles (Fig. 90).

Figure 90. *Glenognatha emertoni*. Female tracheal system. MT: median trunks (arrow, lateral projection). LT: lateral trunks.

Ramified median tracheal trunks optimizes as synapomorphic for *Glenognatha*. All the examined *Glenognatha* species have a similar branching pattern with tracheoles emerging from distinct lateral projections of the median trunks and at the apical end (Fig. 90), entering into the cephalothorax.

82. Median tracheal trunks, width (L=1, CI=1, RI=1, F=1) (MH04)

- (0) about as wide as laterals;
- (1) at least one a half times wider than laterals (Fig. 90).

Large median trunks relative to laterals optimizes as synapomorphic for *Glenognatha*.

6.3 Phylogenetic relationships

Although this study did not planned to reconstruct the intergeneric relationships within the subfamily Tetragnathinae, as this issue requires a denser taxonomic sample,

some comments about the relationships obtained here are pertinent. According with previous investigations (Álvarez-Padilla, 2007; Kuntner et al. 2008; Dimitrov & Hormiga, 2009; Álvarez-Padilla *et al.*, 2009; Álvarez-Padilla & Hormiga, 2011; Dimitrov & Hormiga, 2011), Tetragnathinae is recovered as a highly supported monophyletic clade (Fig. 7). Nevertheless, the genus *Cyrtognatha* is obtained as sister to *Pachygnatha* + *Glenognatha*, contrary to the hypothesis found in the aforementioned works where *Cyrtognatha* appears either as sister to *Tetragnatha* or sister to a clade composed by *Tetragnatha*, *Pachygnatha* and *Glenognatha*. This difference could be related with the lower taxon sampling in the present study and the exclusion of some characters, used by previous authors (Álvarez-Padilla & Hormiga, 2011 and references therein), uninformative to solve *Glenognatha* relationships. As previously suggested (Álvarez-Padilla & Hormiga, 2011 and references therein), *Pachygnatha* is recovered as the sister group of *Glenognatha* (Figs. 7-8). In the present study, five unambiguous synapomorphies, free of homoplasy support *Pachygnatha* + *Glenognatha* (Fig. 8).

The monophyly of *Glenognatha* is strongly supported by high values of resampling measures and Bremer support (Fig. 7). Eight unambiguous synapomorphies support the monophyly of *Glenognatha*, all free of homoplasy: l-shaped paracymbium (char. 15[state 2]), setae distributed only in the distal portion of the paracymbium (char. 18[0]), conductor without basal apophysis (char. 19[1]), conductor retrolateral apophysis prolaterally folded (char. 21[1]), embolus with medial groove (char. 32[1]), male Ret1 posteriorly displaced (char. 66), medial tracheal trunks branched (char. 81[1]) and large relative to lateral tracheae (char. 82 [1]). Additional synapomorphies (although of ambiguous optimization) are: large accessory gland base (char. 41 [1]), accessory glands located near the copulatory ducts (char. 42 [1]) and male Prt2 closer to Prt1 than to Prt3 or subequally distant (char. 67 [0], homoplasious).

Within *Glenognatha* several monophyletic groups are recovered, though most of them with low support values (15 of 25 internal nodes with resampling values < 50) (Fig. 8). These results are congruent with that obtained in generic systematic revisions among other taxa, where low support values are also reported (Lopardo, 2005; Izquierdo & Ramírez, 2008; Dimitrov & Hormiga, 2009; Ojanguren & Ramírez, 2009; Werenkraut & Ramírez, 2009; Daza *et al.*, 2012; Soto & Ramírez 2012). The amount of support for a group is the result of the interaction between the characters that favor the

group and those that contradict it (Goloboff *et al.*, 2003). Low support values are obtained when the same characters that support a group also contradict it (Daza *et al.*, 2012). Considering the geographic distribution of *Glenognatha*, the unknown females in some species and the high probability of finding undescribed species, future addition of taxa and characters might improve some support values.

Unambiguous synapomorphies supporting the major internal clades within *Glenognatha* are given in Table 2. Clade A is recovered as the most basal lineage. The three representatives of the genus *Dyschiriognatha* included in the outgroup sample, form a monophyletic group nested within *Glenognatha* (clade C). These species present all the diagnostic character of *Glenognatha* and therefore they are transfer to this genus (see taxonomy section). The morphology of the uterus externus sac provides support for the clade D which includes most *Glenognatha* species. Within this group male genitalia and chelicerae characters provide support for internal clades (Fig. 8, Table 2).

The Cameroon endemic species *G. smilodon*, is recovered as sister to *G. heleios* + *G. iviei*, the shape of the Prt1 provides unambiguous support to this clade. *Glenognatha hirsutissima*, the only Polynesian species available for this study, is recovered as sister group of *G. sp. nov. 1*, but with very low support. According with Berland (1933, 1935, 1942), other *Glenognatha* species could be found in the French Polynesia. However, coding these taxa from the original descriptions and drawings, which lack details of crucial character systems as genitalia and spinnerets morphology, might produce numerous missing data and greater instability in the relationships. Therefore, examination of new material is necessary in order to assess the position of these Polynesian species within *Glenognatha*. Perhaps these species could form a monophyletic group as suggested in several taxa radiations registered in the Marquesas islands, including the tetragnathine genus *Tetragnatha* (Gillespie *et al.*, 2008).

Table 2. Unambiguous synapomorphies supporting major clades within *Glenognatha* that results analyzing the complete matrix under $k = 8$.

Clade	Unambiguous synapomorphies	Character No.
A	PMS with one aciniform gland spigots	3
B	PLS aciniform gland spigots arranged in one line	6
	Four epiandrous fusules	8
	Paracymbium distal portion long	16
	Embolic medial groove expanded	33
C	Carapace with irregular depressions on lateral surface	51
D	Uterus externus sac divided	44
E	Embolus tip with projection beyond embolic opening	30
F	Conductor with retrolateral projection	24
G	Male Prt1 conspicuously enlarged	61
J	Male Ret2 long	63

PLS: posterior lateral spinnerets. PMS: posterior median spinnerets. Prt: promarginal tooth. Ret: retromarginal tooth.

6.4 Character evolution

Genitalia

The male palpal morphology of *Glenognatha* is very characteristic; five of the eight unambiguous synapomorphies that support the monophyly of the genus are related with this character system. According with my preferred hypothesis (Fig. 8), the plesiomorphic condition in *Glenognatha* correspond to a short distal portion of the paracymbium (Figs. 98D, 106D, 110D) and an embolic groove limited to the inner surface of the embolus (Fig. 102A, 110A) (Clade A). Long distal portion of the paracymbium and expanded embolic groove have an unique origin at clade B, although with low support. These contrasting male genitalia configurations are not correlated with clear morphological patterns in female genitalia, a fact that could be related with the absence of a ‘‘lock-and-key’’ fit between male and female genitalia in haplogyne taxa (Huber & Senglet, 1997; Danielson-François, 2006). Mating behavioral data and histological preparations could provide functional significance for the contrasting configuration of male genitalia within *Glenognatha*, clarifying crucial aspects as which sclerites besides the embolus are inserted in the female genital cavity and which kind of insertion (ipsilateral or contralateral) is implemented.

Within *Glenognatha* several clades have lost independently the copulatory ducts and the spermathecae. As stated by Eberhard & Huber (2010), this condition could be explained by an untested hypothesis: males under sexual selection may have “short-circuited” female storage organs and introduced sperm directly into the oviduct. In accordance with this hypothesis, sperm masses were detected in the uterus externus sac of females without spermathecae after copula (*G. globosa* and *G. sp. nov. 8*). However, histological preparations are necessary in order to confirm where the sperm is deposited in females with and without spermathecae and if this locations is phylogenetically informative.

Chelicerae

Cheliceral morphology within *Glenognatha* is highly variable amongst species and this variation is phylogenetically informative. Conspicuous asymmetry in the size of cheliceral teeth appears to be an apomorphic condition; enlarged Prt1 support clade G and enlarged Ret2 clade J. Available published data for *Glenognatha* species (Barrows, 1919; Edwards & Senske, 2001; Danielson-François, 2006) and observations of mating behavior in *G. globosa*, *G. sp. nov. 8* and *G. lacteovittata*, confirm that cheliceral clasp occur prior to insemination in *Glenognatha*. Therefore, the apparently rapid divergent evolution of chelicerae could be related with sexual selection. However, modifications of the cheliceral teeth might also be related with prey specialization as suggested for the genus *Tetragnatha* (Gillespie *et al.*, 1997).

Tracheal system

One of the most striking characteristic of the genus *Glenognatha* is the morphology of the tracheal system (Figs. 101, 109, 174). In the present analysis, this character provides unambiguous support for the monophyly of the genus. However, it should be noted that ramified median trunks are also present in members of the Nanometinae subfamily (Álvarez-Padilla & Hormiga, 2011) and some *Pachygnatha* species (Bosmans & Bosselaers, 1994), but with a totally different configuration. Similar branching patterns to those of *Glenognatha*, have been reported in distant related groups as some linyphiids (“desmitracheate” condition) and uloborids (Opell, 1979, 1990; Arnedo *et al.*, 2009). In both cases, a relation of the branched tracheal pattern and the active monitoring of webs have been proposed. In the case of *Glenognatha*, natural history data are necessary in order to suggest a possible functional

significance of the tracheal morphology. No discrete variation in the general morphology of the tracheal system was detected across *Glenognatha* species

6.5 Identity of the spider genus *Dyschiriognatha*

The three representatives of the genus *Dyschiriognatha* included in the outgroup sample are nested within *Glenognatha* (Fig. 7). These species form a monophyletic group strongly supported by high resampling values and Bremer support (Fig. 7). In addition, *D. montana* Simon, 1897 is suggested as junior synonym of *D. argyrostilba* after examination of the type material (see taxonomic section). The remaining four described *Dyschiriognatha* species, including the type species, were not available for this study and the lack of morphological details in the original descriptions and drawings prevent me to include this species in the phylogenetic analysis, in order to avoid the effects of high proportion of missing data. However, some information included in the original descriptions suggest the possibility of including these species in the genus *Glenognatha*.

Simon (1893) described *D. bedoti*, the type species of the genus *Dyschiriognatha*, from a single female specimen collected in Borneo. Despite its evident similarity with the previously described genus *Glenognatha*, as stated by Simon in the original description, the author decided to proposed a new genus based on highly variable somatic characters as the eye and leg size to classify this species. Although the original description do not include information about the internal female genitalia or tracheal system, Simon (1893) states that this species present an anteriorly displaced spiracle as in *Glenognatha* and mentions two characters that might place this species in the clade C within *Glenognatha*: “*cephalothorax.....versus marginem subtiler granosus*” and “*sternum....laeve sed parce granosum*”, these conditions could be the apomorphic states of characters number 51 and 52 used in the present analysis.

Vellard (1926) described *D. lobata*, from a single male specimen collected in Lagoa de Bom Sucesso, Rio de Janeiro, Brazil. Unfortunately the type material is lost and there is great uncertainty about the exact location of the type locality. In addition, the original description would apply similar to different species and therefore the species could be considered as a *nomen dubium*. However, it should be noted that the

morphology of the paracymbium depicted by Vellard (1926) correspond to the diagnostic morphology of *Glenognatha*.

Dyschiriognatha oceanica Berland, 1929 and *D. upoluensis* Marples, 1955, were described from male specimens from Upolu, Samoa. According with the original drawings, these species exhibit the typical *Glenognatha* male genitalia morphology and in *D. upoluensis* the characteristic female tracheal system (Marples, 1955 pl. 59 fig. 17). The presence of anterior tooth in *D. oceanica* (Berland, 1929 fig. 43) suggest the inclusion of this species in the clade G.

Examination of new material collected in the type locality of *D. bedoti* is necessary in order to propose objectively *Dyschiriognatha* as junior synonym of *Glenognatha*. In addition, the inclusion of this species and the other described *Dyschiriognatha* species, unavailable for this study, within the data matrix could improve the stability and support of some internal clades.

6.6 Taxonomy

Glenognatha Simon, 1887

Mimognatha, Banks, 1929: 90, type species by monotypy *Mimognatha foxi* Banks, 1929. Synonymized by Levi, 1980: 64.

Hivaoa, Berland, 1935: 50, type species by original designation *Hivaoa argenteoguttata* Berland, 1935. Synonymized by Levi, 1980: 64.

Type species: *Glenognatha emertoni* Simon, 1887, type by monotypy.

Diagnosis: Males of *Glenognatha* can be distinguished from all other tetragnathid genera by having a prolaterally folded apophysis on the conductor (Figs. 118A-D, 126A-D, 157C-D, 166A-F). The presence of a medial groove in the basal portion of the embolus (Figs. 118E, 158A, 171A, 175B, 199A-B) and the paracymbium with a distal portion oriented in opposite direction to the cymbium are also diagnostic characters (Figs. 98D, 106D, 114D, 122D, 153D, 187D, 214D). Females differ from other members of the Tetragnathinae subfamily, with which they share the secondary haplogyne condition (Figs. 116, 124, 155, 189, 197, 205, 228, 236), by having tracheal system composed of two median trunks divided into numerous tracheoles (on the sides

and on the distal end) and two simple (unbranched) lateral tracheae (Figs. 174, 182, 237, 281).

Description: total length 1.25-4.60 in males and 1.40-4.80 in females. Carapace longer than wide, 0.62-2.4 long in males, 0.61-2.05 in females; pale yellow to dark brown (Figs. 95, 96, 103, 127, 150, 151, 208, 212). Sternum as wide as long and prolonged between coxae in some species (Figs. 119C, 127C, 159C, 168C). Labium trapezoidal, wider than long, and rebordered. PME and AME larger than the other eyes. Lateral eyes with nearly the same diameter. Clypeus higher than one AME diameter. Chelicerae large, sexually dimorphic, with 3-5 promarginal teeth and 3-10 retromarginal teeth (Figs. 97, 161, 170, 178, 194). The number of cheliceral teeth usually varies between and within species. Some individual presents asymmetry in the number of retromarginal teeth. Male chelicerae are usually divergent and in some species with an anterior tooth (spur *sensu* Levi, 1980) (Figs. 186A, 194A, 202A, 209C, 123C). Female chelicerae are less divergent and could carry ectal apophysis (Figs. 161D-F, 170D-F). Cheliceral boss well developed. Cheliceral fangs with retrolateral outgrowth (Figs. 105A, 113B, 143A, 161F, 186B), in some species can be small or absent (Figs. 152A, 170, 178, 233). Legs without spines (except in *G. hirsutissima*), slightly longer in males than in females. Femur I length varies from 0.75 to 3.45 in males and from 0.67 to 3.4 in females. Leg formula I>II>IV>III. Dorsally the base of the femur has one to six trichobothria and the tibia five to ten. On the first half of the metatarsi there is one trichobothrium (two in *G. hirsutissima*) longer than the diameter of the article. The fourth metatarsus lacks trichobothria except in *G. sp. nov. 5*, *G. sp. nov. 10*, *G. sp. nov. 11*, *G. tangi*, *G. emertoni* and *G. hirsutissima*. Abdomen oval to spherical with silver guanine patches, in some species with irregular patterns of dark longitudinal bands that join medially.

Tracheal system with two median trunks branching into several tracheoles at the tip and on the sides and two unbranched lateral tracheae (Figs. 101, 109, 117, 133, 147, 174, 237). Spiracle atrium glands occupying both sides of the atrium and the basal region of the median trunks (Figs. 117, 237, 252, 281). Posterior tracheal spiracle wider than long and anteriorly displaced in most species. ALS with more than 12 piriform spigots (Figs. 298-299). PMS with one to two aciniform spigot between the cylindrical and the minor ampullate spigots (Figs. 300-301). PLS with 5-18 AC spigots (Figs. 302-303). Epiandrous fusules arranged linearly (Fig. 297).

Male palp tibia with 3-6 trichobothria. Cymbium medially constricted. Paracymbium with two perpendicular portions, the distal with its apex in opposite direction in relation with the cymbium (Figs. 98D, 106D, 114D, 122D, 153D, 187D, 214D, 257D). Tegulum spherical, with a cuplike apical depression where the embolus and the conductor rest. Embolus surrounding the conductor base and with a well-differentiated medial groove that originates near the base and ends near the apical region (Figs. 118E, 158A, 171A, 175B, 199A-B, 253E). Conductor emerging from the center of the tegulum as a cylindrical tube that bends prolaterally and flattens into a lamina, which is retrolaterally folded and carries a distinct apophysis (Figs. 102A, 110A, 118A, 126A-D, 157A, C-D, 166, 175, 191A-C, 230A-G). Females lack epigynum. Copulatory opening spiracle-shaped (Figs. 112C, 120C, 117C) leading to the uterus externus chamber (Figs. 100B, 108B, 116B, 155A-C, 280B). This chamber has tendons in its lateral borders that serve as muscle attachment points and carries the copulatory ducts that lead to spermathecae. In some species the spermathecae and copulatory ducts are absent (Figs. 100, 108, 116, 164, 173, 181, 274, 280). Uterus externus chamber connected with a membranous sac of variable morphology across the species (Figs. 100, 132, 146, 189, 228, 251, 259, 295).

Composition: *Glenognatha* currently contains 27 species: *G. argyrostilba* (O. P.-Cambridge, 1876) comb. nov., *G. australis* (Keyserling, 1883), *G. dentata* (Zhu & Wen, 1978) comb. nov., *G. emertoni* Simon, 1887, *G. foxi* (McCook, 1894), *G. gaujoni* Simon, 1895, *G. globosa* (Petrunkevitch 1925), *G. gloriae* (Petrunkevitch, 1930), *G. heleios* Hormiga, 1990, *G. hirsutissima* (Berland, 1935), *G. iviei* Levi, 1980, *G. lacteovittata* (Mello-Leitão, 1944), *G. minuta* Banks, 1898, *G. smilodon* Bosmans & Bosselaers, 1994, *G. spherella* Chamberlin & Ivie, 1936, *G. tangi* (Zhu, Song & Zhang, 2003) comb. nov. and 11 new species described herein.

Distribution: *Glenognatha* species have a broadly distribution with records in Nearctic, Neotropic, Afrotropic, Indomalaya and Oceania ecozones. It occupies a broad altitudinal range from 6 masl (*G. iviei*) to 2700 masl (*G. sp. nov. 5*) (Figs. 304-315).

Natural history: The natural history of *Glenognatha* species is still little known and published data are mainly focused on Nearctic species.

Glenognatha foxi is recorded as an abundant spider in a wide variety of crops in the United States: soybean (Young & Edwards, 1990; Balfour & Rypstra, 1998), alfalfa (Young & Edwards, 1990; Birkhofer *et al.*, 2007), rice, sugarcane, peanuts and cotton (Young & Edwards, 1990). Chapman *et al.* (2012) recorded Collembola, Aphididae and Brachycera as prey taxa for *G. foxi* in winter wheat. Phenology of *G. foxi* in Georgia was assessed by Draney (1997), who suggested a possible annual reproductive cycle with mating in the early summer. *G. foxi* is recorded as the most abundant aerial species in one of the two sampling stations assessed by Dean & Sterling (1985). Some aspects of the reproductive biology and habits of *G. foxi* were described by Barrows (1919). According with this author, *G. foxi* is common in meadows and waste-lands in hot dry situations. The mating occurs in the middle of the web with cheliceral clasp and each male palp is inserted alternately every 5 minutes. The overall copula has a duration of 15 minutes.

Hormiga & Döbel (1990) and Döbel *et al.* (1990) provided phenology and web architecture data for *G. heleioides*. According with these authors, *G. heleioides* is an univoltine species in intertidal salt marshes of New Jersey, with greater abundance in short and intermediate forms of *Spartina alterniflora*. Webs are placed close to the soil surface with the sticky spiral very closely spaced. Some aspects of the reproductive biology of *G. heleioides* were described by Edwards & Senske (2001). These authors recorded the insertion of only one palp and a copula duration of two hours.

Danielson-François (2006) carried on a detailed study of habits, sperm release patterns and reproductive behavior of *G. emertoni*. In this work, specimens were found in vegetation overhanging streams and under stream-side rocks in Arizona. Avoidance behavior after disturbance and mating behavior were described. In the former, the spider dropped into the water beneath and float certain distance until the extended legs allow climbed up some streamside vegetation. The mating behavior involved cheliceral clasp, vibratory courtship through legs movements and palps insertions.

Glenognatha lacteovittata is recorded as a common species in alfalfa and wheat crops in Argentina (Armendano & González, 2010; 2011) and *G. maelfaiti* is collected preferentially in humid habitats of Santa Cruz island in Galápagos, Ecuador (Baert *et al.*, 1991).

Adults and juveniles of *Glenognatha* sp. nov. 2 were collected in low mountain humid forests in western Colombian Andes (Fig. 91). This species builds its webs in vegetation adjacent to streams about 25 cm to 2 m above ground level (Figs. 92), although some individuals were found far away from any current in low vegetation. In both cases, the web is almost horizontal. It has closed hub and few sticky spiral turns and radii. The web frame can be rectangular or triangular. Some webs were observed under leaves (Figs. 92B).

Glenognatha sp. nov. 8 lives in the same habitats as *Glenognatha* sp. nov. 2 (Fig. 91). Nevertheless, this species builds its webs a few centimeters (1-5cm) above streams (Fig. 93). Rocks are used as the principles attachment points. Web aggregations with shared radii and numerous hubs were commonly observed (Figs. 93A). In this structures different individuals cohabit, each occupying one hub. No aggression between conspecifics was recorded. A similar avoidance behavior, as that described for *G. emertoni* by Danielson-François (2006), was observed after disturbance. Diptera and Ephemeroptera were preyed during observations.

Glenognatha gaujoni builds its webs a few centimeters (5-15cm) above streams in Amazonian rainforests (Fig. 91). The web is horizontal with closed hub, few radii and sticky spiral turns (Fig. 94).

Key to males of *Glenognatha*

1. Femur III with a row of strong ventral macrosetae (Fig. 240C)..... *G. hirsutissima*
- Femur III without macrosetae..... 2
2. Chelicerae with anterior tooth (Figs. 186A, 194A, 202A, 209C, 225A)..... 3
- Chelicerae without anterior tooth (Figs. 97A, 152A, 170A, 256A)..... 9
3. Ret1 displaced to the posterior surface (Figs. 186C)..... *G. sp. nov.* 6
- Ret1 not displaced (Figs. 194C, 202C, 209C, 213C)..... 4
4. Prt1 enlarged relative to Prt2 and Prt3 (Figs. 194A, 220D, 225A)..... 5
- Prt1 not enlarged (Figs. 202A, 209A, 213A)..... 7
5. Paracymbium with a rounded projection on the anterior margin (Fig. 195D)....
..... *G. sp. nov.* 3

- Paracymbium with a pointed projection on the anterior margin (Figs. 222D, 226B)..... 6
- 6. Embolus coiled, Prt1 strongly curved (Figs. 220A, 221, 222)..... *G. iviei*
- Embolus not coiled, Prt1 slightly curved (Figs. 225A, 226, 227)..... *G. heleios*
- 7. Paracymbium distal portion as long or longer than the tegulum in retrolateral view (Fig. 214D)..... *G. sp. nov.* 10
- Paracymbium distal portion shorter than the tegulum in retrolateral view..... 8
- 8. Conductor lamina excavated in dorsal view, margin entire, Canada to Panama (Figs. 204C, 207D)..... *G. foxi*
- Conductor lamina not excavated, margin serrated, Brazil (Figs. 211B-C)..... *G. sp. nov.* 9
- 9. Embolic medial groove not visible in ventral view, paracymbium distal portion short (Figs. 98D, 102A, 106D, 110A, 110D)..... 10
- Embolic medial groove visible in ventral view, paracymbium distal portion long (Figs. 122A, 137A, 171A, D, 187A, D, 203C-D)..... 12
- 10. Conductor lamina with distal prolateral fold (Figs. 110A, 118A) 11
- Conductor lamina without distal prolateral fold (Figs. 99B-C, 102B)..... *G. sp. nov.* 4
- 11. Embolus tip twice coiled, with filiform projections (Figs. 115E, 118E-G)..... *G. lacteovittata*
- Embolus tip uncoiled, without filiform projections (Figs. 107D, 110A-C)..... *G. sp. nov.* 5
- 12. Carapace with irregular lateral depressions (Figs. 119A, 127A, 141A)..... 13
- Carapace without such depressions (Figs. 150A, 159A, 168A)..... 15
- 13. Conductor with tooth-like projections (Figs. 144B, 145B-C, 149D)..... *G. dentata*
- Conductor without such projections (Figs. 126A-D, 139A-B)..... 14
- 14. Conductor lamina sinuous, sternum with rounded setae-bearing depressions (Figs. 131B-C)..... *G. argyrostilba*
- Conductor lamina almost rectangular, sternum smooth (Fig. 123B-C)..... *G. tangi*
- 15. Chelicerae with enlarged Ret2 and Ret3, the latter being longer (Fig. 284B)..... *G. minuta*
- Chelicerae otherwise (Figs. 248B, 256B), if Ret2 and Ret3 are enlarged, the latter is shorter (Fig. 271B, 277B, 292B)..... 16
- 16. Chelicerae with enlarged Prt1, curved (Fig. 217D)..... *G. smilodon*
- Chelicerae with Prt1 not enlarged (Figs. 248A, 256A, 271A)..... 17

17. Ret1 adjacent to the fang articulation, longer than the fang width (Figs. 152A-C).....	<i>G. sp. nov.</i> 2
- Ret1 not adjacent to the fang articulation (Figs. 161B, 170B, 178B, 233B, 271B), if near to the fang articulation smaller than the fang width (Figs. 256B-C, 264B-C).....	18
18. Embolus tip curved towards the conductor (Figs. 238A-C).....	<i>G. sp. nov.</i> 1
- Embolus tip otherwise.....	19
19. Ret2 straight (Figs. 170B, 178B), if curved, apical portion mesally oriented (Fig. 161B).....	20
- Ret2 curved, apical portion ectally oriented (Figs. 248B, 256B, 264B, 271B, 277B).....	22
20. Cheliceral anterior margin with three teeth (Figs. 161A, C).....	<i>G. gaujoni</i>
Cheliceral anterior margin with at least five teeth (Figs. 170A, 178A).....	21
21. Conductor with a long apical projection (Fig. 172B-C, 175B).....	<i>G. sp. nov.</i> 8
Conductor without such projection (Figs. 180B-C).....	<i>G. globosa</i>
22. Cheliceral basal segment with antero-marginal projection (Fig. 292A).....	<i>G. emertoni</i>
- Cheliceral basal segment without such projection	23
23. Ret2 abruptly curved (Fig. 271B).....	<i>G. sp. nov.</i> 11
- Ret2 gradually curved (Figs. 277B, 248B, 256B, 264B).....	24
24. Embolus longer than the conductor in ventral view (Fig. 278A).....	<i>G. sp. nov.</i> 7
- Embolus subequal to the conductor in ventral view (Figs. 249A, 250A, 258A, 261A, 268A-B).....	25
25. Conductor with a thin apical projection (Figs. 250A-B, 253C).....	<i>G. australis</i>
- Conductor apical portion otherwise (Figs. 258A-B, 266A-B).....	26
26. Clypeus strongly projected (Fig. 262B).....	<i>G. gloriae</i>
- Clypeus slightly projected (Fig. 254B).....	<i>G. spherella</i>

Key to females of *Glenognatha*

1. Spermathecae absent (Figs. 100, 108, 116, 164, 173).....	2
- Spermathecae present (Figs. 124, 132, 146, 155,).....	9
2. Chelicerae with ectal apophysis (Figs. 161D-F, 170D-F).....	3
- Ectal apophysis absent (Figs. 97D-F, 271D-F, 277D-F).....	4
3. Chelicerae with anterior tooth (Fig. 161D).....	<i>G. gaujoni</i>

- Anterior tooth absent (Fig. 170D).....	<i>G. sp. nov.</i>	8
4. Chelicerae with anterior tooth (Figs. 178D, F).....	<i>G. globosa</i>	
- Anterior tooth absent (Fig. 97D, 271D, 277D).....		5
5. Prt 1 basal region enlarged (Fig. 277D).....	<i>G. sp. nov.</i>	7
- Prt 1 basal region not enlarged (Figs. 105D, 271D).....		6
6. Ret2 enlarged, strongly curved (Fig. 271E-F).....	<i>G. sp. nov.</i>	11
- Ret2 not enlarged, moderately curved (Figs. 97E, 105E, 113E).....		7
7. Chelicerae with two posterior bulges (Fig. 113E).....	<i>G. lacteovittata</i>	
- Chelicerae with one posterior bulge (Figs. 97F, 105F).....		8
8. Cheliceral posterior bulge located at the level of the Ret2 and Ret3 (Fig. 97F).....	<i>G. sp. nov.</i>	4
- Cheliceral posterior bulge located at the level of the Ret3 and Ret4 (Fig. 105F).....	<i>G. sp. nov.</i>	5
9. Cheliceral with anterior bulge (Figs. 284F, 292F).....		10
- Chelicerae without such bulge (Figs. 186D, 194D, 202D, 225D, 233D).....		11
10. Spermathecae and copulatory ducts well-developed (Fig. 287).....	<i>G. minuta</i>	
- Spermathecae and copulatory ducts reduced (Fig. 295).....	<i>G. emertoni</i>	
11. Carapace with conspicuous lateral depressions (Figs. 125A, D-F, 140A-B).....		12
- Carapace without such depressions		14
12. Sternum smooth (Fig. 125C)	<i>G. tangi</i>	
- Sternum with setae-bearing depressions (Figs. 148C, 140C).....		13
13. Uterus externus chamber with filiform projections (Fig. 146).....	<i>G. dentata</i>	
- Uterus externus chamber without such projections (Figs. 132, 138).....	<i>G. argyrostilba</i>	
14. Femur III with a row of strong ventral macrosetae (Fig. 240C).....	<i>G. hirsutissima</i>	
- Femur III without such macrosetae.....		15
15. Ret1 enlarged (Figs. 152E, 186E).....		16
- Ret1 not enlarged (Figs. 233E, 248E, 264E).....		17
16. Prt2 closer to Prt1 than to Prt3 (Fig. 152D).....	<i>G. sp. nov.</i>	2
- Prt 2 closer to Prt3 than to Prt1 (Fig. 186D).....	<i>G. sp. nov.</i>	6
17. Spermathecae bean-shaped (Figs. 236, 251).....		18
- Spermathecae otherwise (Figs. 205, 267, 259).....		19
18. Prt1 and Prt2 subequal in size (Fig. 233D).....	<i>G. sp. nov.</i>	1
- Prt2 enlarged relative to Prt1 (Fig. 248D).....	<i>G. australis</i>	
19. Cheliceral fang outgrowth well-developed (Fig. 202E).....	<i>G. foxi</i>	

- Cheliceral fang outgrowth absent (Figs. 264E, 256E) 20
- 20. Clypeus strongly projected (Fig. 263B)..... *G. glorie*
- Clypeus slightly projected (Figs. 193B, 224B, 255B)..... 21
- 21. Chelicera with posterior bulge, Ret2 enlarged (Figs. 256E-F)..... *G. spherella*
- Chelicerae without posterior bulge (Figs. 194D-F, 225D-F)..... 22
- 22. Chelicerae with 3 promarginal and 3 retromarginal teeth, southeastern Brazil (Fig. 194D-F)..... *G. sp. nov. 3*
- Chelicerae with 3 promarginal and 4 retromarginal teeth, New Jersey, USA (Fig. 225D-F)..... *G. heleios*

***Glenognatha* sp. nov. 4**

(Figs. 95-102, 312)

Type material: male holotype from Estação Biológica Boracéia, Salesópolis, São Paulo, Brazil, 23°39'20.6''S, 45°53'28.6''W, elev. [900m], 1.iv.2001, S.T.P. Amarante e Equipe leg., deposited in MZSP 41270; paratypes: 4♂ 1♀ same data as the holotype, deposited in MZSP 42538; 1♂ from the type locality, 9.v.2003, G. R. S. Ruiz leg., deposited in IBSP 38325.

Diagnosis: males of *G. sp. nov. 4* resemble those of *G. lacteovittata* and *G. sp. nov. 5* by the short distal portion of the paracymbium (Fig. 98D) and the embolic medial groove confined to the inner surface of the embolus (Fig. 102A). It can be distinguished from the two latter species by the absence of a prolateral fold enclosing partially the embolus tip (Figs. 99, 102B). Females resemble those of *G. lacteovittata* and *G. sp. nov. 5* by the median projection of the uterus externus sac (Fig. 100A); distinguished from the former by the presence of one posterior bulge on the cheliceral basal segment (Figs. 96B, 97F) and from the latter by the position of the posterior bulge, which is located at the level of Ret2 and Ret3 in mesal view (Fig. 97F).

Description: Male (Holotype): habitus as in figure 95. Carapace yellow-brownish, darker along furrows. Sternum dusky yellow-brownish with darker edges. Abdomen oval, strongly depigmentated, dorsally with two diffused black patches at posterior region. Silver guanine spots absent. Ventrally with diffused black areas posterior to the tracheal spiracle. Legs light yellow-brownish. Total length 2.00. Cephalothorax 1.02 long, 0.80 wide, 0.62 high. Abdomen 1.00 long, 0.80 wide, 0.80 high. Sternum 0.50

long, 0.55 wide. Eye diameters and interdistances: AME 0.07. ALE 0.06. PME 0.09. PLE 0.04. AME-AME 0.04, AME-ALE 0.06, PME-PME 0.10, PME-PLE 0.09, ALE-PLE 0.01. Clypeus height $2.67 \times$ AME diameter. Chelicerae divergent, with the same coloration of the cephalothorax. Three promarginal and four retromarginal teeth. (Figs. 97A-C). CFO present (Fig. 97A). Leg measurements: I: femur 1.57, patella 0.30, tibia 1.55, metatarsus 1.32, tarsus 0.57, total 5.32; II: 1.45, 0.27, 1.50, 1.25, 0.55, 5.02; III: 0.95, 0.25, 0.75, 0.75, 0.42, 3.12; IV: 1.22, 0.27, 1.05, 0.97, 0.50, 4.02. DTS 0.11. DTE 0.55. Palp as in figures 98-99. Paracymbium with short distal portion (Fig. 98D). Conductor sinuous without distal prolateral fold (Figs. 99B, 102B-C). Embolus smooth without projections (Fig. 102). Medial groove not evident in the outer surface of the embolus (Figs. 102A-B).

Female (Paratype MZSP 41270): coloration and general habitus as in male (Fig. 96). Abdomen with scattered silver guanine spots dorsally along the median region and in the lateral surfaces. Venter with diffused greyish patches between the spinnerets and the tracheal spiracle. Total length 2.62. Cephalothorax 1.05 long, 0.80 wide, 0.70 high. Abdomen 1.47 long, 1.28 wide, 1.25 high. Sternum 0.5 long, 0.55 wide. Eye diameters and interdistances: AME 0.07. ALE 0.05. PME 0.09. PLE 0.06. AME-AME 0.06, AME-ALE 0.05, PME-PME 0.11, PME-PLE 0.07, ALE-PLE 0.01. Clypeus height $2.10 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax, with three promarginal and four retromarginal teeth on left chelicera (Figs. 97D-F) and three teeth on each margin on right chelicera. Basal segment of the chelicerae with a distinct posterior bulge (Figs. 96B, 97F). Leg measurements: I: femur 1.50, patella 0.35, tibia 1.40, metatarsus 1.20, tarsus 0.55, total 5.00; II: 1.42, 0.32, 1.35, 1.15, 0.67, 4.92; III: 1.00, 0.25, 0.65, 0.77, 0.42, 3.10; IV: 1.27, 0.25, 1.05, 1.02, 0.47, 4.07. DTS 0.20. DTE 0.77. Tracheal system as figure 101. Internal genitalia without spermathecae (Fig. 100).

Variation: male total length 1.7-2.0 ($N = 10$; average 1.9), cephalothorax length 0.8-1.2 ($N = 10$; average 0.9), femur I length 1.3-1.6 ($N = 10$; average 1.5). Female total length 2.1-2.6 ($N = 3$; average 2.2), cephalothorax length 0.7-1.0 ($N = 3$; average 0.9), femur I length 1.3-1.5 ($N = 3$; average 1.4).

Distribution: known only from the type locality in southeastern Brazil (Fig. 312).

Additional material examined (N = 13): BRAZIL: São Paulo: Salesópolis, Estação Biológica Boracéia [23°39'S, 45°33'W], elev. [900m], 22-23.ii.1961, P. Biasi leg., 1♂ (MZSP 11062); 1.ii.1961, K. Lenko leg., 1♂ (MZSP 11551); 23°39'5.8''S, 45°33'44.6''W, 1.iv.2001 (varredura), 1♀ (MZSP 39047); Trilha dos Pilões, 23°39'1.9''S, 45°53'36''W, 4.iv.2001, (varredura), 2♂ 1♀ (MZSP 39043); 23°39'5.5''S, 45°53'42.9''W, 3-6.iv.2001, (Armadilha mouicke trilha), 1♂ (MZSP 39046); 23°39'11''S, 45°53'57''W, 1.iv.2001, (varredura), 2♂ (MZSP 39044); 23°39'2.9''S, 45°53'39''W, 1.iv.2001, (varredura), 1 immature (MZSP 41464); 23°39'2.2''S, 45°53'37''W, 1-3.iv.2001, (Armadilha mouicke trilha), 1 immature (MZSP 39045); 23°39'1.9''S, 45°53'36''W, 1.iv.2001, (varredura), 2♂ (MZSP 39045), all collected by , S.T.P. Amarante e Equipe.

***Glenognatha* sp. nov. 5**

(Figs. 103-110, 297J, 310)

Type material: Male holotype from Laguna La Herrera, Mosquera, Cundinamarca, Colombia, [4°42'31.1''N, 74°18'54.2''W], elev. 2600m, 9.ii.2002, J. Martinez, C. Niño, A. Castañeda, G. Mora leg., (Vegetación macrófita emergentes, suelo, trampa Pitfall) deposited in ICN 5976; paratypes: 24♂ 14♀ same data as the holotype, deposited in ICN 5977; 4♂ 4♀ same data as the holotype, deposited in IBSP 163855.

Diagnosis: males of *G. sp. nov. 5* resemble those of *G. lacteovittata* by the distal prolateral fold of the conductor lamina (Figs. 107B, 110A). They are distinguished from the latter by the absence of filiform projections in the distal portion of the embolus (Figs. 107D, 110B-C). Females resemble those of *G. lacteovittata* and *G. sp. nov. 4* by the median projection of the uterus externus sac (Figs. 108A-B); distinguished from the former by the presence of one posterior cheliceral bulge (Fig. 105F) and from the latter by the position of the posterior bulge, which is located at the level of Ret3 and Ret4 in mesal view (Fig. 105F).

Description: Male (Holotype): habitus as in figure 103. Carapace pale brown, darker along sides and median region. Sternum dusky brown. Abdomen oval, dorsally with irregular pattern of two longitudinal black bands that join medially forming thin transverse bands in the posterior region. Silver guanine spots scattered in dorsal and lateral surfaces. Venter with a dusky median band that ramifies towards the lateral

surface into thin irregular bands. Legs light yellow-brownish with distal parts of segments darker. Tracheal spiracle well-sclerotized. Total length 3.90. Cephalothorax 1.62 long, 1.27 wide, 1.07 high. Abdomen 2.35 long, 1.87 wide, 1.75 high. Sternum 0.72 long, 0.82 wide. Eye diameters and interdistances: AME 0.11. ALE 0.09. PME 0.11. PLE 0.08. AME-AME 0.08, AME-ALE 0.07, PME-PME 0.10, PME-PLE 0.14, ALE-PLE 0.01. Clypeus height $2.40 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax. Three promarginal and four retromarginal teeth. (Figs. 105A-C). CFO well-developed (Fig. 105A). Leg measurements: I: femur 1.72, patella 0.52, tibia 1.67, metatarsus 1.22, tarsus, total 0.72; II: 1.67, 0.52, 1.60, 1.22, 0.72, 5.75; III: 1.15, 0.40, 0.97, 0.65, 0.52, 3.70; IV: 1.50, 0.45, 1.57, 1.20, 0.70, 5.42. DTS 0.27. DTE 0.95. Epiandrous fusules as in figure 297J. Palp as in figures 106-107. Paracymbium with short distal portion (Figs. 106D, 110D). Embolus with tooth-like projections (Fig. 107D). Medial groove not evident in the outer surface of the embolus (Fig. 107A, 110A).

Female (Paratype ICN 2141): coloration and general habitus as in male (Fig. 104). Abdomen with three longitudinal black bands, one median, bifurcated at the anterior region and two laterals. Total length 3.85. Cephalothorax 1.60 long, 1.30 wide, 0.80 high. Abdomen 2.65 long, 2.00 wide, 1.75 high. Sternum 0.80 long, 0.82 wide. Eye diameters and interdistances: AME 0.10. ALE 0.08. PME 0.11. PLE 0.08. AME-AME 0.1, AME-ALE 0.07, PME-PME 0.12, PME-PLE 0.11, ALE-PLE 0.01. Clypeus height $2.20 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax. Three promarginal and four retromarginal teeth (Figs. 105D-F). Leg measurements: femur 1.45, patella 0.55, tibia 1.25, metatarsus 1.07, tarsus 0.57, total 4.90; II: 1.47, 0.50, 1.15, 1.07, 0.65, 4.85; III: 1.07, 0.42, 0.87, 0.60, 0.50, 3.47; IV: 1.50, 0.30, 1.37, 1.07, 0.45, 4.70. DTS 0.52. DTE 0.87. Tracheal system as in figure 109. Internal genitalia without spermathecae (Fig. 108).

Variation: Male total length 3.2-4.1 ($N = 10$; average 3.6), cephalothorax length 1.5-1.7 ($N = 10$; average 1.6), femur I length 1.5-1.8 ($N = 10$; average 1.7). Female total length 3.5-4.2 ($N = 10$; average 3.8), cephalothorax length 1.5-1.7 ($N = 10$; average 1.6), femur I length 1.2-1.7 ($N = 10$; average 1.4).

Distribution: Known only from Cundinamarca and Boyacá states in Colombian central Andes (Fig. 310).

Additional material examined (N = 178): COLOMBIA: Boyacá: Paipa, Laguna de Sochagota, [5°46'1.1"N, 73°7'36.78"W], elev. 2500m, 8.vii.2000, V. Rodríguez & E. Flórez leg., (Debajo de tronco caído), 1♂ (ICN 5102). **Cundinamarca:** Mosquera, La Herrera, [4°42'31.1"N, 74°18'54.2"W], elev. 2600m, 9.ii.2002, J. Martinez, C. Niño, A. Castañeda, G. Mora leg., 43♂ 18♀ 53 immature (ICN 2136); 43♂ 4♀ 8 immature (ICN 1973); 2♂ 2♀ (IBSP 163856); Mosquera, Corpoica, [4°45'N, 74°20'W], elev. 2600m, v-vi.1997, L. Benavides leg., (Cultivo y pastos Kituyo y Falsa Poa), 2♂ (ICN 4451); Bogotá, Universidad Nacional, Arboretum [4°38'33.77"N, 74°4'55.09"W], elev. 2600m, 21.ii.2009, F. Bagon leg., (colecta manual en suelo y hojarasca), 1♀ (ICN 5100); Bogotá, Universidad Nacional, Instituto de Ciencias Naturales [4°38'N, 74°4'W], elev. 2600m, 9.ix.1992, C. Martinez & A. Ordoñez leg., 1♂ (ICN 6433).

Glenognatha lacteovittata (Mello-Leitão, 1944)

(Figs. 111-118, 297I, 298H, 299F, 300F, 301E, 302H, 303E, 308)

Oedothorax lacteovittatus Mello-Leitão, 1944: 327, fig. 9 (Male and female lectotypes from La Plata, Buenos Aires, Argentina, R. Costa leg., deposited in MNRJ 1963, examined).

Glenognatha lacteovittata: Ramírez, 1996: 35, figs. 1-10; Platnick, 2013.

Diagnosis: males of *G. lacteovittata* resemble those of *G. sp. nov. 4* and *G. sp. nov. 5* by the short distal portion of the paracymbium (Figs. 114D, 118H) and the embolic medial groove confined to the embolus inner surface (Fig. 114A). It can be distinguished from the two latter species by the presence of filiform projections in the embolus distal region (Figs. 115E, 118F-G). Females are diagnosed by the presence of two posterior cheliceral bulges (Fig. 113E).

Description: male and female described by Ramírez (1996). Additional data are presented here.

Male (IBSP 44111): habitus as in figure 111. Carapace brown, with three longitudinal dusky bands (one median and two lateral). Sternum brown, darker on sides. Abdomen spherical, dorsally with irregular pattern of two longitudinal black bands on sides. Black

patches scattered around and between these bands. Silver guanine spots concentrated on the median regions of the dorsal and lateral surface. Venter with a pale black median band that ramifies into irregular thin bands towards the lateral surface. Legs yellow-brownish. Total length 2.72. Cephalothorax 1.30 long, 1.03 wide, 0.80 high. Abdomen 1.71 long, 1.3 wide, 1.22 high. Sternum 0.80 long, 0.70 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.08. PLE 0.08. AME-AME 0.08, AME-ALE 0.06, PME-PME 0.13, PME-PLE 0.08, ALE-PLE 0.01. Clypeus height $1.90 \times$ AME diameter. Chelicerae brown. Three promarginal and four retromarginal teeth (Figs. 113A-C). Ret1 on the posterior surface (Fig. 113B). CFO well-developed (Fig. 113B). Leg measurements: femur 1.92, patella 0.42, tibia 1.92, metatarsus 1.50, tarsus 0.82, total 6.60; II: 1.85, 0.40, 1.82, 1.37, 0.75, 6.20; III: 1.25, 0.30, 1.05, 0.85, 0.50, 3.95; IV: 1.92, 0.32, 1.77, 1.33, 0.52, 5.88. DTS 0.22. DTE 0.72. Epiandrous fusules as in figure 297I. Spinnerets as in figures 299F, 301E and 303E. Palp as in figures 114-115. Paracymbium with short distal portion (Figs. 114D, 118H). Conductor lamina distal end prolaterally folded (Figs. 115B, 118A). Embolus with subapical tooth-like projections (Fig. 118G) and filiform projections (Figs. 118E-G). Medial groove restricted to the inner surface of the embolus (Fig. 114A).

Female (IBSP 44084): coloration and general habitus as in male (Fig. 112). Abdomen with two large dorso-lateral patches of silver guanine spots. Venter with grey-brownish area anterior to the gonopore and scattered silver guanine spots. Total length 2.77. Cephalothorax 1.32 long, 1.05 wide, 0.75 high. Abdomen 2.00 long, 1.60 wide, 1.40 high. Sternum 0.65 long, 0.70 wide. Eye diameters and interdistances: AME 0.08. ALE 0.08. PME 0.09. PLE 0.08. AME-AME 0.08, AME-ALE 0.07, PME-PME 0.14, PME-PLE 0.09, ALE-PLE 0.01. Clypeus height $1.9 \times$ AME diameter. Three promarginal and four retromarginal teeth. (Figs. 113D-F). Leg measurements: I: femur 1.85, patella 0.45, tibia 1.72, metatarsus 1.45, tarsus 0.75, total 6.22; II: 1.67, 0.42, 1.72, 1.32, 0.67, 5.82; III: 1.07, 0.32, 0.92, 0.65, 0.37, 3.35; IV: 1.92, 0.32, 1.67, 1.25, 0.56, 5.73. DTS 0.17. DTE 0.60. Tracheal system as in figure 117. Spinnerets as in figures 298H, 300F and 302H. Internal genitalia without spermathecae (Fig. 116).

Variation: Male total length 2.3-3.7 ($N = 10$; average 2.7), cephalothorax length 1.1-1.6 ($N = 10$; average 1.3), femur I length 1.6-2.3 ($N = 10$; average 2). Female total length

2.6-3.5 ($N = 10$; average 3.1), cephalothorax length 1.1-1.6 ($N = 10$; average 1.3), femur I length 1.6-2.2 ($N = 10$; average 1.8).

Distribution: Known in Peru, Brazil, Uruguay and Argentina (Fig. 308).

Additional material examined ($N = 834$): ARGENTINA: *Buenos Aires*: Bella Vista, [34°34'S, 58°41'W], elev. [23m], P. A. Goloboff leg., 1♂ (MACN 24617); San Pedro, [33°40'S, 59°41'W], elev. [29m], 1♂ (MACN 24619). *Corrientes*: Itatí, [27°16'S, 58°14'W], elev. [60m], M. E. Galiano leg., 1♀ 1♂ (MACN 24618). *Entre Ríos*: Río Gualaguaychú, [33°4'S, 58°26'W], elev. [6m], 10.xii.1982, Ramírez & Goloboff leg., 1♂ (MACN 24620). *Santa Fe*: Las Gamas, 20Km W Vera, [29°23'S, 60°32'W], elev. [54m], 27-30.x.1994, M. Ramírez & J. Faibovich leg., 1♀ (MACN 24616).

New records: ARGENTINA: *Buenos Aires*: Campana, Reserva Natural Otamendi, Estación Río Luján, [34°9'S, 58°56'W], elev. [4m], 30.vi.2007, C. J. Grismado, L. Damer, N. López, S. Trivero & N. Olejnik leg., 2♀ 1 immature (MACN 12722); 1♂ (MACN 12715); [34°16'43.4'S, 58°53'16.2'W], elev. [6m], 30.vi.2007, C. J. Grismado, L. Damer, N. López, S. Trivero & N. Olejnik leg., 2♀ 2♂ (MACN 12750); 34.2774S, 58.888W, elev. 5m, 9.ix.2010, M. Ramírez, C. Grismado, L. Piacentini, E. Soto, M. E. González-Márquez, M. Guala, J. M. Andia Navarro, N. López, I. Ortega Insaurralde y P. Zermoglio leg., 4♀ 3♂ 2 immature (MACN); Delta, Arroyo Caraguatá, [34°22'S, 58°38'W], elev. [4m], A. Bachmann leg., 1♀ 1♂ (MACN 24634); 1♀ (MACN 24633b); Paraná de las Palmas, [34°17'S, 58°34'W], elev. [2m], J. M. Viana leg., 1♂ (MACN 26004). **Chaco**: 100NW Resistencia, Chaco NP, [26°49'N, 59°40'W], elev. [76m], 12-17.xii.1990, S. & J. Peck leg., 1♂ (AMNH). **Ciudad Autónoma de Buenos Aires**: Laguna de los Macáes, 34°36'21.7'N, 58°20'55'W, elev. [25m], 12.v.2008, M. Turienzo leg., trampa de caída, 2♂ 1 immature (MACN); 10.xi.2008, M. Turienzo leg., trampa de caída, 1♂ (MACN); 13.x.2008, M. Turienzo leg., trampa de caída, 1♀ 4♂ (MACN); 27.x.2008, M. Turienzo leg., trampa de caída, 2♂ (MACN); 1.ix.2008, M. Turienzo leg., trampa de caída, 1♀ 5♂ (MACN); 15.ix.2008, M. Turienzo leg., trampa de caída, 1♀ 3♂ 1 immature (MACN); 29.ix.2008, M. Turienzo leg., trampa de caída, 1♀ 1♂ (MACN); 19.i.2009, M. Turienzo leg., trampa de caída, 1♂ (MACN); 5.i.2009, M. Turienzo leg., trampa de caída, 1♂ (MACN); 2.ii.2009, M. Turienzo leg., trampa de caída, 1♂ (MACN). **Entre Ríos**: San Justo, [32°26'S, 58°25'W], elev. [44m], A. M. Julieta leg., 1♀ 1♂ 1 immature (MACN 24636). **Río Negro**: Valcheta, [40°40'S, 66°9'W], elev. [176m], A., Bachmann leg., 1♂ (MACN

24637). **BRAZIL: Acre:** Rio Branco, campus UFAC, [9°57'S, 67°52'W], elev. [162m], 4.iv.1996, A. D. Brescovit & A. B. Bonaldo leg., 1♀ 1♂ 1 immature (IBSP 6978). **Bahia:** Barreiras, [12°9'S, 44°58'W], elev. [620m], 2008, I. M. Bortolin leg., 1♂ (IBSP 145416). **Minas Gerais:** Santa Bárbara, Brumal, 19°59'30"S, 43°27'33"W, elev. [730m], 28-29.viii.2008, I.L.F. Magalhães leg., 1♀ 1♂ (UFMG 4773). **Paraná:** Boa Vista da Aparecida, [25°26'S, 53°22'W, elev. [352m], 7-14.x.1998, Eq. IBSP leg., 1♂ (IBSP 21102); Candói/Mangueirinha, Usina Hidrelétrica de Segredo, Reservatório do Rio Jordão, [25°44'S, 52°4'W, elev. [758m], iv.1996, R. Bertani leg., 1♀ (IBSP 11644); Cascavel, Lago Municipal de Cascavel, [24°57'S, 53°26'W, elev. [700m], 9.vi.2006, A.P.G. Silva leg., 1♂ (IBSP 80128); Cruzeiro do Iguaçu, Dois Vizinhos, Foz do Chopim, [25°32'S, 53°29'W, elev. [352m], 8-15.x.1998, Eq. IBSP leg., 1♀ 1♂ (IBSP 21057); 1♂ (IBSP 21113); 1♀ (IBSP 21313); 2♀ 1♂ 1 immature (IBSP 21209); 1♀ (IBSP 21129); 1♀ (IBSP 21249); 1♀ (IBSP 21264); 1♀ (IBSP 21228); 1♂ (IBSP 21200); 1♀ (IBSP 21274); 1♂ (IBSP 21177). **Rio de Janeiro:** Rio de Janeiro, Pedra da Itaúna, near Lagoa, [22°52'S, 43°5'W], elev. [50m], ii.1990, S. A. Marshall leg., 1♂ (AMNH); Bom Jesus do Itabapuaana, São José do Calçado, Rio Itabapuaana, Usina Hidrelétrica de Rosal, [20°58'S, 41°43'W, elev. [605m], xi.1999, I. Knysak leg., 2♀ 3♂ 2 immature (IBSP 26460). **Rio Grande do Sul:** Arroio do Sal, [29°31'S, 49°55'W, elev. [23m], 24.viii.1998, J. Romanzin leg., 2♀ 1♂ 2 immature (MCTP 10320); Bagé, [31°19'S, 54°4'W, elev. [213m], 30.xii.2003, L. A. Freitas leg., 1♀ 2♂ (MCTP 19573); Cambará do sul, [29°3'S, 50°8'W, elev. [1006m], iii.2005, M. V. Petry *et al.* leg., 1♂ (MCTP 30986); vii.2005, M. V. Petry *et al.* leg., 1♂ (MCTP 30987); viii.2005, M. V. Petry *et al.* leg., 1♂ (MCTP 30989); iii.2006, M. V. Petry *et al.* leg., 1♂ (MCTP 30990); ix.2006, M. V. Petry *et al.* leg., 1♂ (MCTP 30992); Canoas, Capão do Corvo, [29°55'S, 51°13'W, elev. [5m], 23.iv.1966, A. Lise leg., 15♀ (MCN 699); Caxias do Sul, [29°6'S, 51°4'W], elev. [739m], vii.1999, C. D. C. Rosa leg., 1♂ (MCTP 11772); Derrubadas, Parque Estadual do Turvo, [27°10'S, 53°55'W], elev. [313m], 4-8.v.2004, R. Ott *et al.* leg., 2♀ (MCN 38786); 27-31.x.2003, R. Ott *et al.* leg., 5♂ (MCN 38778); Planalto, [27°19'S, 53°4'W], elev. [563m], 23.i.1994, R. Oliveira leg., 3♂ 1 immature (MCTP 4859); Porto Alegre, [30°4'S, 51°8'W], elev. [174m], 10.iv.2000, A. Braul leg., 1♂ (MCTP 11215); Rio Pardo, [29°58'S, 52°21'W], elev. [100m], 20.ii.1967, A. Lise leg., 1♀ (MCN 48507); 6.vii.1966, A. Lise leg., 10♂ 3 immature (MCN 266); 12♂ 2 immature (MCZ 125525); S. Leopoldo, [29°45'S, 51°8'W], elev. [12m], 28.xi.1965, C. Valle leg., 1♀ 1♂ (MZSP 4898); Santana do Livramento, Cerro Verde, [30°50'S,

55°32'W], elev. [255m], 28-29.xi.2003, J. A. Bitencourt leg., 1♀ (IBSP 84965); Santo Ângelo, [28°18'S, 54°17'W], elev. [204m], 12-25.ii.2004, I. Renardi leg., 1♂ (MCTP 16492); 1♀ (MCTP 16493), 2-17.ii.2004, I. Renardi leg., 1♀ 3♂ (MCTP 16491); 30.iii – 9.iv.2004, F. D' Agostini 3♀ 1♂ (MCTP 22620); São Francisco de Paula, Potreiro Velho, [29°26'S, 50°39'W], elev. [772m], 10-13.iv.1997, A. Lise leg., 1♂ (MCTP 14278); Tapes, Fazenda São Miguel, [30°40'S, 51°25'W], elev. [9m], 14.v.2003, Equipe Probio leg., 1♂ (MCN 35926); Torres, [29°20'S, 49°44'W], elev. [13m], 26.iii.2006, E. L. C. da Silva leg., 1♂ 2 immature (MCN 1972); Triunfo, Estação Braskem de Proteção Ambiental, [29°56'S, 51°41'W], elev. [6m], 14.vi.2006, R. Ott leg., 1♂ (MCN 42101); Triunfo, Faz. Pontal, Parque Estadual Delta do Jacuí, [29°59'S, 51°29'W], elev. [15m], 22.vi.1999, M. P. de Barros leg., 2♂ (MCN 31226); Triunfo, [29°56'S, 51°41'W], elev. [6m], 4.vi.1987, C. Marros leg., 1♀ (MCN 16934); 18.x.1993, L. Moura leg., 1♂ (MCN 24059); Triunfo, Ilha dos Dorneles, [29°56'S, 51°43'W], elev. [5m], 23.vii.1986, M. Rosenau leg., 2♀ (MCN 15423); Uruguaiana, Imbaá, [29°44'S, 57°6'W], elev. [51m], 24.vi.2009, R. Alves leg., 1♂ (MCN 26490). **Rio Grande do Sul / Santa Catarina:** Rio Uruguai, [27°9'S, 53°49'W], elev. [240m], 2.ix.2010, R. C. Francisco leg., 85♀ 115♂ (MCTP). **Santa Catarina:** Bombinhas, Arie Costeira de Zimbros, [27°8'S, 48°31'W], elev. [74m], 4.vii.2011, A. L. Trivia & L. Malta leg., 1♀ (IBSP 163680); Chapecó, [27°13'S, 52°40'W], elev. [394m], 23.iii.2001, F. Garcia leg., 2♀ 2♂ (MCTP 11293); Florianópolis, Ilha do Árvoredo, Reserva Biológica Marinha de Arvoredo, [23°58'S, 46°10'W], elev. [3m], 2003, Noili leg., 1♀ 1♂ (IBSP 75324); 1♀ (IBSP 75354); 1♀ (IBSP 75323), Itá, Rio Uruguai, [27°16'S, 52°19'W], elev. [457m], 1.x.2001, 1♂ (MCTP 849); Rio Negrinho, [26°13'S, 49°31'W], elev. [797m], iv.2004 - vii.2005, M. A. Nickel leg., 1♀ 3♂ 1 immature (IBSP 75995); M. A. Nickel leg., 153♀ 163♂ 56 immature (IBSP 70038). São Cristovão do Sul, Monte Alegre, [27°15'S, 50°26'W], elev. [1019m], 2001-2002, J. M. Moreira leg., 1♀ 1♂ (IBSP 141433); 1♀ (IBSP 141429); 2♀ (IBSP 141427); 1♀ (IBSP 141431); 1♂ (IBSP 141432); 2♂ (IBSP 141428); 1♀ (IBSP 141426); 1♂ (IBSP 141430); 1♂ (IBSP 141425); São Miguel do Oeste, [26°43'S, 53°30'W], elev. [603m], iii-viii.2004, J. Barp leg., 1♀ 1♂ (IBSP 79226); 1 immature (IBSP 79190). **São Paulo:** Pirassununga, [21°59'S, 47°25'W], elev. [630m], 8.vii.1940, Schubart leg., 1♂ (MZSP 6432); Rosana, Usina Hidrelétrica Sérgio Motta, [22°29'S, 52°57'W], elev. [294m], 1.ii.2000, Eq. IBSP leg., 1♀ (IBSP 29791); Cananéia, Ilha do Cardoso, [25°7'S, 47°57'W], elev. [687m], 12.v.1988, L. Romagnano & E. Venticinque leg., 1♀ (MCN 23205). **ECUADOR: Napo:** Lago Agrio, [0°5'S,

76°52'W], elev. [298m], 26.ix.1975, Andrea Langley leg., 1♂ (USNM); 18.iv.1976, Langley leg., 1♀ (USNM). **PARAGUAY: Central:** 15 Km NE Asunción, [25°15'S, 57°41'W], elev. [61m], 21.vi.1969, P. & P. Spangler leg., 1♀ 1♂ (USNM). **PERU: Loreto:** San Miguel, arenas movedizas, ca. boca del Río Samiria, entre el Río Marañón y el Samiria, 4°39'S, 74°21'W, elev. 100m, 11.viii.1989, D. Silva leg., 1♂ (MUSM 0504909). **Madre de Dios:** Zona Reservada Pakitza, 11°56'S, 71°17'W, elev. 356m, 18.viii.1992, D. Silva leg., 3♀ 7♂ 4 immature (MUSM 0504907). **San Martín:** Yuracyaru, 5°57'0.9"S, 77°14'1.34"W, elev. 356m, 18.viii.1992, D. Silva leg., 2♀ 1♂ (MUSM 0501281). **URUGUAY: Montevideo:** Montevideo, Ruta 1 Km 12, [34°40'S, 56°29'W], elev. [3m], 2001, M. A. Benamu leg., 3♀ (IBSP 44074); 1♀ 1♂ (IBSP 44084); 1♀ (IBSP 44081); 3♀ (IBSP 44085); 1♀ 1♂ 1 immature (IBSP 44111); 3♂ (IBSP 44082); 2♀ (IBSP 44083); 4♀ (IBSP 44072).

***Glenognatha tangi* (Zhu, Song & Zhang, 2003) new combination**

(Figs. 119-126, 297B, 299H, 301F, 303F, 314)

Dyschiriognatha tangi Zhu, *et al.*, 2003: 207, figs. 113A-G, 114A-F (female holotype from Yongning county, Guangxi province, China, 6.xii.1982, Zhang Yongquiang leg., deposited in HU, not examined; paratypes: 1♂ from Jinghong county, Yunnan province, China, 10.vii.1983, Zhu Chuandian leg., deposited in HU, not examined, 1♂ paratype from Nanning city, Guangxi province, China, 11.xii.1986 Zhang Yongquiang leg., deposited in HU, examined); Platnick, 2013.

Transfer justification: Detailed study of *D. tangi* male paratype and female specimens from Myanmar showed that this species has all the diagnostic characters of the genus *Glenognatha*. The conductor (Figs. 123B-C, 126C), the embolus (Fig. 123D, 126C), the paracymbium (Fig. 126E) and the female genitalia (Fig. 124) exhibit the typical *Glenognatha* morphology.

Diagnosis: males of *G. tangi* resemble those of *G. dentata* and *G. argyrostilba* by the presence of irregular and rounded setae-bearing depressions on the lateral surface of the carapace (Fig. 125D-F). They can be distinguished from the latter species by the shape of the conductor lamina in ventral view, which is rectangular and without tooth-shaped projections (Figs. 123B-C, 126C). Females are diagnosed by the rounded UEs distal portion (Fig. 124) and the smooth sternum (Fig. 125C).

Description: male and female described by Zhu *et al.* (2003), additional data are presented here.

Male (Myanmar, USNM): habitus as in figure 119. Cephalothorax with lateral depressions (Fig. 119A). Cephalothorax 0.70 high. Abdomen 1.05 high. Sternum 0.45 long, 0.50 wide. Chelicerae as in figures 121A-C. Cheliceral fang outgrowth well-developed (Fig. 121A). Epiandrous fusules as in figure 297B. Spinnerets as in figures 299H, 301F and 303F. Palp as in figures 122-123.

Female (Myanmar, USNM): habitus as in figure 120. Cephalothorax with lateral depressions (Figs. 125A, D-F). Cephalothorax 0.75 high. Abdomen 1.47 high. Sternum 0.50 long, 0.50 wide. Chelicerae as in figures 121D-F. Internal genitalia with well-developed spermathecae (Fig. 124).

Variation: male total length 1.9-2.2 ($N = 4$; average 2.1), cephalothorax length 0.8-1.1 ($N = 4$; average 0.9), femur I length 0.9-1.2 ($N = 4$; average 1.1).

Distribution: known from Guangxi and Yunnan provinces in China and Sagaing region in Myanmar (Fig. 314).

Additional material examined (N= 5): *New records:* **MYANMAR: Sagaing:** Chatten Wildlife Sanct. Takontaing, 23°37'20"N, 95°31'52"E, elev. [179m], 7-12.x1998, Coddington & Baptista leg., 1♀ 3♂ 1 immature (USNM).

***Glenognatha argyrostilba* (O. P.-Cambridge, 1876) new combination**

(Figs. 127-140, 313)

Pachygnatha argyrostilba O. P.-Cambridge, 1876: 573, pl. 59, fig. 8 (male lectotype and female paralectotype from Alexandria, Egypt, deposited in Hope Entomological Collection, Oxford, not examined).

Dyschiriognatha argyrostilba: Simon, 1893: 324; Bosmans & Bosselaers, 1994: 346, fig. 132-147; Saaristo, 2003: 22, fig. 19-20; Saaristo, 2010: 233, fig. 36.24-26; Platnick, 2013.

Pachygnatha (Dyschiriognatha) argyrostilba: Pavesi, 1895: 504.

Dyschiriognatha montana Simon, 1897: 868 (male and female syntypes from St. Vincent Islands, Lesser Antilles, deposited in BMNH, examined through photographs of the habitus and male genitalia). **New Synonymy.**

Dyschiriognatha atlantica Holm, 1969: 63, fig. 1-5 (male holotype from Sandy bay beach, St. Helena island, 11.i.1966, P. Basilewsky, P. Benoit & N. Leleup leg., deposited in MRAC, not examined); Benoit, 1977: 160, figs. 69a-e. Synonymized by Bosmans & Bosselaers, 1994.

Glenognatha mira Bryant, 1945: 405 (female holotype from Miragoane, Haiti, 2.xi.1934, Darlington leg., deposited in MZC, examined). **New synonymy.**

Glenognatha maelfaiti Baert, 1987: 141, figs. 1-7 (male holotype from Cerro Maternidad, Santa Cruz, Galápagos, Ecuador, 15.ii-1.iii-1986, deposited in RBINS, not examined, paratypes: 13♀ 2♂ 1 immature from Transect Pto. Ayora-Itabaca, z-flank, Santa Cruz, Galápagos, Ecuador, 15.ii-1.iii-1986 Baert, Maelfait et Desender leg., deposited in RBINS 27047, examined; 36♀ 19♂ 5 immature from Santa Cruz, Galápagos, Ecuador, deposited in RBINS, not examined. **New synonymy.**

Transfer and Synonymy justification: Detailed study of *D. argyrostilba* specimens collected in Africa and drawings of the type material (see Bosmans & Bosselaers, 1994), showed that this species has all the diagnostic characters of the genus *Glenognatha*. Conductor (Figs. 131 B-C, 139A-B), embolus (Figs. 131D, 139B), paracymbium (Figs. 130D, 137D), female genitalia (Figs. 132, 138) and tracheal system (Fig. 133) exhibit the typical *Glenognatha* morphology.

Meticulous examination of the available type material of *D. montana*, *G. mira* and *G. maelfaiti*, showed that these species have the diagnostic characters of *D. argyrostilba* and should be considered as synonyms. Male palps of *D. montana* and *G. maelfaiti* have the conductor lamina sinuous in ventral view and the conductor retrolateral apophysis tip sharpened as observed in *D. argyrostilba*. In addition, the uterus externus sac of *G. mira* and *G. maelfaiti* is wider than long as characteristic for *D. argyrostilba*. It was not possible to examine the internal female genitalia of *D. montana*, nevertheless based on the male palp and the female chelicerae morphology I consider it as a synonym of *G. argyrostilba*.

Diagnosis: males of *G. argyrostilba* resemble those of *G. dentata* and *G. tangi* by the presence of irregular and rounded setae-bearing depressions on the lateral surface of the carapace (Figs. 127A, 134A, 140A-B). They can be distinguished from the latter species by the pointed conductor retrolateral apophysis (Figs. 131B-C). Females are diagnosed by the morphology of the UEs, which is wider than long (Figs. 132, 138).

Description: male and female described by Bosmans & Bosselaers (1994), additional data are presented here.

Male (CAS 9056025): habitus as in figure 127. Cephalothorax with lateral depressions (Fig. 127A). Chelicerae with reduced CFO (Fig. 129A). Prt2 and Prt3 closer to each other than to Prt1 (Figs. 129A, C). Ret2 and Ret3 closer to each other than to Ret1 (Fig. 129B). Palp as in figures 130-131. Conductor enclosing the embolus (Figs. 130A, 131A).

Female (CAS 9056025): habitus as in figure 128. Cephalothorax with lateral depressions (Fig. 128A). Sternum with setae-bearing depressions (Fig. 140C). Chelicerae as in figures 129D-F. Tracheal system as in figure 133. Internal genitalia as in figure 132. Spermathecae well-developed (Fig. 132).

Variation: male total length 1.6-2.2 ($N=10$; average 2.0), cephalothorax length 0.8-1.2 ($N=10$; average 1.0), femur I length 1.0-1.3 ($N=10$; average 1.2). Female total length 2.1-2.6 ($N=10$; average 2.4), cephalothorax length 0.9-1.1 ($N=10$; average 1.0), femur I length 1.1-1.4 ($N=10$; average 1.2). Habitus and chelicerae of Ecuadorian specimens as in figures 134-136.

Distribution: known in the Neotropics and Afrotropics (Fig. 313).

Additional material examined (N = 31): ECUADOR: Galápagos: Isabela, [0°55'S, 91°0'W], elev. 2m, 2-15.iii.1989, Peck & Sinclair leg., 1♂ (AMNH); [0°16'S, 90°41'W], elev. [300m], 10.iv.1982, Y. Lubin leg., 2♀ (MCZ 125476).

New records: BRAZIL: Bahia: Mucugê, Reserva Particular do Patrimônio Natural Adília Paraguassu, [12°59'S, 41°23'W], elev. [1067m], 3-7.vii.2005, J. P. Souza & Alves leg., 1♀ (IBSP 56557). **Ceará:** Fortaleza, UFCE, Campus de Itaperi [3°47'S, 38°33'W], elev. [26m], 8.vii.2011, R. Azevedo leg., 1♀ (UFCE 852); 1♀ (UFCE 841).

Paraná: Porto Rico, [22°47'S, 53°16'W], elev. [271m], v.2009, E. R. Cunha leg., 1♂ (MPEG 15435). **CAMEROON: Southwest Region:** Matute, Tiko, [4°7'N, 9°24'E], elev. [30m], 14.iv.-6.v.1949, B. Malkin 1♂ (CAS 9039595). **CUBA: Pinar del Río:** Soroa, [22°46'S, 82°59'W], elev. [82m], 27-29.iv.1983, P.J. Sangler & Iliana Fernandez G. leg., 1♂ (USNM); San Vicente, [20°5'S, 75°46'W], elev. [125m], 7.ii.1981, P. J. Spangler & A. Vega leg., 2♂ 6♀ (USNM). **Sancti Spiritus:** Gaviña, Sierra Escambray, [21°56'S, 79°26'W], elev. [67m], 13.ii.1981, P.J. Spangler & A. Vega leg., 1 ♀ (USNM). **DOMINICA:** [15°26'S, 61°20'W], elev. [310m], 5.x.1964, P. J. S. leg., 1 ♀ (USNM). **ECUADOR: El Oro:** Arenillas (18Km SE), La Cuca. Exp. Sta., [3°33'S, 80°2'W], elev. [77m], 22.v.1979, Jos J. Anderson leg., 1♀ 1♂ (USNM); **Guayas:** Naranjal (30Km N), [2°40'S, 79°36'W], elev. [24m], 24.xii.1977, Jos J. Anderson leg., 1♀ 1♂ (USNM); **Manabí:** Chone, [0°41'S, 80°5'W], elev. [65m], 7.i.1978, P. J. Spangler & J. Anderson leg., 1♂ (USNM). **HAITI: Sud:** Lévy (1 Km NE), [18°18'N, 73° 51'W], elev. [185m], 10-11.ix.1981, P. Spangler & R. Faitoute leg., 1♂ (USNM). **JAMAICA: Kingston:** [18°16'S, 77°6'W], elev. [341m], 26.viii.1934, Darlington leg., 1♂ (MCZ 125504). **NIGERIA : Kabba:** Kabba, : [7°50'N, 6°4'E], elev. [458m], 19-23.ii.1949, B. Malkin leg., 2♀ 2♂ (CAS). **REPUBLIC OF CÔTE D'IVOIRE: Vallée du Bandama region:** Bouaké, [7°41'N, 5°1'W], elev. [350m], 7.x.1995, Russel-Smith A. leg., 1♂ (MRAC 227412).

***Glenognatha dentata* (Zhu & Wen, 1978) new combination**

(Figs. 141-149, 297A, 299G, 314)

Dyschiriognatha dentata Zhu & Wen, 1978: 16, figs. 1-9 (female holotype from China, 24.x.1975, presumably deposited in the Jilin University, not examined; paratypes: 33♂ 36♀ 7 immature from China, presumably deposited in the Jilin University, not examined); Hu, 1984: 133, figs. 135.1-8; Chen & Gao, 1990: 74, figs. 93A-E; Okuma, 1991: 15, figs. 1, 2A-F, 3A; Okuma *et al.*, 1993: 31, figs. 28A-C; Song *et al.*, 1999: 213, figs. 119O-R; Zhu *et al.*, 2003: 204, figs. 111A-K, 112A-G, pl. VIIA-D; Tanikawa, 2007: 103, figs. 364-365, 812-814; Tanikawa, 2009: 412, figs. 49-51; Platnick, 2013.

D. hawigtenera Barrion & Litsinger, 1995: 490, figs. 300A-E, 301A-G (female holotype from Luzon Island, Philippines, 10.viii.1979, A. T. Barrion leg., deposited in the International Rice Research Institute, not examined).
Synonymized by Zhu *et al.*, 2003: 204.

Transfer justification: Detailed study of *D. dentata* specimens collected in Asia (Myanmar, China, Vietnam and Japan) and schematic drawings of the male genitalia and somatic characters in the original description (Zhu & Wen, 1978), showed that this species has all the diagnostic characters of the genus *Glenognatha*. The conductor and the embolus although highly modified (Figs. 145B-D, 149), the female genitalia (Fig. 146) and the tracheal system (Fig. 147) exhibit the typical *Glenognatha* morphology.

Diagnosis: males of *G. dentata* can be easily distinguished from all other *Glenognatha* species by the prominent tooth-like projections on the distal retrolateral margin of the conductor (Figs. 144B, 145B-C, 149D). Females are diagnosed by the presence of filiform projections in the uterus externus chamber (Fig. 146).

Description: male and female described by Zhu & Wen (1978), additional data are presented here.

Male (Myanmar, USNM): habitus as in figure 141. Cephalothorax with lateral depressions (Fig. 141A). Cephalothorax 0.77 high. Abdomen 0.88 high. Sternum 0.55 long, 0.55 wide. Chelicerae as in figures 143A-C, with small setae-bearing tubercles on the antero-ectal surface (Fig. 143C). Cheliceral fang outgrowth well-developed (Fig. 143A). Epiandrous fusules as in figure 297A. ALS as in figure 299 G. Palp as in figures 144-145. Embolus and conductor highly modified (Figs. 149A-F).

Female (Myanmar, USNM): habitus as in figure 142. Cephalothorax with lateral depressions (Fig. 142A, 148A, D-F). Sternum with setae-bearing depressions (Figs. 148C, G). Cephalothorax 0.82 high. Abdomen 1.57 high. Sternum 0.52 long, 0.58 wide. Chelicerae as in figures 143D-F, with small setae-bearing tubercles on the antero-ectal surface (Figs. 143F, 148B). Tracheal system as in figure 147. Internal genitalia with well-developed spermathecae (Fig. 146).

Variation: male total length 1.6-2.2 ($N=4$; average 2.0), cephalothorax length 0.8-1.2 ($N=4$; average 1.0), femur I length 1.0-1.3 ($N=4$; average 1.2). Female total length 2.5-3.0 ($N=7$; average 2.7), cephalothorax length 1.1-1.3 ($N=7$; average 1.2), femur I length 1.0-1.2 ($N=7$; average 1.1).

Distribution: known from India, Bangladesh, China, Myanmar, Japan, Philippines and Vietnam (Fig. 314).

Additional material examined (N = 18): CHINA: Hong kong: Tai Po Tsai, [22°20'N, 114°15'E], elev. [7m], 1.iii.1961, E. Shingler leg., 1♀ (AMNH). **JAPAN: Okinawa:** [26°9'N, 127°53'E], elev. [15m], 22.vii.1945, C. T. Parsons & F. G. Werner leg., 1♂ (MCZ 125497).

New records: MYANMAR: Sagaing: Chattin Wildlife Sanct. Takontaing, 23°37'20"N, 95°31'52"E, elev. [179m], 7-12.x.1998, Coddington & Baptista leg., 6♀ 3♂ 6 immature (USNM). **VIETMAN:** 2-20.xi.1966, 1♂ (MCZ 84023).

***Glenognatha* sp. nov. 2**

(Figs. 150-158, 297F, 298B, 299B, 300A, 301A, 302B, 303A, 310)

Type material: male holotype from Hacienda San Pedro, Alto Queremal, Dagua, Valle del Cauca, Colombia, 3°29'5.42"N, 76°42'W, elev. 1800m, 21.xi.2009, J. Mendez leg., hand collection, deposited in ICN 5981; paratypes: 12♂ 9♀ from the type locality, 21-26.xi.2009, J. Cabra leg., hand collection, deposited in ICN 5982; 1♀ from Río Dagua, Queremal, Valle del Cauca, Colombia, [3°30'N, 76°43'W], elev. [1512m], 19.vi.1970, deposited in MZC 92671; 1♂ 1♀ from Vereda Chicoral, La Cumbre, Valle del Cauca, Colombia, 3°34'N, 76°35.6'W, elev. 1800-2100m, 31.x.2009, J. Mendez leg., deposited in IBSP 163857; 3♂ 1♀ from Bosque Integral Otonga, 4.5 Km from San Francisco de las Pampas, Cotopaxi, Ecuador, 0°25'17.3"N, 78°58'56.9'W, elev. 1670m, 8.xii.2009, A. J. Santos leg., deposited in UFMG 8975.

Diagnosis: males of *G. sp. nov. 2* can be distinguished from all other *Glenognatha* species by the morphology of the chelicerae, which has the Ret1 adjacent to the fang articulation (Fig. 152B). Females are diagnosed by having few gland ducts concentrated in the spermathecae (Figs. 155D-E).

Description: Male (Holotype): habitus as in figure 150. Carapace yellow-brownish. Sternum dusky brown with darker edges and dusky bands oriented to the median region. Abdomen oval, with irregular pattern of two lateral black bands darker at posterior region. Silver guanine spots scattered in two longitudinal bands dorsally and in lateral surfaces. Venter without guanine spots. Legs brownish tan. Total length 2.39.

Cephalothorax 0.97 long, 0.78 wide, 0.67 high. Abdomen 1.40 long, 0.88 wide, 0.92 high. Sternum 0.50 long, 0.52 wide. Eye diameters and interdistances: AME 0.06. ALE 0.05. PME 0.07. PLE 0.04. AME-AME 0.05, AME-ALE 0.1, PME-PME 0.09, PME-PL 0.09, ALE-PL 0.01. Clypeus height $2.50 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax, divergent, with three promarginal and four retromarginal teeth (Figs. 152A-C). Ret 1 adjacent to the fang articulation (Fig. 152B). Leg measurements: I: femur 1.80, patella 0.35, tibia 1.92, metatarsus 1.72, tarsus 0.90, total 6.70; II: 1.72, 0.35, 1.77, 1.50, 0.80, 6.15; III: 1.15, 0.25, 0.77, 0.85, 0.47, 3.50; IV: 1.47, 0.25, 1.17, 1.07, 0.50, 4.47. DTS 0.18. DTE 0.67. Epiandrous fusules as in figure 297F. Spinnerets as in figures 299B, 301B and 303A. Palp as in figures 153, 154 and 157. Embolus tip S-shaped (Figs. 153A, 154D, 158), with projection beyond embolic opening (Fig. 158)

Female (Paratype ICN 5982): coloration and general habitus as in male (Fig. 151). Sternum dusky brown with darker edges. Venter with a lighter patch between the gonopore and the openings of the book lungs. Total length 2.27. Cephalothorax 0.95 long, 0.78 wide, 0.55 high. Abdomen 1.32 long, 1.15 wide, 1.20 high. Sternum 0.50 long, 0.52 wide. Eye diameters and interdistances: AME 0.06. ALE 0.05. PME 0.07. PLE 0.04. AME-AME 0.05, AME-ALE 0.09, PME-PME 0.1, PME-PL 0.09, ALE-PL 0.01. Clypeus height $2.08 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax, with three promarginal and four retromarginal teeth (Figs. 152D-F). Leg measurements: I: femur 1.65, patella 0.35, tibia 1.77, metatarsus 1.50, tarsus 0.80, total 6.07; II: 1.50, 0.35, 1.77, 1.50, 0.80, 5.92; III: 1.00, 0.25, 0.77, 0.97, 0.47, 3.47]; IV: 1.45, 0.22, 1.20, 1.02, 0.47, 4.37. DTS 0.16. DTE 0.39. Tracheal system as in figure 156. Spinnerets as in figures 298B, 300A and 302B. Uterus externus sac with a tubiform median projection (Figs. 155A-B). Spermathecae with two gland ducts (Figs. 155D-E).

Variation: male total length 1.8-2.2 ($N = 10$; average 2.0), cephalothorax length 0.7-1.0 ($N = 10$; average 0.9), femur I length 1.3-2.0 ($N = 10$; average 1.6). Female total length 1.7-2.4 ($N = 10$; average 2.2), cephalothorax length 0.7-1.0 ($N = 10$; average 0.9), femur I length 1.2-1.6 ($N = 10$; average 1.4). Male specimens from Costa Rica and Nariño state in Colombia have short and less divergent chelicerae.

Distribution: known from southwestern Colombia, northwestern Ecuador and Costa Rica (Fig. 310).

Additional material examined (N = 81): COLOMBIA: Nariño: Barbacoas, Altaquer, Reserva Nambi, [1°15'N, 78°7'W], elev. 1450m, 10.iv.2010, E. Flórez y Est. Tax. Animal UN leg., 2♂ 2♀ (ICN 4501); Ricaurte, R. N. La Planada, [1°34'10''N, 77°31'12''W], elev. 1850m, 13.i.1992, C. Valderrama leg., 1♂ (ICN 4519); Ricaurte, R. N. La Planada, [1°34'10''N, 77°31'12''W], elev. 1850m, 23.i.1992, C. Valderrama leg., Bosque nublado, tela casi horizontal sobre hojas grandes a 130cm del suelo, diámetro tela 7cm, 2♀ (ICN 4495); [Ricaurte], La Planada, 7km S. Chocones, [1°30'7.59''N, 77°31'27.98''W], elev. 1800m, vii.1986, W. Eberhard leg., 1♂ (MCZ 125509), 4♂ 4♀ 1 immature (MCZ 125508); 1♀ (MCZ 125507). **Valle del Cauca:** Cali, Bosque San Antonio, 3°37'N, 76°34'W, elev. 1800 - 2100m, ix.2009, J. Cabra leg., 1♂ (ICN 5983); La Cumbre, Vereda Chicoral, 3°34'N, 76°35.6'W, elev. 1800-2100m, ix.2009, J. Mendez leg., 4♂ 4♀ 3 immature (ICN 5984); 31.x.2009, J. Mendez leg., 13♂ 21♀ 4 immature (ICN 5985); ca. El saladito, [3°29'1.29''N, 76°36'52.32''W], elev. 1800m, 1♂ (MCZ 125506). **COSTA RICA: Punta Arenas / Alajuelas:** Monte Verde Biological Reserve, [10°18'25.36''N, 84°48'34.36''W], elev. [1431m], 2.ii.1979, J. Coddington leg., 5♂ (MCZ 125511); Monteverde Cloud Forest Reserve, [10°18'N, 84°48'W], elev. 1580m, vii.1978, C. L. Craig & P. Klass leg., 1♂ (MCZ 125510). **San Jose:** Rio Hondura, 10° N, 84°W, elev. 1200m, 30.iii.1991, W. Eberhard leg., 3♂ (MCZ 125522); iii.1986, W. Eberhard leg., 1♀ (MCZ 125475).

***Glenognatha gaujoni* Simon, 1895**

(Figs. 159-167, 297D, 298F, 299D, 300D, 301C, 302F, 303C, 309)

Glenognatha gaujoni Simon, 1895: 151 (male holotype from Loja (Gaujon), Ecuador, deposited in MNHN, examined); Platnick, 2013.

Diagnosis: males of *G. gaujoni* resemble those of *G. globosa* and *G. sp. nov. 8* by the presence of thin pleural bars between coxae II-III (Fig. 159C). It can be distinguished from the two latter species by the presence of scale-shaped projections in the retrolateral surface of the embolus (Fig. 167C). Females are diagnosed by the presence of anterior tooth, ectal apophysis and CFO on the chelicerae (Figs. 161D-F).

Description: Male (IBSP 26965): habitus as in figure 159. Carapace brown, with three dusky longitudinal bands (two lateral and one medial). Sternum pale brown. Abdomen greyish, dorsally with black patches arranged in two longitudinal bands. Silver guanine spots scattered in the dorsal and lateral surfaces. Venter with black median patch between the epigastric furrow and the petiole. Silver guanine spots scattered between the tracheal spiracle and the epigastric furrow. Tracheal spiracle well-sclerotized. Legs yellow-brownish. Pleural bars between coxae I-II, II-III and III-IV. Total length 3.60. Cephalothorax 1.55 long, 1.17 wide, 0.95 high. Abdomen 2.17 long, 1.37 wide, 1.22 high. Sternum 0.90 long, 0.70 wide. Eye diameters and interdistances: AME 0.14. ALE 0.10. PME 0.15. PLE 0.12. AME-AME 0.11, AME-ALE 0.08, PME-PME 0.13, PME-PLP 0.08, ALE-PLP 0.02. Clypeus height $1.10 \times$ AME diameter. Chelicerae brown. Three promarginal and four retromarginal teeth (Figs. 161A-C). Cheliceral fang outgrowth well-developed (Fig. 161A). Ret1 on the posterior surface (Fig. 161B). Leg measurements: I: femur 3.00, patella 0.65, tibia 3.05, metatarsus 2.97, tarsus 1.47, total 11.15; II: 2.72, 0.60, 2.57, 2.50, 1.22, 9.62; III: 1.75, 0.45, 1.42, 1.42, 0.55, 5.60; IV: 2.35, 0.42, 1.92, 1.90, 0.85, 7.45. DTS 0.52. DTE 0.62. Epiandrous fusules as in figure 297D. Spinnerets as in 299D, 301C and 303C. Palp as in figures 162, 163 and 166. Palp tibia longer than wide (Fig. 162, 163). Conductor lamina in dorsal view with a conspicuous excavation (Fig. 163C). Embolus widened subapically, with projection beyond embolic opening (Fig. 167).

Female (MUSM 0504906): coloration and general habitus as in male (Fig. 160). Abdomen greyish, dorsally with three longitudinal bands of black patches that forms thin transversal bands in the posterior region. Venter with a black median patch between the gonopore and the petiole. Silver guanine spots arranged in two longitudinal bands between the tracheal spiracle and the epigastric furrow. Tracheal spiracle well-sclerotized. Legs yellow-brownish. Pleural bars between coxae I-II, II-III and III-IV. Total length 4.35. Cephalothorax 1.85 long, 1.30 wide, 1.12 high. Abdomen 2.67 long, 1.70 wide, 1.82 high. Sternum 0.80 long, 0.80 wide. Eye diameters and interdistances: AME 0.60. ALE 0.45. PME 0.70. PLE 0.55. AME-AME 0.50, AME-ALE 0.80, PME-PME 0.10, PME-PLP 0.77, ALE-PLP 0.02. Clypeus height $1.10 \times$ AME diameter. Chelicerae brown. Three promarginal and four retromarginal teeth (Figs. 161D-F). Anterior tooth present (Figs. 161D). Ectal apophysis well-developed (Figs. 161D-F). Cheliceral fang outgrowth well-developed (Fig. 161F). Ret1 on the posterior surface

(Fig. 161E). Leg measurements: I: femur 3.25, patella 0.55, tibia 2.75, metatarsus 3.25, tarsus 1.37, total; II: 3.00, 0.65, 2.90, 2.85, 1.25, 10.65; III: 1.75, 0.37, 1.30, 1.55, 0.67, 5.65; IV: 2.60, 0.50, 2.10, 2.10, 0.85, 8.15. DTS 0.60. DTE 1.20. Tracheal system as in figure 165. Spinnerets as in figures 298F, 300D and 302F. Internal genitalia without spermathecae (Fig. 164).

Variation: male total length 3.6-4.9 ($N = 10$; average 4.2), cephalothorax length 1.5-2.0 ($N = 10$; average 1.7), femur I length 2.9-3.7 ($N = 10$; average 3.1). Female total length 3.7-4.5 ($N = 10$; average 4.0), cephalothorax length 1.6-1.9 ($N = 10$; average 1.7), femur I length 2.5-3.3 ($N = 10$; average 3.0).

Distribution: known from Amazonian regions of Colombia, Ecuador, Peru and Brazil (Fig. 309).

Additional material examined (N = 123): *New records:* **BRAZIL:** **Acre:** Marechal Thaumaturgo, Parque Nacional da Serra do Divisor, [8°17'S, 73°19'W], elev. [262m], 14.iii.1997, L. Resende & R. Vieira leg., 1♀ 1♂ (IBSP 12612); 25.iii.1997, L. Resende & S. Vieira leg., 1♀ 1♂ (IBSP 12182). **Amazonas:** Manaus, Reserva do PDBFF, [2°29'S, 60°2'W], elev. [115m], ii-ix.2001, E. M. Venticinque leg., 1♀ (IBSP 55545); Manaus, Reserva Florestal Adolpho Ducke, [2°59'S, 59°56'W], elev. [90m], vii.1999, A. J. Santos leg., 1♀ 2♂ (IBSP 26965); 10.iv.1992, S. Darwich leg., 1♀ 1♂ (MCTP 2715). **Mato Grosso:** Vale São Domingos/Pontes e Lacerda, Usina hidrelétrica de Guaporé, [15°15'S, 59°12'W], elev. [262m], x.1999, Equipe Resgate *et al.* leg., 1♀ (IBSP 41537). **Rondônia:** Porto Velho, Mutum, [8°33'S, 63°42'W], elev. [83m], 7.vi.2011, M. C. Silveira leg., 2♂ (MZSP 41003). **Roraima:** Pacaraima, [4°25'S, 61°8'W], elev. [480m], 25.vi – 5.vii.1988, J. A. Rafael leg., 1♂ (MCN 19742). **São Paulo:** Ribeirão Preto, [21°7'S, 47°51'W], elev. [567m], 2003-2005, E. Nascimento *et al.* leg., 1♂ (IBSP 58162). **COLOMBIA:** **Meta:** Villavicencio, Bosque Bavaria, [4°9'N, 73°38'W], elev. [467m], 14.v.2005, Sistemática Animal leg., 1♀ (ICN 4487). **ECUADOR:** **Napo:** Limoncocha, [0°58'S, 77°49'W], elev. [562m], 12.xii.1971, R. Buskirk leg., 3♀ (MCZ 125477). **PERU:** **Cuzco:** Convención, Cerro Dorado, Quillabamba [12°50'S, 72°44'W], elev. 1500m, 18.vi.1964, B. Malkin leg., 1♀ (AMNH); Cashiriari, Rio Camisea, 11°52'S, 72°39'W, elev. 690m, xii.1997, S. Córdoba leg., 1♂ (MUSM 0504920); Parque Nacional Manu, Carretera Paucartambo-Pillcopata,

quebrada quita calzón, [13°2'S, 71°31'W], elev. 1180m, ix.1991, B. Leon leg., 1♂ (MUSM 0504919). **Huánuco:** Sta. Teresa. Huallaga, [9°40'S, 75°30'W], elev. 600m, viii.1954, F. Woytkowski leg., 1♀ (CAS 9039649). **Loreto:** Jenaro Herrera, Quebrada el Baño, [4°54'S, 75°40'W], elev. 100m, 26.viii.1988, D. Silva leg., 1♂ (USNM). **Madre de Dios:** 15 km E Puerto Maldonado, 12°33'S, 69°3'W, elev. 200m, 17.vii.1989, D. Silva leg., 9♀ 3♂ 2 immature (MUSM 0504926); Boca del río los Amigos, 12°34'S, 70°6'W, elev. 270m, 6.xii.2005, J. A. Ochoa *et al.* leg., 2♀ (MUSM 0501093); Zona Reserva Pakitsa, 11°56'S, 71°17'W, elev. 356m, 2-3.v.1991, D. Silva leg., 1♀ (MUSM 0504912); 9.v.1991, D. Silva leg., 1♀ (MUSM 0504915); 13.v.1991, D. Silva leg., 1♀ 1♂ (MUSM 0504908); 25.v.1991, D. Silva leg., 3♀ (MUSM 0504922); 6.x.1987, J. Coddington & D. Silva leg., 6♀ 7♂ 1 immature (MUSM 0509928); Zona Reserva Pakitsa, quebrada picaflor, 11°56'S, 71°17'W, elev. 356m, 10-11.v.1991, D. Silva leg., 4♀ 2♂ (MUSM 0504914); 8.v.1991, D. Silva leg., 1♀ 3♂ (MUSM 0504923); Zona Reserva Tambopata, [12°13'S, 69°51'W], elev. 290m, 10-11.v.1991, D. Silva leg., 7♀ 7♂ (MUSM 0504927); Zona Reserva Tambopata, [12°50'S, 69°17'W], elev. 290m, 21.v.1988, D. Silva leg., 2♀ 2♂ (USNM); Zona Reservada de Manu, Puesto de Vigil, Pakitsa, 11°58'S, 71°18'W, elev. [425m], 6.x.1987, 6♀ 5♂ 1 immature (USNM); 1.x.1987, 1♀ 1♂ (USNM); 28.ix.1987, 2♀ (USNM); 1.x.1987, 3♀ 1♂ (USNM); 5.x.1987, 1♀ (USNM), all collected by D. Silva & J. Coddington. **Pasco:** Huancabamba, quebrada chispa, 10°10'S, 75°15'W, elev. 345m, 4.xi.1986, D. Silva leg., 1♂ (MUSM 0504918); Huancabamba, quebrada castillo, 10°10'S, 75°15'W, elev. 345m, 10.ix.1987, D. Silva leg., 1♀ 1♂ (MUSM 0504906); 2♀ 1♂ (USNM); Santa Rosa, río Palcazú, [10°27'S, 75°29'W], elev. 1776m, 24.ix.1991, P. Hocking leg., 1♀ (MUSM 0504902). **Puno:** Tambopata-Candamo, 13°21'S, 69°33'W, elev. 380m, 27.viii.1992, I. Bohorquez leg., 2♀ 1♂ 2 immature (MUSM 0504916). **VENEZUELA:** **Amazonas:** Cerro de la Neblina, 0°50'S, 66°9'W, elev. 140m, 4-12.ii.1984, D. Davis & T. McCabe leg., 1♀ (USNM).

***Glenognatha* sp. nov. 8**

(Figs. 168-175, 310)

Type material: male holotype from Hacienda San Pedro, Alto Queremal, Dagua, Valle del Cauca, Colombia, 3°29'N, 76°42'W, elev. 1800m, 21.ix.2009, J. Cabra leg., nocturnal hand collection, deposited in ICN 5987; paratypes: same data as the holotype, 4♂ 19♀ deposited in ICN 5986; 1♂ 1♀ deposited in IBSP 163858.

Diagnosis: males of *G. sp. nov.* 8 resemble those of *G. globosa* by the nearly 180° curved embolus tip (Figs. 171B, 172D, 175A). It can be distinguished from the latter species by the thin distal projection of the conductor lamina (Figs. 172B-C, 175). Females can be easily distinguished from all other *Glenognatha* species (except *G. gaujoni*) by the presence of cheliceral ectal apophysis (Figs. 170D-F); distinguished from *G. gaujoni* by the absence of anterior tooth (Fig. 170D).

Description: Male (Holotype): habitus as in figure 168. Carapace pale brown, darker along furrows. Sternum pale brown, darker on sides. Abdomen oval, dorsally with irregular pattern of two longitudinal dusky bands on sides. Silver guanine spots scattered in two median longitudinal bands and on lateral surfaces. Venter with a pale black median band and two lateral lighter bands with scattered silver guanine spots. Legs yellow-brownish. Tracheal spiracle well-sclerotized. Pleural bars between coxae I-II, II-III and III-IV. Total length 3.6. Cephalothorax 1.75 long, 1.30 wide, 0.90 high. Abdomen 2.15 long, 1.55 wide, 1.45 high. Sternum 0.90 long, 0.90 wide. Eye diameters and interdistances: AME 0.12. ALE 0.10. PME 0.15. PLE 0.10. AME-AME 0.10, AME-ALE 0.15, PME-PME 0.21, PME-PLE 0.12, ALE-PLE 0.01. Clypeus height 1.2 × AME diameter. Chelicerae slightly lighter than the cephalothorax and anteriorly projected (Fig. 168B). Six promarginal and eight retromarginal teeth. Ret1 on the posterior surface (Fig. 170B). Leg measurements: femur 3.20, patella 0.75, tibia 3.25, metatarsus 3.35, tarsus 1.65, total 12.20; II: 3.00, 0.65, 3.00, 2.90, 1.40, 10.95; III: 2.00, 0.40, 1.30, 1.40, 0.55, 5.65; IV: 2.55, 0.50, 2.05, 2.10, 0.87, 8.07. DTS 0.50. DTE 0.65. Palp as in figures 171, 172 and 175. Palp tibia longer than wide (Fig. 171). Conductor lamina with a thin distal end (Fig. 172B-C). Embolus tip nearly 180° curved (Figs. 171B, 172D, 175A).

Female (Paratype ICN 5986): coloration and general habitus as in male (Fig. 169). Pleural bars between coxae I-II, II-III and III-IV. Total length 4.8. Cephalothorax 2.05 long, 1.50 wide, 1.05 high. Abdomen 3.25 long, 2.55 wide, 2.45 high. Sternum 0.95 long, 0.90 wide. Eye diameters and interdistances: AME 0.10. ALE 0.10. PME 0.17. PLE 0.12. AME-AME 0.10, AME-ALE 0.12, PME-PME, 0.17 PME-PLE 0.15, ALE-PLE 0.02. Clypeus height 1.30 × AME diameter. Chelicerae slightly lighter than the cephalothorax. Five promarginal and eight retromarginal teeth. Ectal apophysis well developed (Figs. 170D-F). Leg measurements: I: femur 3.40, patella 0.70, tibia 3.45,

metatarsus 3.35, tarsus 1.70, total 12.60; II: 3.25, 0.70, 3.05, 3.00, 1.40, 11.40; III: 1.85, 0.50, 1.55, 1.35, 0.55, 5.80; IV: 2.50, 0.50, 2.00, 2.10, 0.90, 8.00. DTS 0.70. DTE 0.55. Tracheal system as in figure 174. Internal genitalia without spermathecae. Uterus externus sac with a tubiform projection (Fig. 173).

Variation: male total length 3.9-4.3 ($N=10$; average 4.1), cephalothorax length 1.5-2.0 ($N=10$; average 1.8), femur I length 3.2-3.7 ($N=10$; average 3.4). Female total length 3.5-5.0 ($N=10$; average 4.4), cephalothorax length 1.5-2.2 ($N=10$; average 1.8), femur I length 3.0-4.0 ($N=10$; average 3.4).

Distribution: known from Valle del Cauca, Risaralda and Nariño states in Colombia (Fig. 310).

Material examined ($N=85$): **COLOMBIA: Quindío:** Filandia, [4°40'N, 75°40'W], elev. [1758m], 4.viii.2012, N. Hazzi leg., 6♀ 1♂ 4 immature (ICN 5998); 2♀ 2♂ (IBSP 163859). **Nariño:** Barbacoas, Altaquer, Reserva Río Ñambi, [1°18'N, 78°5'W], elev. 1440m, 12.iv.2010, E. Flórez y Est. Tax. Animal UN leg., 2♀ 1♂ 1 immature (ICN 4505); 10.x.2009, E. Flórez y Est. Tax. Animal UN leg., 1♀ 2 immature (ICN 4408); 20.x.2012, N. Hazzi leg., 5♀ 1♂ 2 immature (ICN 5999). **Risaralda:** Mistrato, San Antonio del Chambi, La Estrella Arcacay, [5°17'N, 75°53'W], elev. 900m-1100m, 31.iii-1.iv.1992?, Estud. Biol. UNAL leg., 1♀ (ICN 1078b). **Valle del Cauca:** Cali, El Palomar, [3°32'N, 76°36'W], elev. [1700m], 17.i.2013, J. Cabra & D. Rodríguez leg., 1♂ (ICN 5994); Cali, PNN Los Farallones, [3°15'N, 76°39'W], elev. 2050m, 2.iv.2000, M. M. Medina leg., 2♂ (ICN 4317); Cali, El Topacio, [3°19'N, 76°38'W], elev. [1624m], 6.i.2011, N. Hazzi leg., 1♀ 3♂ (ICN 5996); Dagua, same data as holotype, 37 immature (ICN 5988); La Cumbre, Vereda Chicoral, 3°34'N, 76°35.6'W, elev. 1800m-2100m, ix.2009, J. Mendez leg., 1♀ (ICN 5989); Pance, ca. Topacio, [3°20'10.73"N, 76°36'5.04"W], elev. [1430m], viii.2011, N. Hazzi leg., 1♀ (ICN 5990). Pance, 3°19'41"N, 76°38'12"W, elev. 1624m, 2.i.2012, N. Hazzi leg., 2♀ 3♂ 4 immatures (ICN 5997).

Glenognatha globosa (Petrunkevitch, 1925)

(Figs. 176-183, 297E, 298G, 299E, 300E, 301D, 302G, 303D, 310)

Cyrtognatha globosa Petrunkevitch, 1925a: 123, fig. 42 (female holotype from San Lorenzo, Panama, 4.xii.1924, A. & W. Petrunkevitch leg., deposited in YPM, examined through photographs of the habitus and female genitalia).

Glenognatha globosa: Dimitrov & Hormiga, 2009: 102, figs. 66A-F; Platnick, 2013.

Diagnosis: males of *G. globosa* resemble those of *G. sp. nov. 8* by the nearly 180° curved embolus tip (Figs. 179C, 183B). It can be distinguished from the latter species by the absence of a long apical projection in the conductor lamina (Figs. 180B-C). Females can be easily distinguished from all other *Glenognatha* species (except *G. gaujoni*) by the presence of anterior tooth (Fig. 178D); distinguished from *G. gaujoni* by the absence of CFO (Fig. 178F) and by having at least six retromarginal teeth (Fig. 178F).

Description: Male (ICN 5991): habitus as in figure 176. Carapace brown, darker along furrows and with a well-marked fovea. Sternum brown, darker on sides. Abdomen oval, dorsally with irregular pattern of two longitudinal dusky bands on sides and thin transverse bands on the posterior region. Silver guanine spots scattered in dorsal and lateral surfaces. Venter with a pale black median band that ramifies towards lateral surface from the tracheal spiracle and the spinnerets. Silver guanine spots scattered in pale bands between the tracheal spiracle and the epigastric furrow. Legs yellow-brownish. Tracheal spiracle well-sclerotized. Pleural bars between coxae I-II, II-III and III-IV. Total length 3.70. Cephalothorax 1.70 long, 1.40 wide, 1.02 high. Abdomen 2.12 long, 1.45 wide, 1.35 high. Sternum 0.90 long, 0.85 wide. Eye diameters and interdistances: AME 0.10. ALE 0.10. PME 0.15. PLE 0.10. AME-AME 0.06, AME-ALE 0.1, PME-PME 0.15, PME-PLE 0.13, ALE-PLE 0.01. Clypeus height $1.60 \times$ AME diameter. Chelicerae slightly lighter than the cephalothorax. Six promarginal and ten retromarginal teeth. Ret1 on the posterior surface (Fig. 178B). Leg measurements: I: femur 2.90, patella 0.60, tibia 2.80, metatarsus 2.80, tarsus 1.40, total 10.50; II: 2.30, 0.50, 2.85, 2.45, 1.25, 9.35; III: 1.70, 0.40, 2.05, 2.00, 0.80, 6.95; IV: 2.50, 0.50, 2.00, 2.05, 0.85, 7.90. DTS 0.40. DTE 0.50. Epiandrous fusules as in figure 297E. Spinnerets as in figures 299E, 301D and 303D. Palp as in figures 179, 180 and 183. Palp tibia longer than wide (Fig. 179). Embolus tip nearly 180° curved (Figs. 179C, 183B).

Female: described by Dimitrov & Hormiga (2009). Additional data are presented here: **(ICN 5991):** habitus as in figure 177. Carapace with three dusky bands (one median and two lateral). Sternum dusky yellow-brownish. Abdomen greyish, dorsally with irregular pattern of four longitudinal dusky bands (two median and two on sides) and thin transverse bands on the posterior region. Silver guanine spots scattered in dorsal and lateral surfaces. Venter with a pale black median band that ramifies towards lateral surface from the tracheal spiracle and the spinnerets. Silver guanine spots scattered in pale bands around the black median band. Legs yellow-brownish. Tracheal spiracle well-sclerotized. Pleural bars between coxae I-II, II-III and III-IV. Total length 4.07. Cephalothorax 1.90 long, 1.40 wide, 1.10 high. Abdomen 2.45 long, 1.95 wide, 1.95 high. Sternum 1.05 long, 0.85 wide. Eye diameters and interdistances: AME 0.12. ALE 0.10. PME 0.15. PLE 0.10. AME-AME 0.08, AME-ALE 0.15, PME-PME 0.15, PME-PL 0.15, ALE-PL 0.01. Clypeus height $1.4 \times$ AME diameter. Five promarginal and eight retromarginal teeth. Anterior tooth present (Figs. 178D, F). Leg measurements: I: femur 3.15, patella 0.70, tibia 3.20, metatarsus 3.10, tarsus 1.45, total 11.60; II: 2.80, 0.70, 2.85, 2.75, 1.25, 10.35; III: 1.90, 0.45, 1.40, 1.55, 0.65, 5.95; IV: 2.50, 0.45, 1.95, 2.00, 0.85, 7.75. DTS 0.47. DTE 0.30. Tracheal system as in figure 182. Spinnerets as in figures 298G, 300E and 302G. Internal genitalia without spermathecae (Fig. 181). Uterus externus sac with a tubiform projection (Fig. 181).

Variation: male total length 3.0-4.6 ($N = 10$; average 3.7), cephalothorax length 1.5-2.1 ($N = 10$; average 1.7), femur I length 2.3-3.8 ($N = 10$; average 3.2). Female total length 3.2-4.2 ($N = 10$; average 3.9), cephalothorax length 1.6-2 ($N = 10$; average 1.8), femur I length 2.7-3.2 ($N = 10$; average 3.0).

Distribution: known from Panama and Colombia (Fig. 310).

Additional material examined (N = 58): *New records:* **COLOMBIA:** **Boyacá:** Corinto, [5°25'N, 72°40'W], elev. 1600m, 27.x.1979, C. Hernandez leg., 2♂ (ICN 636); Santa María, Vda. La Carbonera, cascada la Colorata, [7°17'N, 73°10'W], elev. 600m, 19.v.2009, E. Flórez y Est. leg., 2♀ (ICN 4188). **Cauca:** Caloto, Vereda Morales, [3°4'N, 76°24'W], elev. 1035m, 11.x.2006, J. Cabra leg., 4♀ 2♂ (ICN 5995); Isla Gorgona, [3°0'N, 78°12'W], elev. [5m], vii.2003, R. Restrepo leg., 2♀ 1 immature (ICN 4270). **Cundinamarca:** ca. La Vega. Río San Miguel, [5°0'N, 74°20'W], elev. 1480m,

27.iv.1992, 1♂ (ICN 1080); Cachipay, [4°42'N, 74°29'W], elev. [1019m], 27.ii.2011, J. Cabra leg., 6♀ 8♂ 5 immature (ICN 5991). **Magdalena:** SNSM Finza La Victoria, 11°7'45'N, 74°5'42'W], elev. [900m], 19.vii.2006, L. Ferreira leg., 1♂ (ICN 4123). **Risaralda:** Mistrato, San Antonio del Chambi, La estrella Arcacay, [5°17'N, 75°53'W], elev. 900m – 1100m, 31.iii – 1.iv.1992, Estud. Biol. UNAL leg., 3♀ 1 immature (ICN 1078a). **Santander:** Carmen de Chucurí, Vda. La Bodega, PNN Los Yariguies, [6°41'N, 73°30'W], elev. [585m], 14-20.iii.2011, Est. Taxonomia animal leg., 1♀ (ICN 6129). **Valle del Cauca:** 6 mi. W. of Cali, [3°21'N, 76°35'W], elev. 1630m, 20.iii.1955, E. I. Schingler & E. S. Ross leg., 1♀ 1♂ (CAS 9039648); Cali, El Palomar, [3°32'N, 76°36'W], elev. [1700m], 17.i.2013, J. Cabra & D. Rodríguez leg., 1♀ 1♂ (ICN 5992); 4♀ 2♂ (ICN 5993); Rio Pance, ca. Cali, [3°20'N, 76°33'W], elev. 1000m, 4.vii.1973, 1♀ (MCZ 67453); vii.1973, 1♀ 1 immature (MCZ 67454). **PANAMA:** **Chiriquí:** Boquete, [8°46'N, 82°25'W], elev. [1094m], vii.1939, A. M. Chickering leg., 1♀ 1♂ (MCZ 67470); **Panamá:** Barro Colorado. C. Zone, [9°9'N, 79°50'W], elev. [150m], 10.ii.1936, W. J. Gertsch leg., 2 immature (AMNH); Canal Zone, Forest reserve, [9°9'N, 79°50'W], elev. [150m], 29.i.1958, A. M. Chickering leg., 1 immature (MCZ 125490). **VENEZUELA:** **Miranda:** Santa Cruzita, Guatopo National Park., [10°5'N, 66°25'W], elev. 450m, 13.ii.1984, J. Coddington leg., 1♂ (USNM).

***Glenognatha* sp. nov. 6**

(Figs. 184-191, 309)

Type material: male holotype from Estación Biológica Caparu, Lago Taraira. Taraira, Vaupés, Colombia, [1°4'S, 69°29'W], elev. [128m], 11.iv.2004, J. Pinzón leg., deposited in ICN 5979; paratypes: 2♂ 1♀ from the type locality, same data as the holotype, deposited in ICN 5980; 1♂ 1♀ from Igarapé forest of upper Rio Yaciba, [Amazonas], Venezuela, [1°14'N, 66°44'W], elev. [109m], 7.xii.1953, W. M. Beebe leg., deposited in AMNH; 1♂ from Estação Científica Ferreira Penna, Melgaço, Pará, Brazil, 1°43'21.6''S, 51°25'51.2''W, elev. [40m], 1993-2009?, A. B. Bonaldo leg., deposited in MPEG 19083; 1♂ from 15 km E Puerto Maldonado, Madre de Dios, Peru, 12°33'S, 69°3'W, elev. 200m, 10.vii.1989, D. Silva leg., deposited in MUSM 0504904.

Diagnosis: males of *G. sp. nov. 6* can be distinguished from all other *Glenognatha* species by the presence of small sharpened projections on the conductor (Figs. 191A-C). Females resemble those of *G. sp. nov. 2* and *G. lacteovittata* in having a

conspicuously enlarged Ret1 (Fig. 186E). They are distinguished from the latter by the presence of disc-shaped portions in the uterus externus sac (Fig. 189C).

Description: Male (Holotype): habitus as in figure 184. Carapace yellow-brownish, darker along furrows. Sternum dark brown, with dusky bands oriented towards the median region. Abdomen spherical, dorsally with irregular pattern of two longitudinal black bands on sides and some dark patches on the postero-median region. Silver guanine spots scattered in the entire dorsal surface and the median lateral surfaces. Venter with a diffused dusky median band, darker around epigastric furrow and two lighter lateral bands with some silver guanine spots. Legs light yellow-brownish with distal parts of segments darker. Tracheal spiracle well-sclerotized. Total length 2.62. Cephalothorax 1.17 long, 0.85 wide, 0.62 high. Abdomen 1.60 long, 1.15 wide, 1.15 high. Sternum 0.52 long, 0.53 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.08. PLE 0.07. AME-AME 0.08, AME-ALE 0.12, PME-PME 0.09, PME-PLP 0.11, ALE-PLP 0.01. Clypeus height $1.66 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax. Three promarginal and four retromarginal teeth (Figs. 186A-C) Anterior tooth present (Figs. 186A). Cheliceral fang outgrowth well-developed (Fig. 186B). Leg measurements: I: femur 1.45, patella 0.37, tibia 1.55, metatarsus 1.25, tarsus 0.65, total 5.27; II: 1.25, 0.35, 1.27, 1.20, 0.55, 4.62; III: 0.92, 0.25, 0.63, 0.70, 0.45, 2.96; IV: 1.27, 0.27, 1.02, 1.00, 0.47, 4.05. DTS 0.17. DTE 0.52. Palp as in figures 187-188. Conductor with rugose texture (Figs. 191A-C). Embolus straight with 180° curved tip (Fig. 191A-B).

Female (Paratype AMNH): habitus as in figure 185. Carapace brown, darker along furrows, with a median longitudinal dusky band. Sternum dark brown, darker on the edges. Abdomen spherical, strongly depigmentated, dorsally with dusky patches. Silver guanine spots absent. Venter with a diffused dusky median band, and two lighter bands on sides. Gonopore region and book lung covers lighter. Legs light yellow-brownish with distal parts of segments darker. Tracheal spiracle well-sclerotized. Total length 3.1. Cephalothorax 1.45 long, 0.97 wide, 0.70 high. Abdomen 1.67 long, 1.55 wide, 1.60 high. Sternum 0.65 long, 0.62 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.08. PLE 0.06. AME-AME 0.08, AME-ALE 0.13, PME-PME 0.10, PME-PLP 0.12, ALE-PLP 0.01. Clypeus height $2.22 \times$ AME diameter. Chelicerae slightly darker than the cephalothorax. Three promarginal and four retromarginal teeth (Figs.

186D-F). Ret1 enlarged (Fig. 186E). Leg measurements: I: femur 1.90, patella 0.40, tibia 1.90, metatarsus 1.72, tarsus 0.82, total 6.75; II: 1.93, 0.42, 1.65, 1.25, 0.75, 6.01; III: 1.17, 0.42, 0.77, 0.90, 0.47, 3.75; IV: 1.57, 0.32, 1.35, 1.15, 0.52, 4.92. DTS 0.30. DTE 0.50. Tracheal system as in figure 190. Uterus externus sac divided in three portions (Fig. 189).

Variation: male total length 2.0-2.7 ($N = 10$; average 2.4), cephalothorax length 1.0-1.2 ($N = 10$; average 1.1), femur I length 1.3-1.6 ($N = 10$; average 1.5). Female total length 2.3-3.1 ($N = 5$; average 2.6), cephalothorax length 1.0-1.4 ($N = 5$; average 1.2), femur I length 1.2-1.9 ($N = 5$; average 1.6).

Distribution: known from Amazonian regions of Colombia, Bolivia, Peru, Brazil, Venezuela and Suriname (Fig. 309).

Additional material examined ($N = 15$): BOLIVIA: Beni: Rio Benicito, Chacobo Indian Village, 12°30'S, 66°W], elev. [156m], 10.31.vii.1960, B. Malkin leg., 1 ♀ (AMNH). **BRAZIL: Rondônia:** Guajará-Mirim, Parque Estadual Guajará, [10°48'41.98''S, 66°18'41.36''W], elev. [132m], 18.i – 13.iv.1998, Lawne J. Vitte & T. C. Ávila-Pires leg., 1♂ 1♀ (MCTP 11373). **PERU: Loreto:** P.N. Pacaya-Samiria Pithecia, 5°6'S, 74°50'W, elev. 100m, 16.viii.1989, D. Silva leg., 1♂ 3♀ 6 immature (MUSM 0504921). **Madre de Dios:** Zona Reservada de Manu, Puesto de Vigilancia., Pakitsa, 11°58'S, 71°18'W, elev. [425m], 6.x.1987, D. Silva & J. Coddington leg., 1 ♀ (USNM). **SURINAME: Para:** Carolina Creek, 10km from Zanderij, [5°27'N, 55°12'W], elev. [27 m], B. Malkin leg., 1♂ (AMNH).

***Glenognatha* sp. nov. 3**

(Figs. 192-199, 297G, 312)

Type material: male holotype from Potreiro Velho, São Francisco de Paula, Rio Grande do Sul, Brazil, [29°28'S, 50°9'W], elev. [772m], 25.iii.1997, J. Ketterl leg., deposited in MCTP 17537, paratypes: 1♂ 1♀, 29°28'26.619''S, 50°9'22.4451''W, 7.iv.2001, deposited in MCN; 2♀, 29°28'26.619''S, 50°9'22.4451''W, 14.iv.2002, deposited in MCN; 1♂, 29°28'26.619''S, 50°9'22.4451''W, 14.iv.2002, deposited in MCN, all from the type locality, R. Ott leg.; 1♂ paratype (IBSP 57090) and 1♀ paratype (IBSP 57080)

from Parque Nacional da Serra da Bocaina, São José do Barreiro, São Paulo, Brazil, [22°43'S, 44°36'W], elev. [900m], 28.iv – 3.v.2002, Equipe Biota leg.

Diagnosis: males of *G. sp. nov.* 3 can be distinguished from all other *Glenognatha* species by the presence of a distinct rounded projection on the paracymbium (Fig. 195D). Females can be easily differentiated from all other *Glenognatha* (except *G. glorieae*) by having three promarginal and three retromarginal teeth (Figs. 194D-F); distinguished from *G. glorieae* by the slightly projected clypeus in lateral view (Fig. 193B).

Description: Male (Holotype): habitus as in figure 192. Carapace yellow-brownish, darker along furrows. Sternum brown with darker edges. Abdomen oval, strongly depigmentated, with irregular pattern of two diffused dusky bands that join medially at posterior region. Silver guanine spots scattered in two longitudinal bands dorsally and in lateral surfaces. Ventrally without silver spots. Legs light yellow-brownish. Total length 1.85. Cephalothorax 0.87 long, 0.80 wide, 0.57 high. Abdomen 0.97 long, 0.82 wide, 0.80 high. Sternum 0.50 long, 0.55 wide. Eye diameters and interdistances: AME 0.08. ALE 0.07. PME 0.13. PLE 0.08. AME-AME 0.08, AME-ALE 0.07, PME-PME 0.13, PME-PLE 0.07, ALE-PLE 0.01. Clypeus height $1.80 \times$ AME diameter. Chelicerae darker than cephalothorax, with a well-developed anterior tooth (Fig. 194A, C). Three promarginal and three retromarginal teeth. (Fig. 194A-C). Prt1 enlarged (Fig. 194A). CFO well-developed (Fig. 194C). Leg measurements: I: femur 1.30, patella 0.32, tibia 1.30, metatarsus 1.02, tarsus 0.65, total 4.60; II: 1.15, 0.30, 1.15, 0.87, 0.55, 4.02; III: 0.75, 0.27, 0.55, 0.57, 0.37, 2.52; IV: 1.05, 0.22, 0.90, 0.75, 0.45, 3.37. DTS 0.07. DTE 0.48. Epiandrous fusules as in figure 297G. Palp as in figures 195, 196 and 199. Paracymbium with distinct rounded projection (Fig. 195D). Median region of the embolus with helical configuration (Figs. 199B).

Female (Paratype MCN): coloration and general habitus as in male (Fig. 193). Venter with a lighter area between the gonopore and the openings of the book lungs. Total length 2.10. Cephalothorax 0.97 long, 0.85 wide, 0.65 high. Abdomen 1.35 long, 1.12 wide, 1.12 high. Sternum 0.50 long, 0.52 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.13. PLE 0.07. AME-AME 0.08, AME-ALE 0.08, PME-PME 0.14, PME-PLE 0.09, ALE-PLE 0.01. Clypeus height $1.80 \times$ AME diameter. Chelicerae

darker than cephalothorax, with three promarginal and three retromarginal teeth (Figs. 194D-F). Leg measurements: I: femur 1.27, patella 0.32, tibia 1.35, metatarsus 1.05, tarsus 0.67, total 4.67; II: 1.25, 0.32, 1.22, 0.80, 0.62, 4.22; III: 0.82, 0.20, 0.52, 0.58, 0.37, 2.51; IV: 1.07, 0.25, 0.80, 0.75, 0.43, 3.31. DTS 0.07. DTE 0.52. Tracheal system as in figure 198. Uterus externus sac with a disc-shaped basal projection (Fig. 197).

Variation: male total length 1.7-2.0 ($N = 10$; average 1.8), cephalothorax length 0.8-1.0 ($N = 10$; average 0.9), femur I length 1.3-1.4 ($N = 10$; average 1.3). Female total length 1.7-2.3 ($N = 10$; average 2.0), cephalothorax length 0.7-1.1 ($N = 10$; average 0.9), femur I length 0.8-1.3 ($N = 10$; average 1.1).

Distribution: known from São Paulo, Santa Catarina and Rio Grande do Sul states in Brazil (312).

Additional material examined ($N = 49$): BRAZIL: Rio Grande do Sul: São Francisco de Paula, Potreiro Velho, [29°28'S, 50°9'W], elev. [772m], 31.iii.1997, J. Ketterl leg., 1♂ (MCTP 16065); 17.iii.1997, 1♂ (MCTP 16066); 11.iii.1997, 2♂ (MCTP 17541); 18.iii.1997, 1♀ (MCTP 17493), all collected by J. Ketterl; 12-15.vi.1997, A. Lise leg., 1♂ (MCTP 13771); 29°28'27.121''S, 50°9'25.0714''W, 1.v.2001, 1♂ (MCN); 29°29'15.898''S, 50°10'59.5791''W, 1.v.2001, 1 immature (MCN); 29°28'27.121''S, 50°9'25.0714''W, 2.i.2001, 2♀ (MCN); 29°28'26.619''S, 50°9'22.4451''W, 2.i.2001, 1♀ (MCN); 29°29'14.82''S, 50°10'57.8025''W, 2.ii.2001, 1♂ (MCN); 29°29'15.998''S, 50°10'59.5791''W, 2.ii.2001, 1♀ (MCN); 29°28'27.121''S, 50°9'25.0714''W, 2.ii.2001, 1 immature (MCN); 29°28'26.619''S, 50°9'22.4451''W, 2.ii.2002, 2♀ (MCN); 29°28'27.121''S, 50°9'25.0714''W, 2.ii.2002, 2♀ (MCN); 29°29'14.82''S, 50°10'57.8025''W, 2.ii.2002, 1♀ (MCN); 29°28'38.84296''S, 50°10'8.63689''W, 2.ii.2002, 1♀ (MCN); 29°29'14.82048''S, 50°10'57.80248''W, 2.vi.2001, 1♀ (MCN); 29°28'26.61861''S, 50°9'22.44506''W, 3.iii.2001, 1♂ (MCN); 29°28'38.84296''S, 50°10'8.63689''W, 7.iv.2001, 1♂ (MCN); 29°29'14.82048''S, 50°10'57.80248''W, 7.iv.2001, 1♀ (MCN); 29°28'26.61861''S, 50°9'22.44506''W, 8.iii.2001, 1♀ (MCN); 29°29'14.82048''S, 50°10'57.80248''W, 8.iii.2001, 1♂ (MCN); 29°28'38.84296''S, 50°10'8.63689''W, 9.v.2001, 1♀ (MCN); 29°28'27.12072''S, 50°9'25.07136''W, 11.x.2001, 1♀ (MCN); 29°29'15.99848''S, 50°10'59.57909''W, 13.xi.2001, 1♀ (MCN); 29°28'38.84296''S, 50°10'8.63689''W, 14.iv.2002, 1♂ (MCN);

29°28'27.12072''S, 50°9'25.07136''W, 14.iv.2002, 1♂ 1♀ (MCN); 29°29'14.82048''S, 50°10'57.80248''W, 14.iv.2002, 1♀ (MCN); 29°28'27.12072''S, 50°9'25.07136''W, 14.ix.2002, 1♂ (MCN); 29°28'38.84296''S, 50°10'8.63689''W, 14.ix.2002, 1♀ (MCN); 29°28'27.12072''S, 50°9'25.07136''W, 18.v.2002, 1♀ (MCN); 29°28'26.61861''S, 50°9'22.44506''W, 18.v.2002, 1♂ (MCN); 29°29'14.82048''S, 50°10'57.80248''W, 23.xi.2000, 1♀ (MCN); 29°29'26.61861''S, 50°9'22.44506''W, 25.x.2000, 1♂ (MCN); 29°29'38.84296''S, 50°10'8.63689''W, 25.x.2000, 1♂ (MCN), all collected by R. Ott. **Santa Catarina:** Ilhota, Morro do Baú, [26°52'5.87''S, 48°51'12.88''W], elev. [232m], 13.v.1996, C. N. Duchett leg., 2♂ (MCN 27631); **São Paulo:** São José do Barreiro, Parque Nacional da Serra da Bocaina, [22°43'S, 44°36'W], elev. [900m], 28.iv – 3.v.2002, Equipe Biota leg., Pitfall, 4♀ (IBSP 68552); 1♂ 1♀ (IBSP 57091); 1♂ (IBSP 57078).

Glenognatha foxi (McCook, 1894)

(Figs. 200-207, 305)

Theridium foxi McCook, 1894: 402, pl. 29, fig. 1. *Nomen nudum*.

Mysmena bulbifera Banks, 1896: 66 (syntypes from United States of America, deposited in MCZ, examined); Banks, 1904: 126, pl. 7, figs. 12-13; Barrows, 1919: 210, figs. 1-2. Synonymized by Levi 1980: 68.

Diplocephalus crumbi Petrunkevitch, 1925b: 171, pl. 8, fig. 1 (syntypes from Tennessee, United States of America, deposited in YPM, not examined). Synonymized by Levi 1980: 68.

Glenognatha foxi: Crosby & Bishop, 1928: 1055.

Mimognatha foxi: Banks, 1929: 90; Kaston, 1945: 7, fig. 27; Kaston, 1948: 264, figs. 834-835. Synonymized by Levi 1980: 68.

Glenognatha foxi: Levi, 1980: 68, figs. 272-284; Coddington, 1990: 16, fig. 48; Breene *et al.*, 1993: 107, figs. 167A-C; Dimitrov *et al.*, 2007: 765, figs. 8A-D, 11A-B; Álvarez-Padilla *et al.*, 2009: 138, fig. 9b, Álvarez-Padilla & Hormiga, 2011: 762, figs. 36A-I, 37A-G, 38A-D, 39A-F, 40A-B; Platnick, 2013.

Diagnosis: males of *G. foxi* resemble those of *G. heleios*, *G. iviei*, *G. sp. nov. 3*, *G. sp. nov. 9* and *G. sp. nov. 10* by the presence of anterior tooth (Figs. 202A,C). They are distinguished from the latter species by the widely excavated conductor lamina in dorsal

view (Figs. 204C, 207D). Females are differentiated from the very similar species *G. heleios* by the presence of a well-developed CFO (Fig. 202E).

Description: male and female described by Levi (1980), additional data are presented here.

Male (USA, Pennsylvania, AMNH): habitus as in figure 200. Total length 1.47. Cephalothorax 0.60 long, 0.42 wide, 0.57 high. Abdomen 0.82 long, 0.75 wide, 0.72 high. Sternum 0.32 long, 0.35 wide. Eye diameters and interdistances: AME 0.05, ALE 0.05, PME 0.06, PLE 0.04. AME-AME 0.05, AME-ALE 0.07, PME-PME 0.06, PME-PLE 0.08, ALE-PLE 0.01. Clypeus height $2.00 \times$ AME diameter. Three promarginal and four retromarginal teeth (Fig. 202A-C). Anterior tooth present (Figs. 202A,C). Leg measurements: I: femur 0.82 + patella 0.25 + tibia 0.75 + metatarsus 0.62 + tarsus 0.40, total 2.85; II: 0.70, 0.22, 0.65, 0.45, 0.30, 2.32; III: 0.45, 0.17, 0.32, 0.35, 0.27, 1.57; IV: 0.72, 1.50, 0.50, 0.45, 0.27, 3.45. DTS 0.06. DTE 0.37. Palp as in figures 203-204. Embolus tip widened (Figs. 204D, 207B). Conductor retrolateral apophysis rounded (Figs. 204B-C).

Female (USA, Arizona, AMNH): habitus as in figure 201. Total length 1.75. Cephalothorax 0.70 long, 0.55 wide, 0.55 high. Abdomen 1.00 long, 0.97 wide, 1.02 high. Sternum 0.35 long, 0.42 wide. Eye diameters and interdistances: AME 0.05, ALE 0.03, PME 0.05, PLE 0.03. AME-AME 0.06, AME-ALE 0.05, PME-PME 0.07, PME-PLE 0.07, ALE-PLE 0.01. Clypeus height $1.70 \times$ AME diameter. Three promarginal and four retromarginal teeth (Figs. 202D-F). Cheliceral fang outgrowth well-developed (Fig. 202E). Leg measurements: I: femur 0.67, patella 0.22, tibia 0.60, metatarsus 0.52, tarsus 0.35, total 2.37; II: 0.62, 0.21, 0.50, 0.45, 0.35, 2.13; III: 0.45, 0.12, 0.27, 0.30, 0.22, 1.37; IV: 0.67, 0.17, 0.45, 0.42, 0.36, 2.08. DTS 0.08. DTE 0.37. Tracheal system as in figure 206. Internal genitalia with well-developed spermathecae (Fig. 205).

Variation: male total length 1.2-1.8 ($N = 10$; average 1.6), cephalothorax length 0.6-0.8 ($N = 10$; average 0.7), femur I length 0.7-1.0 ($N = 10$; average 0.8). Female total length 1.4-1.8 ($N = 10$; average 1.6), cephalothorax length 0.6-0.7 ($N = 10$; average 0.69), femur I length 0.6-0.8 ($N = 10$; average 0.6).

Distribution: known from southern Canada to Panama (Fig. 305).

Additional material examined (N = 684): CANADA: Ontario: Pelee Island, Lake Erie, [41°45'N, 82°40'W], elev. [179m], 4-16.vi.1950, W. Ivie & T. B. Kurata leg., 1♂ 3 immature (AMNH); Esser Co., Bois Blanc Is., [42°5'N, 83°7'W], elev. [174m], 9.viii.1933, W. D. Shepard leg., (in roadside ditch), 1♂ (AMNH). **CUBA: Cienfuegos:** Soledad, [Jardín Botánico de Cienfuegos], [22°7'N, 80°20'W], elev. [50m], 1-11.viii.1934, P. J. Darlington leg., 4♀ 1♂ (AMNH). **JAMAICA: Saint Andrews:** Mona, [18°0'N, 76°44'W], elev. [189m], 15.v.1951, B. W. S. leg., (earth underwood), 1♂ (MCZ 125488). **Saint Catherine:** School of Agni, [17°59'N, 76°58'W], elev. [34m], 23.xi.1923, Chickering leg., 1♀ 1 immature (MCZ 125486). **MEXICO: Tamaulipas:** Tampico, [22°14'N, 97°53'W], elev. [6m], 1966, A. Pamanes leg., 3♂ (CAS 9039596). **PANAMA: Colón:** Santa Rosa, [8°52'N, 80°5'W], elev. [272m], vi.1945, C. D. Michener leg., 1♂ (AMNH) **Panamá:** Barro Colorado, Canal zone, [9°9'N, 79°50'W], elev. [150m], 10.iii.1936, W. J. Gertsch leg., 1♀ (AMNH); 2-14.vii.1979, E. Broadhead *et al.* leg., 1♂ (USNM); viii.1950, 1♀ 2♂ (MCZ 125540); viii.1954, 1♂ (MCZ 125534); 1♀ 1♂ (MCZ 125546); 21.xii.1957, 1♂ (MCZ 125542); 8.ii.1958, 1♂ (MCZ 129047), all collected by A. M. Chickering; Canal Zone, Corozal, [8°4'N, 81°26'W], elev. [200m], xii.1957 – i.1958, 5♀ (MCZ 125492); 23.xii.1957, 2♀ 3♂ (MCZ 125544); Canal zone, Gatun, [9°17'N, 79°46'W], elev. [30m], 1.ii.1958, 2♂ (MCZ 125528); ii.1958, 3♀ 15♂ 1 immature (MCZ 125543); iii-vi.1958, 1♂ (MCZ 125495); 6.iii.1958, 3♀ 1♂ (MCZ 125493); 30.i.1958, 4♀ 5♂ 2 immatures (MCZ 125539), Canal Zone, Pedro Miguel, [9°1'N, 79°36'W], elev. [50m], 26.xii.1957, 1♀ 2 immature (MCZ 125532); Canal zone, Summit park, [9°9'N, 79°50'W], elev. [150m], 25.ii.1958, 2♂ (MCZ 125531), all collected by A. M. Chickering; Bella vista, [7°44'N, 80°14'W], elev. [30m], 6.vii, Banks leg., 1♂ (MCZ 125547). **UNITED STATES OF AMERICA: Alabama:** Tuscaloosa, [33°12'N, 87°35'W], elev. [43m], 3.viii, A. F. Archer leg., 1♀ 1♂ (AMNH); Auburn, [32°36'N, 85°30'W], elev. [206m], N. Banks leg., 4♂ (MCZ 125569). **Arizona:** Yuma, [32°44'N, 113°58'W], elev. [79m], 4.xi.1959, V. Roth leg., (Swp. Alfalfa), 3 immatures (AMNH). **Arkansas:** Sevier Cossatot River, [33°57'N, 94°13'W], elev. [95m], 3.v.1966, W. Peck leg., 1♂ (CAS 9039594); Mississippi Co. BigLake, [35°50'N, 90°7'W], elev. [68m], 25.vi.1966, W. Peck leg., 1♂ (CAS 9039590); Conway Co., [35°16'N, 92°41'W], elev. [120m], 8.vii.1961, W. Peck leg., 1♂ 1♀ (CAS 9039644); Washington Co., Cove creek valley, 15 mi. W of Prairie Grove

Boston Mts., [35°55'N, 94°19'W], elev. 305m, 11-24.vii.1956, M. Hite leg., 2♂ (MCZ 125576); Washington Co., Cove cr. valley, 15 mi. S. of Prairie Grove, Boston Mts., [35°54'N, 94°17'W], elev. 305m, vii.1957, M. Hite leg., 1♀ 1♂ (MCZ 125575); 1957, M. Hite leg., 1♂ (MCZ 125574); vi.1956, M. Hite leg., 1♀ 1 immature (MCZ 125577); 19.vi.1957, M. Hite leg., 1♀ (MCZ 125572); Washington Co., Fayetteville, [36°3'N, 94°9'W], elev. [388m], vii.1957, M. Hite leg., 1♀ (MCZ 125573). **California:** Imperial Co. Imperial Dam., [32°50'N, 114°29'W], elev [48m], 28.ix.1957, B. Schick leg., 1♀ 1♂ (AMNH). **Florida:** Volusia Co: NW side of lake Monroe, [28°51'N, 81°17'W], elev. [5m], 30.iii.1942, W. H. & L. F. Stieckel leg., (plant sweep), 1♀ (AMNH); Archbold, biological station, 27°11'N, 81°21'W, elev. [42m], 19.xii.1962, W. Ivie leg., 4♀ 6♂ 16 immature (AMNH); 8 miles N.W. of Stuart, 27°17'N, 80°17'W, elev. [4m], 12.xii.1962, W. Ivie leg., 2♀ (AMNH); Collier Co., Naples, [26°8'N, 81°47'W], elev. [5m], 17.i-12.ii.1946, Stowell Rounds leg., 1♀ (AMNH); N. of Winter Park, [28°43'N, 81°24'W], elev. [5m], 11.iv.1938, W. J. Gertsch leg., 1♀ (AMNH); Miami, [25°50'N, 80°22'W], elev. [5m], 1.viii.1937, F. N. Young leg., 1♂ (AMNH); Everglades, Immocole road [26°29'N, 81°25'W], elev. [11m], 16.i.1935, W. M. B. leg., 1♂ (AMNH); Gainesville, Newman's Lake, [29°38'N, 82°13'W], elev. [20m], 13.iv.1938, Gertsch leg., 1♂ (AMNH); Gainesville, 3 mi. S. Lake Istokpoga, [27°11'N, 81°17'W], elev. [18m], 28.ii.1951, A. M. Nadler leg., 1♀ (AMNH); Miakka River State Park, nr. Sarasota, [27°12'N, 82°15'W], elev. [9m], 6.iv.1938, Gertsch leg., 1♀ (AMNH); Okeechobee, [26°54'N, 80°37'W], elev. [5m], 26.iii.1938, Gertsch leg., 2♀ 2♂ (AMNH); 5 mi. S. Clara, [30°26'N, 87°19'W], elev. [7m], 11.iv.1938, W. J. Gertsch leg., 1♂ (AMNH); Miami, [25°47'N, 80°14'W], elev. [5m], 2.iii.1936, 1♂ 1♂ (AMNH); Sebring, [27°29'N, 81°26'W], elev. [39m], 7.iii.1939, F. E. Lutz leg., 2♂ (AMNH); Lake County, Lessburg, [28°48'N, 81°52'W], elev. [19m], 1-11.iii.1954, M. Statham leg., 1♂ (AMNH); Homestead fields and roadside, [25°47'N, 80°13'W], elev. [5m], 1-4.iii.1968, Chickering leg., 1♂ (MCZ 125562); Sebastian, [27°49'N, 80°29'W], elev. [6m], 9-14.iv.1944, G. Nelson leg., 1♂ (MCZ 125567); Runnymede, [27°10'N, 80°18'W], elev. [4m], N. Banks leg., 1♀ 1 immature (MCZ 125566). **Georgia:** Gainesville, [34°18'N, 83°49'W], elev. [369m], 31.iii.1949, E. Kaston leg., 1♂ (USNM); Rabun Co., S.W. end lake Burton, camp Cherokee, [34°50'N, 83°33'W], elev. [571m], 29.vi.1975, D. A. Rossman leg., 1♂ (AMNH); Sylvania to Sardis, 32°50'N, 81°40'W, elev. [36m], 20.iv.1943, W. Ivie leg., 1♀ (AMNH); Sylvania, [32°45'N, 81°38'W], elev. [71m], 27.iii.1957, W. J. Gertsch & R. Forster leg., 1♀ (AMNH). **Illinois:** Old Ripley, along

creek, [38°53'N, 89°34'W], elev. [171m], 11.viii.1941, C. & M. Goodnight leg., 1♂ (AMNH); Grafton, along river, [38°58'N, 90°26'W], elev. [176m], 3.ix.1944, C. & M. Goodnight leg., 1♂ (AMNH); Mt. Olive, 39°5'N, 89°48'W, elev. [192m], 10.vi.1933, W. Ivie leg., 2♀ 1♂ (AMNH). **Indiana:** Fort Wayne (St. Marys River), 41°3'N, 85°8'W, elev. [241m], 3.viii.1964, J. & W. Ivie leg., 3♀ 4♂ 1 immature (AMNH). **Kansas:** 4 miles S.W. of Redfield, 37°45'N, 94°55'W, elev. [258m], 8.viii.1964, J. & W. Ivie leg., 40♀ 70♂ 29 immature (AMNH). **Louisiana:** Hamburg, [31°1'N, 1°55'W], elev. [15m], 13.v.1963, 16♀ 25♂ 9 immature (AMNH); Baton Rouge, [30°27'N, 91°8'W], elev. [15m], ix.1958, 2♀ (AMNH); Farmerville, [31°45'N, 92°9'W], elev. [45m], 10.vi.1933, W. Ivie leg., 1♂ (AMNH); Parks, [30°12'N, 91°49'W], elev. [7m], 16.vii.1963, 27♀ 35♂ 15 immature (CAS 9038090). **Massachusetts:** Nantucket, [41°16'N, 70°6'W], elev. [9m], 20.vi.1929, 1♀ (MZC 124567); 15.ix.1929, 1♀ (MZC 125466), 23.vi.1928, (saltmarsh), 1♂ (MZC 125465). **Mississippi:** Hattiesburg, [31°19'N, 89°17'W], elev. [46m], 8.vii.1944, C. D. Michener leg., 2♂ (AMNH). **Missouri:** Johnson Co., [38°40'N, 93°49'W], elev. [262m], 2.vi.1965, HEF leg., 1♀ 3♂ (AMNH); Jackson Co., 5 mi. S of Oak Grove, [39°0'N, 94°8'W], elev. [281m], 23.viii.1956, M. Hite leg., 2♂ (MCZ 125563). **New York:** Ithaca, [42°26'N, 76°30'W], elev. [120m], 30.vii.1916, Crosby leg., 1♂ (AMNH); Cold Spring Harbor, [40°52'N, 76°27'W], elev. [120m], 23.vii.1907, E. B. Bryant leg., 1♂ (MCZ 125470). **North Carolina:** Waynesville, [35°29'N, 82°59'W], elev. [853m], 7.vii.1933, W. Ivie leg., 2♀ (AMNH); Lake Waccamaw, [34°18'N, 78°29'W], elev. [13m], 21.x.1926, 1♂ (AMNH); Durham Co., Duke Forest, [35°58'N, 78°56'W], elev. [104m], 13-18.vi.1933, A. M. Chickering leg., 1♂ (MCZ 125561); Orange Co., Barbour farm; St. Mary's Road, [35°59'N, 79°8'W], elev. [187m], 13.ix.1963, J. W. Berry leg., 1♀ (MCZ 125570); 24.ix.1963, J. W. Berry leg., 1♂ (MCZ 125570); Canton, [35°31'N, 82°50'W], elev. [809m], N. Banks leg., 1♂ (MCZ 125472). **Pennsylvania:** N.E. of Jamison, Horseshoe Bend, Neshaminy Cr., 40°16'N, 75°3'W, elev. [49m], vi.1955, W. Ivie leg., 1♂ (AMNH); x.1954, W. Ivie leg., 9♀ 12♂ 4 immature (AMNH); ix. 1954, W. Ivie leg., 12♀ 11♂ 17 immature (AMNH); 4 mi. E. Gettysburg, [39°49'N, 77°13'W], elev. [168m], 2.vii.1960, J. R. D. Barnes leg., 3♂ (MCZ 125464). **South Carolina:** Long Bay, Myrtle Beach, [33°44'N, 78°48'W], elev. [9m], 15.x.1940, E. Mayr leg., 1♀ (AMNH). **Tennessee:** Kingston, [35°52'N, 84°30'W], elev. [237m], 12.vii.1933, W. Ivie leg., 1♀ (AMNH); Memphis, [35°10'N, 90°1'W], elev. [72m], 22.viii.1939, 2♂ (AMNH); Little Pigeon Cr., Great Smoky Mts., 35°38'N, 83°30'W, elev. [998m],

9.vii.1933, W. Ivie leg., 1♀ 1♂ (AMNH); Great Smoky Mts., [35°41'N, 83°32'W], elev. [450m], 8.vii.1933, Gertsch leg., 1♀ (AMNH); 1871, J. Curtis leg., 1♂ (MCZ 125568). **Texas:** Cameron Co. 11 mi E. Rio Hondo, [26°13'N, 97°24'W], elev. [10m], 8.xii.1954, K. W. Haller leg., 1♂ (AMNH); Cameron Co. [26°7'N, 97°31'W], elev. [7m], i-iii.1936, L. L. Davis leg., 1♀ 2♂ (USNM); 11 mi. N. San Saba, [31°14'N, 98°43'W], elev. [379m], 4.vii.1936, L. & D. leg., 1♂ (AMNH); 2 mi. S McCook, [26°29'N, 98°23'W], elev. [93m], 28.vi.1935, S.M. leg., 3♀ (AMNH); 20 mi. S. Alpine, [30°16'N, 103°39'W], elev. [1660m], 17.viii.1935, S.M. leg., 2♀ (AMNH); 5 mi. SE Weslaco, [26°3'N, 97°51'W], elev. [21m], 21.vii.1935, S.M. leg., 2♂ 1 immature (AMNH); 6 mi. Creek Carthage, [32°9'N, 94°20'W], elev. [96m], 9.v.1952, M. Cazier, W. Gertsch & R. Schramme leg., 1♂ (AMNH); 7 mi. E of Palestine, [31°45'N, 95°33'W], elev. [134m], 17.vii.1938, I. Davis leg., 2♀ 1♂ (AMNH); 7 mi. W of Higgins, [36°7'N, 100°2'W], elev. [779m], 16.vii.1939, L. I. Davis leg., 1♀ (AMNH); Bon Wier, [30°44'N, 93°38'W], elev. [23m], 18.viii.1940, A. M. & L. I. Davis leg., 1♀ (AMNH); 1 mi NW Rio Hondo, branch of Arroyo Colorado, [26°15'N, 97°36'W], elev. [7m], viii.1937, L. I. Davis leg., 1♀ 4♂ (AMNH); Brownville, [26°11'N, 97°26'W], elev. [5m], 11-16.vi.1933, Darlington leg., 1♂ (MCZ 124569); Cameron Co., [26°8'N, 97°29'W], elev. [7m], xii.1936, Davis leg., 1♀ (AMNH); Denton Co., Dacatur, [33°8'N, 97°10'W], elev. [196m], 8.viii.1945, 1♂ (MCZ 124573); E. of Harlingen; [26°10'N, 97°35'W], elev. [10m], i-iii.1936, Davis leg., 1♂ (AMNH); Edinburg; [26°20'N, 98°9'W], elev. [27m], 7.xii.1935, S.M. leg. 2♂ 1 immature (AMNH); xii.1939, S. & D. Mulaik leg., 1♀ (AMNH); 12.x.1935, S. M. leg., 5♂ 1 immature (AMNH); xii.1939, S. & D. Mulaik leg., 2♀ (AMNH); 1934, 2♂ (AMNH); 19.iv.1935, S. M. leg., 4♀ 3♂ 1 immature (AMNH); xi.1933, Mulaik leg., 1♀ (AMNH); Harlingen, [26°11'N, 97°41'W], elev. [12m], xi.1936, L. I. Davis leg., 1♂ (AMNH); Hidalgo. Breistown State Park, [26°5'N, 98°15'W], elev. [29m], 27.xii.1978, 1♂ (CAS 9039593); Kingsville, [27°31'N, 97°53'W], elev. [22m], 3-4.xi.1934, L. I. Davis & S. Mulaik leg., 3♂ (AMNH); Llano Co., [30°45'N, 98°40'W], elev. [314m], 10-12.vii.1936, L & D leg., 2♂ (AMNH); N. W. Edinburg, [26°20'N, 98°9'W], elev. [27m], 10-20.vi.1935, S. Mulaik leg., 3♀ 2♂ 3 immature (AMNH); Nacogdoches, 2 miles south, 31°35'N, 94°40'W, elev. [121m], 11.viii.1946, J. & W. Ivie leg., 3♀ 6♂ 6 immature (AMNH); New Brownfield, [33°10'N, 102°16'W], elev. [1012m], 19.viii.1935, S.M. leg., 2♀ 2♂ (AMNH); Palm Grove, [26°0'N, 97°23'W], elev. [5m], 26.iii.1936, 1♂ (AMNH); Riesel, [31°28'N, 96°55'W], elev. [153m], 15.vii.1941, M. Kagen leg., 3♀ (AMNH); Sanderson, [30°8'N,

102°23'W], elev. [851m], 20.viii.1935, S. Mulaik leg., 4♀ 6♂ (AMNH). **Virginia:** Amissville, [38°40'N, 77°59'W], elev. [157m], 18.viii.1939, R.V.C. leg., 1♂ (AMNH); Douthat St. Pk., Bath Co., [37°53'N, 79°48'W], elev. [456m], R. L. Hoffman leg., (sweeping short grass) 1♂ (AMNH); Great Falls, [38°59'N, 77°17'W], elev. [103m], J. H. Emerton leg., 1♀ 1♂ (MCZ 125564); Falls Church, [38°52'N, 77°10'W], elev. [97m], N. Banks leg., 2♀ 2♂ (MCZ 125560); Norfolk, [36°50'N, 76°17'W], elev. [5m], v.1900, J. H. Emerton leg., 1♂ (MCZ 125565). **West Virginia:** Pocahontas Co., 2350' Minnehaha Springs, [38°9'N, 79°58'W], elev. [712m], vii.1948, K. W. Haller leg., 1♂ (AMNH). **Wisconsin:** Trempealeau Co., [44°1'N, 91°28'W], elev. [263m], 15.vii.1949, S. P. Wise leg., 1♀ (MCZ 125468); Madison, [43°4'N, 89°24'W], elev. [259m], vi.1967, 1♂ (MCZ 125501).

New records: **BELIZE:** **Belize:** 9 mi. W Belize City, [17°28'N, 88°15'W], elev. [3m], 9.viii.1933, W. D. Shepard leg., (in roadside ditch), 1♂ 1 immature (CAS 9039646). **COSTA RICA:** **San José:** San José, [9°56'N, 84°5'W], elev. [1152m], E. Schmidt leg., 1♀ (AMNH). **CUBA:** **Cienfuegos:** Gaviña, [21°57'N, 80°10'W], elev. [790m], 1-13.ii.1981, P. J. Spangler & A. Vega leg., 1♀ (USNM). **HAITI:** **Sud:** Lévy (1 Km NE), [18°18'N, 73°51'W], elev. [185m], 10-11.ix.1981, P. Spangler & R. Faitoute leg., 1♀ (USNM). **MEXICO:** **Chiapas:** 13 miles NW of Comitán, [16°16'N, 92°10'W], elev. [1945m], 17.viii.1972, G. P. Hevel leg., 1♀ (USNM). **Guerrero:** 1.5 miles W Acapulco, [16°52'N, 99°53'W], elev. [320m], 4.i.1948, (fresh lake shore), 1♂ (AMNH); Cacahuamilpa, [18°40'N, 99°30'W], elev. [320m], 16.xii.1934, 1♀ (AMNH). [**Nuevo León:** Monterrey, [25°37'N, 100°17'W], elev. [599m], 10.vi.1936, Davis leg., 2♂ (AMNH). **San Luis Potosí:** Tamazunchale, arroyo la Chorrera, [21°15'N, 98°47'W], elev. [135m], 28.iii.1937, A. M. & L. I. Davis leg., 2♀ (AMNH). **Sinaloa:** Burrion, 25°33'N, 108°25'W, elev. [15m], 17.v.1963, W. J. Gertsch & W. Ivie leg., 1♀ (AMNH). **Sonora:** Hermosillo, [29°5'N, 110°56'W], elev. [135m], 20.ix.1952, B. Malkin & V.E. Thatcher leg., 1♀ (AMNH). **Tamaulipas:** San Fernando, [21°15'N, 98°47'W], elev. [135m], 28.iii.1937, Davis leg., 1♀ 2♂ (AMNH); Reynosa, [26°2'N, 98°17'W], elev. [39m], 2.iv.1936, S. Mulaik leg., 2♀ (AMNH); Mante, 22°45'N, 98°58'W, elev. [89m], 17.iv.1963, W. J. Gertsch & W. Ivie leg., 1♀ (AMNH). **Veracruz:** Coatzacoalcas, [18°7'N, 94°27'W], elev. [15m], 14.viii.1966, J. & W. Ivie leg., 1♂ (AMNH). **NICARAGUA:** [**Jinotega:** Musawas, Waspuc River, [14°23'N, 84°35'W], elev. [115m], 30.ix.1955, B. Malkin leg., 1♂ (AMNH). **PANAMA:** **Herrera:** Desierto de Sarigua, [8°3'N, 80°29'W], elev. [10m], 28.vii.1985, C. D. Quintero A. leg.,

1♂ (MCZ 125491). **PUERTO RICO: Mayagüez:** [18°11'N, 67°7'W], elev. [44m], 10.vi.1964, 1♂ (MCZ 125484). **UNITED STATES OF AMERICA: Louisiana:** St. Charles Co., Heberg Research Station, [29°56'N, 90°20'W], elev. [1m], 24.vi.1984, J. Coddington leg., 1♂ (USNM). **Maryland:** Piney point, [38°8'N, 76°29'W], elev. [1m], 26.viii.1946, E. A. Chapain leg., 1♂ (USNM). **Missouri:** Callaway Co., Tucker prairie, [38°53'N, 91°54'W], elev. [245m], 12.vi.1984, J. C. Weaver leg., 1♂ (USNM). **North Carolina:** Craven Co., Croatan, Croatan Nat. forest, [34°54'N, 77°3'W], elev. [12m], 30.vi.1961, J. E. Carico leg., 1♂ (USNM); Macon Co., Blue Valley, Wilson Lake, 2 mi SW Highlands, [34°57'N, 83°21'W], elev. [680m], 15.vii.1998, M. van der Meiwe leg., 1♂ (USNM).

***Glenognatha* sp. nov. 9**

(Figs. 208-211, 309)

Type material: male holotype from Lago Janauari, Manaus, Amazonas, Brazil, 3°20'S, 60°17'W, elev. [12m], vi.1987-vii.1988, J. Adis *et al.* leg., deposited in IBSP 120209; paratypes: 1♂ same data as the holotype deposited in IBSP 120266.

Diagnosis: males of *G.* sp. nov. 9 resemble those of *G. heleios*, *G. iviei*, *G.* sp. nov. 3 and *G.* sp. nov. 10 by the presence of anterior tooth (Fig. 209C). They are distinguished from the latter species by the serrated distal margin of the conductor (Fig. 211B-C).

Description: Male (Holotype): habitus as in figure 208. Carapace pale brown, darker on sides and with a diffused dusky patch from the median eyes to the cephalic fovea. Sternum dusky brown, with darker bands towards the median region. Abdomen spherical, strongly depigmentated, dorsally with irregular greyish patches and scattered silver guanine spots. Venter with a pale black median band. Legs yellow-brownish with darker bands at the base of the segments. Total length 1.77. Cephalothorax 0.77 long, 0.60 wide, 0.50 high. Abdomen 0.92 long, 0.75 wide, 0.75 high. Sternum 0.35 long, 0.42 wide. Eye diameters and interdistances: AME 0.08. ALE 0.05. PME 0.07. PLE 0.06. AME-AME 0.05, AME-ALE 0.05, PME-PME 0.07, PME-PLE 0.08, ALE-PLE 0.01. Clypeus height 1.20 × AME diameter. Chelicerae slightly lighter than the cephalothorax. Three promarginal and four retromarginal teeth (Figs. 209A-C). Anterior tooth near the fang base (Fig. 209C). Leg measurements: I: femur 0.80, patella 0.22, tibia 0.75, metatarsus 0.70, tarsus 0.45, total 2.92; II: 0.67, 0.22, 0.70, 0.61, 0.45, 2.66;

III: 0.50, 0.18, 0.40, 0.42, 0.28, 1.80; IV: 0.75, 0.17, 0.60, 0.55, 0.30, 2.37. DTS 0.10. DTE 0.34. Palp as in figures 210-211. Embolus short, almost completely enclosed by the conductor (Figs. 211A).

Female: unknown.

Variation: male total length 1.65-1.77 ($N = 4$; average 1.72), cephalothorax length 0.62-0.75 ($N = 4$; average 0.72), femur I length 0.8-0.85 ($N = 4$; average 0.81).

Distribution: known only from the type locality in the state of Amazonas, Brazil (Fig. 309).

Material examined ($N = 2$): **BRAZIL: Amazonas:** Manaus, Lago Janauari, 3°20'S, 60°17'W, elev. [12m], vi.1987-vii.1988, J. Adis *et al.* leg., 1 ♂ (IBSP 120166); 1 ♂ (IBSP 120220).

***Glenognatha* sp. nov. 10**
(Figs. 212-216, 297H, 309)

Type material: male holotype from Río Camisea, La Convención, Cusco, Peru 11°47'9.8"S, 72°42'5.3"W, elev. 474m, iii-iv.1997, S. Córdoba leg., deposited in MUSM 0505885; paratypes: 1 ♂, same data as the holotype, deposited in MUSM 0504913.

Diagnosis: males of *G. sp. nov. 10* can be distinguished from all other *Glenognatha* species by slender distal portion of the paracymbium (Fig. 214D).

Description: Male (Holotype): habitus as in figure 212. Carapace pale brown, darker on sides and along furrows, with a median lighter patch. Sternum brown, with darker bands towards the median region. Abdomen oval, dorsally with two dusky longitudinal bands on sides and one median posterior band that divides into two lateral bands that join medially in the posterior region. Silver guanine spots scattered in lighter dorsal regions and on lateral surfaces. Venter with a pale black median band and two lighter lateral bands. Legs yellow-brownish with distal parts of segments darker. Total length 1.62. Cephalothorax 0.80 long, 0.62 wide, 0.45 high. Abdomen 0.97 long, 0.80 wide, 0.82

high. Sternum 0.40 long, 0.45 wide. Eye diameters and interdistances: AME 0.08. ALE 0.07. PME 0.07. PLE 0.06. AME-AME 0.06, AME-ALE 0.04, PME-PME 0.04, PME-
PLE 0.05, ALE-PLE 0.01. Clypeus height $1.17 \times$ AME diameter. Chelicerae with the
same coloration of the cephalothorax. Three promarginal and four retromarginal teeth
(Figs. 213A-C). Anterior tooth well-developed (Fig. 213A,C). Leg measurements: I:
femur 1.02, patella 0.25, tibia 1.75, metatarsus 0.80, tarsus 0.57, total 3.72; II: 0.90,
0.25, 0.90, 0.81, 0.52, 3.38; III: 0.62, 0.20, 0.45, 0.52, 0.35, 2.15; IV: 0.85, 0.20, 0.71,
0.67, 0.42, 2.86. DTS 0.10. DTE 0.36. Epiandrous fusules as in figure 297H. Palp as in
figures 214-216. Paracymbium distal portion slender (Figs. 214D).

Female: unknown.

Variation: male total length 1.62-1.75 ($N = 6$; average 1.66), cephalothorax length 0.75-
0.85 ($N = 6$; average 0.79), femur I length 0.97-1.25 ($N = 6$; average 1.08).

Distribution: Known from Cusco state in Peru (Fig. 309).

Material examined ($N = 4$): **PERU:** **Cusco:** La Convención, Río Camisea,
11°47'9.8''S, 72°42'5.3''W, elev. 474m, S. Córdoba leg., 1♂ (MUSM 0504917); La
Convención, Cashiari, Río Camisea, 11°51'51.3''S, 72°46'45.6''W, elev. 579m,
v-vi.1997, S. Córdoba leg., 1♂ (MUSM 0504905); La Convención, Echarate, C. N.
Timpia, 12°6'S, 72°49'W, elev. 730m, 25-31.i.2010, E. Razúri & C. Espinoza leg., 1♂
(MUSM 0500942); La Convención, 12°19'21.26''S, 73°2'44.08''W, elev. 792m,
23.iv.2007, W. Paredes leg., 1♂ (MUSM 0504903).

Glenognatha smilodon Bosmans & Bosselaers, 1994

(Figs. 217-219, 313)

Glenognatha smilodon Bosmans & Bosselaers, 1994: 348, f. 148-157 (male holotype
from Pic Hosseré Vokré, Poli Mountains, Cameroon, 17.iv.1983, elev. 900m,
Bosmans R. & Van Stelle leg., deposited in MRAC 202710, examined); Platnick,
2013.

Diagnosis: males of *G. smilodon* can be easily distinguished from all other
Glenognatha species by the prominent curved apical portion of the embolus in lateral
view (Figs. 218C-D).

Description: holotype described by Bosmans & Bosselaers (1994). Additional data are presented here: Habitus as in figure 217. Cephalothorax 0.75 high. Abdomen 1.17 high. Palp as in figures 218-219. Conductor lamina distal end prolaterally folded (Figs. 219A-B). Embolus with a distinct laminar projection (Fig. 219D).

Female: unknown

Distribution: known only from the type locality (Fig. 313).

Glenognatha iviei Levi, 1980

(Figs. 220-222, 304)

Glenognatha iviei Levi, 1980: 69, figs. 285-289 (male holotype from Gulfport, Mississippi, United States of America, 18.viii.1922, W. Ivie leg., deposited in AMNH, examined); Platnick, 2013.

Diagnosis: males of *G. iviei* can be differentiated from all other *Glenognatha* species (except *G. heleios*) by the presence of a small pointed apophysis on the paracymbium (Fig. 222D); distinguished from *G. heleios* by the strongly curved Prt1 (Fig. 220D) and by the coiled distal portion of the embolus (Figs. 221A, D, 222A).

Description: male described by Levi (1980), additional data are presented here.

Male (Holotype): Habitus as in figure 220. Cephalothorax 0.42 high. Abdomen 0.78 long, 0.48 wide, 0.58 high. Sternum 0.38 long, 0.32 wide. Eye diameters and interdistances: AME 0.07, ALE 0.04, PME 0.08, PLE 0.04. AME-AME 0.07, AME-ALE 0.03, PME-PME 0.05, PME-PLE 0.06, ALE-PLE 0.005. Clypeus height $1.80 \times$ AME diameter. Three promarginal and four retromarginal teeth. Anterior tooth present (Fig. 220D). Leg measurements: I: femur 0.75, patella 0.25, tibia 0.77, metatarsus 0.62, tarsus 0.37, total 2.77; II: 0.67, 0.22, 0.65, 0.52, 0.32, 2.40; III: 0.42, 0.17, 0.33, 0.33, 0.22, 1.50; IV: 0.58, 0.17, 0.47, 0.45, 0.25, 1.93. DTS 0.03. DTE 0.22. Palp as in figures 221-222. Conductor retrolateral apophysis rounded (Figs. 221B-C). Embolus distal portion coiled (Figs. 221A, D, 222A).

Female: unknown

Distribution: known only from the type locality (Fig. 304).

Glenognatha heleios Hormiga, 1990

(Figs. 223-230, 304)

Glenognatha heleios Hormiga, in Hormiga & Döbel, 1990: 197, figs. 1-14 (male holotype from Tuckerton, Ocean Co., New Jersey, United States of America, 1.xi.1984, H. Döbel leg., deposited in USNM, examined; paratypes from the same locality, 6♀ 6♂, 9.x.1984, 3♀ 4♂, 7.xi.1984, H. Döbel leg., deposited in USNM; 1♀ 1♂, 9.x.1984, H. Döbel leg., deposited in AMNH; 1♀ 1♂, 9.x.1984 H. Döbel leg., deposited in MCZ, all examined); Hormiga *et al.*, 1995: 326, figs. 7H-I; Platnick, 2013.

Diagnosis: males of *G. heleios* can be easily distinguished from all other *Glenognatha* species (except *G. iviei*) by the presence of a small pointed apophysis on the paracymbium (Figs. 226B, 230H); distinguished from *G. iviei* by the slightly curved Prt 1 (Figs. 225A) and by the uncoiled embolus distal portion (Figs. 227A, 230E-F). Females are distinguished from the very similar species *G. foxi* by the absence of CFO (Fig. 225D-F) and from *G. sp. nov. 3* by having four retromarginal teeth (Fig. 225F).

Description: male and female described by Hormiga & Döbel (1990), additional data are presented here: habitus as in figures 223-224. Male and female with three promarginal and four retromarginal teeth (Fig. 225). Male chelicerae with anterior tooth and CFO (Fig. 225A). Palp as in figures 226-227, 230. Conductor retrolateral apophysis rounded (227B-C). Embolus curved prolaterally (Figs. 227A, D, 230E). Female tracheal system as in figure 229. Internal genitalia with well-developed spermathecae (Figs. 228). Uterus externus sac large, with a conspicuous constriction at its base (Fig. 228C, arrow).

Variation: see Hormiga & Döbel, (1990).

Distribution: known in New Jersey state in United States of America (Fig. 304).

Additional material examined (N = 18): UNITED STATES OF AMERICA: *New Jersey:* Ocean Co., Tuckerton, [39°36'N, 74°20'W], elev. [1m], 7.xi.1984, H. Döbel

leg., 4♂ 7♀ (USNM); 28.vii.1984, H. Döbel leg., 3♂ (USNM); 25.ix.1984, H. Döbel leg., 2♂ (USNM).

New records: **UNITED STATES OF AMERICA: New Jersey:** Oceanville, [39°28'N, 74°27'W], elev. [12m], 26.ix.1949, P. F. Springer leg., 1♀ 1♂ (AMNH).

***Glenognatha* sp. nov. 1**

(Figs. 231-238, 298A, 299A, 302A, 312)

Type material: Male holotype and female paratype from Barragem do Rio Paraitinga, Salesópolis, São Paulo, Brazil, [23°32'5.42''S, 45°46'56.62''W], elev. [870m], 11-18.vi.2002, Eq. IBSP leg., deposited in IBSP 163681; paratypes: 13♂ 10♀ from the type locality, 11-18.vi.2002, Eq. IBSP leg., deposited in IBSP 147861; 1♂ from Reserva Natural da Cachoeira, Antonina, Paraná, Brazil, [25°24'2,4''S, 48°41'18.75''W], elev. [100m], 28.vi-2.vii.2003, H. Hofer *et al.* leg., deposited in IBSP 131182; 1♂ 2♀ from Estação Braskem de Proteção Ambiental, Triunfo, Rio Grande do Sul, Brazil, [29°56'28,27''S, 51°41'24.41''W], elev. [6m], 19.xi.2002, R. Ott leg., deposited in MCN 34952; 1♂ 1♀ from Parque do Estado de São Paulo, São Paulo, São Paulo, Brazil, [23°39'11,45''S, 46°37'47.15''W], elev. [811m], 13-20.v.2002, J. Valvassori leg., deposited in IBSP 59239.

Diagnosis: Males of *G.* sp. nov. 1 can be easily distinguished from all other *Glenognatha* species by the bifurcated embolus tip (Figs. 235D, 238C). Females resemble those of *G. australis* by the bean-shaped spermathecae (Fig. 236); distinguished from the latter species by having the Prt1 and Prt 2 subequal in size (Fig. 233D).

Description: Male (Holotype): Habitus as in figure 231. Carapace brown, darker along furrows. Sternum brown with darker edges. Abdomen oval, with two irregular dusky bands that join medially in the posterior region. Silver guanine spots scattered in two longitudinal bands dorsally and in lateral surfaces. Venter with a median dusky band that ramifies laterally from posterior tracheal spiracle, guanine silver spots absent. Legs pale yellow-brownish. Tracheal spiracle well-sclerotized. Total length 2.20. Cephalothorax 1.00 long, 0.81 wide, 0.72 high. Abdomen 1.25 long, 1.00 wide, 1.00 high. Sternum 0.52 long, 0.55 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.10. PLE 0.08. AME-AME 0.10, AME-ALE 0.09, PME-PME 0.11, PME-

PLE 0.09, ALE-PLE 0.01. Clypeus height $2.11 \times$ AME diameter. Chelicerae brownish. Three promarginal and four retromarginal teeth (Figs. 233A-C). Ret 1 on the posterior surface (Fig. 233B). Leg measurements: I: femur 1.50, patella 0.37, tibia 1.55, metatarsus 1.25, tarsus 0.72, total 5.40; II: 1.30, 0.37, 1.28, 1.00, 0.65, 4.61; III: 0.97, 0.25, 0.72, 0.65, 0.30, 2.90; IV: 1.25, 0.25, 1.05, 0.90, 0.47, 3.92. DTS 0.16. DTE 0.52. ALS as in figure 299A. Palp as in figures 234-235, 238. Conductor lamina apically rounded (Figs. 235B-C). Embolus tip bifurcated (Figs. 235D, 238C).

Female (Paratype IBSP 147809): Coloration and general habitus as in male (Fig. 232). Tracheal spiracle well-sclerotized. Total length 2.55. Cephalothorax 1.08 long, 0.93 wide, 0.8 high. Abdomen 1.45 long, 1.30 wide, 1.32 high. Sternum 0.6 long, 0.65 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.09. PLE 0.08. AME-AME 0.08, AME-ALE 0.08, PME-PME 0.11, PME-PLE 0.11, ALE-PLE 0.01. Clypeus height $2.10 \times$ AME diameter. Chelicerae brownish, with three promarginal and four retromarginal teeth (Figs. 233D-F). Leg measurements: I: femur 1.52, patella 0.37, tibia 1.45, metatarsus 1.30, tarsus 0.75, total 5.40; II: 1.30, 0.37, 1.25, 1.17, 0.62, 4.72; III: 1.07, 0.27, 0.62, 0.68, 0.38, 3.05; IV: 1.25, 0.27, 1.05, 0.92, 0.50, 4.00. DTS 0.18. DTE 0.60. ALS and PLS as in figures 298A, 302A. Tracheal system as in figure 237. Internal genitalia with bean-shaped spermathecae (Fig. 236). Uterus externus sac divided into two disc-shaped portions (Fig. 236A).

Variation: Male total length 1.7-2.5 ($N = 10$; average 2.1), cephalothorax length 0.9-1.2 ($N = 10$; average 1.0), femur I length 1.2-1.5 ($N = 10$; average 1.4). Female total length 2.1-3.2 ($N = 10$; average 2.5), cephalothorax length 1.0-1.3 ($N = 10$; average 1.1), femur I length 1.1-1.5 ($N = 10$; average 1.3).

Distribution: Known from the states of São Paulo, Paraná and Rio Grande do Sul in Brazil (Fig. 312).

Additional material examined (N =1096): BRAZIL: São Paulo: São Paulo, Parque do Estado, [23°39'S, 46°37'W], elev. [811m], pitfall, 1-7.xi.2001, J. Valvassori, leg., 1 ♀ (IBSP 59154); 1 ♂ (IBSP 59155); 1 ♀ (IBSP 59233); 1 ♂ (IBSP 59234); 2 ♂ (IBSP 59235); 1 ♂ (IBSP 59236); 2 ♀ (IBSP 59237); 1 ♂ (IBSP 59238); 6 ♂ (IBSP 59240); 2 ♀ (IBSP 59242); 1 ♂ (IBSP 59243); 13-20.v.2002, 1 ♀ (IBSP 59244); 2 ♂ 2 ♀ (IBSP

59245); 1♀ (IBSP 59246); 1♂ (IBSP 59247); 1♀ (IBSP 59248); 1♀ (IBSP 59250); Biritiba Mirim, Barragem do rio Biritiba-Mirim, [23°33'S, 46°2'W], elev. [751m], 10-15.v.2003, Equipe Biota leg., 1♀ (IBSP 117427); 1♀ (IBSP 117428); 1 immature (IBSP 117429); 1♂ (IBSP 117430); 1♂ (IBSP 117431);, 1♂ (IBSP 117432); 1♂ (IBSP 117433); 1♂ (IBSP 117434); 1 immature (IBSP 117435); 1 immature (IBSP 117436); 1♂ (IBSP 117437); 1♂ (IBSP 117438); 1♀ (IBSP 117439); 1 immature (IBSP 117440); 1♀ (IBSP 117441); 1 immature (IBSP 147790); 10-15.v.2003, 3♀ (IBSP 147791); 10-15.v.2003, 2♂ (IBSP 147792); 10-15.v.2003, 1♂ 1♀ (IBSP 147793); Salesópolis, Barragem do Rio Paraitinga, [23°32'S, 45°46'W], elev. [870m], 18-25.vi.2002, Eq. IBSP leg., 1♀ (IBSP 146596); 1♂ (IBSP 147309); 1♀ (IBSP 147311); 11-18.vi.2002, 11♂ 2♀ (IBSP 147642); 17♂ 3♀ (IBSP 147643); 3♂ 2♀ (IBSP 147644); 4♂ 5♀ (IBSP 147645); 2♂ 1♀ (IBSP 147646); 10♂ 4♀ (IBSP 147647); 5♂ 7♀ (IBSP 147648); 4♂ 13♀ (IBSP 147649); 9♂ 6♀ (IBSP 147650); 13♂ 1♀ (IBSP 147651); 7♂ 2♀ (IBSP 147652); 2♂ (IBSP 147653); 6♂ 6♀ (IBSP 147654); 11♂ 6♀ (IBSP 147655); 3♂ 4♀ (IBSP 147656); 4♂ 3♀ (IBSP 147657); 13♂ 2♀ (IBSP 147658); 11-18.vi.2002, 7♂ 4♀ (IBSP 147797); 9♂ 6♀ (IBSP 147798); 2♂ 1♀ (IBSP 147799); 12♂ 8♀ (IBSP 147800); 7♂ 1♀ (IBSP 147801); 1♂ 3♀ (IBSP 147802); 3♂ (IBSP 147803); 4♂ 4♀ (IBSP 147804); 5♂ 6♀ (IBSP 147805); 3♂ 4♀ (IBSP 147806); 2♂ 1♀ (IBSP 147807); ♂ 3♀ (IBSP 147808); 3♂ 5♀ (IBSP 147809); 11♂ 7♀ (IBSP 147810); 4♂ 2♀ (IBSP 147811); 11♂ 5♀ (IBSP 147812); 3♂ 2♀ (IBSP 147813); 7♂ 4♀ (IBSP 147814); 6♂ 4♀ (IBSP 147815); 6♂ 5♀ (IBSP 147816); 9♂ 10♀ (IBSP 147817); 2♂ 3♀ (IBSP 147818); 8♂ 4♀ 1 immature (IBSP 147819); 9♂ 7♀ 1 immature (IBSP 147820); 7♂ 1♀ (IBSP 147821); 2♂ 5♀ (IBSP 147822); 5♂ 2♀ (IBSP 147823); 1♀ (IBSP 147824); 3♂ 3♀ 2 immature (IBSP 147825); 9♂ 6♀ 1 immature (IBSP 147826); 12♂ 17♀ (IBSP 147827); 6♂ 2♀ 1 immature (IBSP 147828); 8♂ 3♀ (IBSP 147829); 10♂ 1♀ (IBSP 147830); 28♂ 29♀ 1 immature (IBSP 147831); 6♂ 5♀ (IBSP 147832); 6♂ 8♀ (IBSP 147833); 9♂ 3♀ (IBSP 147834); 2♂ 3♀ (IBSP 147835); 3♂ 1♀ (IBSP 147836); 3♂ 1♀ (IBSP 147837); 4♂ 6♀ (IBSP 147838); 10♂ 4♀ (IBSP 147839); 4♂ 3♀ (IBSP 147840); 4♂ 3♀ (IBSP 147841); 3♂ (IBSP 147842); 5♂ 1♀ (IBSP 147843); 7♂ 5♀ (IBSP 147844); 5♂ 8♀ (IBSP 147845); 2♂ (IBSP 147846); 9♂ 1♀ (IBSP 147847); 9♂ 5♀ (IBSP 147848); 3♂ 4♀ (IBSP 147849); 5♂ 3♀ (IBSP 147850); 3♂ 3♀ (IBSP 147851); 5♂ 4♀ (IBSP 147852); 2♂ 2♀ (IBSP 147853); 11♂ 4♀ (IBSP 147854); 1♂ 2♀ (IBSP 147855); 8♂ 2♀ (IBSP 147856); 9♂ 5♀ (IBSP 147857); 6♂ 15♀ (IBSP 147858); 6♂ 2♀ (IBSP 147859); 13♂ 8♀ (IBSP 147860); 12♂ 4♀ (IBSP 147862); 12♂

4♀ (IBSP 149115); 4♂ 10♀ (IBSP 149202); 9♂ 6♀ (IBSP 149203); 2♂ (IBSP 149204); 3♂ (IBSP 149205); 4♂ 2♀ (IBSP 149206); 1♂ 1♀ (IBSP 149207); 4♂ 1♀ (IBSP 149208); 4♂ 4♀ (IBSP 149209); 3♂ 4♀ (IBSP 149210); 7♂ 6♀ (IBSP 149211); 3♂ 3♀ (IBSP 149212); 7♂ 13♀ (IBSP 149213); 13♂ 3♀ (IBSP 149214); 7♂ 3♀ (IBSP 149215); 16♂ 4♀ (IBSP 149216); 3♂ 2♀ (IBSP 149217); 2♂ 2♀ (IBSP 149218).

***Glenognatha hirsutissima* (Berland, 1935)**

(Figs. 239-244, 315)

Hivaoa hirsutissima Berland, 1935: 52, fig. 20-23 (female holotype from Teavaituhai, Uapou, Marquesas Islands, 30.xi.1931, deposited in Bernice Bishop Museum, Honolulu, lost).

Glenognatha hirsutissima: Levi 1980: 64; Platnick, 2013.

Diagnosis: males and females of *G. hirsutissima* can be easily distinguished from all other *Glenognatha* species by the presence of spines on the ventral surface of femur III (Figs. 240C).

Description:

Male (Marquesas Islands, Nuku Hiva, USNM): habitus as in figure 239. Carapace yellow-brownish, with two dusky lateral bands. Sternum light yellow, darker on edges. Abdomen oval, dorsally with irregular pattern of longitudinal dusky bands that extend to the lateral surface. Thin transvers bands on the posterior region. Silver guanine spots scattered in the dorsal and lateral surfaces. Venter greyish with scattered silver guanine spots. Legs light yellow. Total length 2.45. Cephalothorax 1.17 long, 0.87 wide, 0.75 high. Abdomen 1.37 long, 0.87 wide, 0.85 high. Sternum 0.62 long, 0.57 wide. Eye diameters and interdistances: AME 0.07. ALE 0.05. PME 0.09. PLE 0.05. AME-AME 0.09, AME-ALE 0.09, PME-PME 0.11, PME-PL 0.11, ALE-PL 0.01. Clypeus height $3.21 \times$ AME diameter. Chelicerae with a strong macrosetae (Fig. 241A). Three promarginal and four retromarginal teeth (Figs. 241A-C). Leg measurements: I: femur 1.50, patella 0.37, tibia 1.50, metatarsus 1.45, tarsus 0.37, total 5.20; II: 1.42, 0.35, 1.50, 0.92, 0.30, 4.50; III: 1.02, 0.32, 0.80, 0.72, 0.25, 3.12; IV: 1.37, 0.27, 1.17, 1.22, 0.30, 4.35. Femur III with a ventral row of strong macrosetae. DTS 0.20. DTE 0.45. Palp as in figures 242-243. Embolus and conductor slender (Figs. 242A, 243A).

Female (Marquesas Islands, Nuku Hiva, USNM): Habitus and general coloration as in male (Fig. 240). Venter of abdomen with thin transverse dusky band originating from the tracheal spiracle towards the anterior region. Light patch anterior to the gonopore. Total length 2.87. Cephalothorax 1.20 long, 1.05 wide, 0.75 high. Abdomen 1.75 long, 1.45 wide, 1.50 high. Sternum 0.65 long 0.62 wide. Eye diameters and interdistances: AME 0.08. ALE 0.05. PME 0.09. PLE 0.06. AME-AME 0.06, AME-ALE 0.1, PME-PME 0.11, PME-PLE 0.11, ALE-PLE 0.01. Clypeus height $3.12 \times$ AME diameter. Chelicerae with a strong macrosetae (Fig. 240D) Three promarginal and four retromarginal teeth. (Figs. 241D-F). Leg measurements: I: femur 1.47, patella 0.45, tibia 1.50, metatarsus 1.17, tarsus 0.27, total 4.87; II: 1.42, 0.45, 1.42, 1.10, 0.25, 4.65; III: 1.00, 0.25, 0.77, 0.82, 0.22, 3.07; IV: 1.47, 0.30, 1.20, 1.30, 0.27, 4.55. DTS 0.25. DTE 0.35. Femur I, II and III with a ventral row of strong macrosetae. Uterus externus chamber projected around uterus externus sac (Fig. 244).

Distribution: known only from Marquesas Islands (Fig. 315).

Remarks: Although the female holotype of *G. hirsutissima* (presumably lost) was not examined, a vial from USNM (2♂ 1♀ 2 immature) collected near the type locality (30 km N) was available for study. After a careful comparison with the original description (Berland, 1935), the female specimen was identified as *G. hirsutissima* considering the presence of conspicuous spines on legs, palp and chelicerae as depicted by Berland (1935, figs. 21-23). Males examined also present such spines (Figs. 239, 241A). According with the original descriptions of the remaining Polynesian *Glenognatha* (Berland, 1933, 1935, 1942) and all the material examined in this work, the presence of these spines is autapomorphic for *G. hirsutissima*. Since the identity of the species is not in doubt the designation of a neotype is not necessary (ICZN, Art. 75).

Additional material examined (N = 5): FRENCH POLYNESIA: Marquesas Islands: Nuku Hiva, Tekao Ridge, 8°51'39''S, 140°10'24''W, elev. 400m, 21.x.1999, D. A. & J. T. Polhemus leg., 2♂ 1♀ 2 immature (USNM).

Glenognatha australis (Keyserling, 1883)

(Figs. 245-253, 297C, 298D, 299C, 300C, 301B, 302D, 303B, 307)

Pachygnatha australis Keyserling, 1883: 211 (syntypes from Pacasmayo, Peru, deposited in BMNH, examined through photographs of the habitus and male genitalia).

Glenognatha australis: Simon, 1894: 716; Platnick, 2013.

Diagnosis: males of *G. australis* resemble those of *G. gloriae* and *G. spherella* by the prominent Ret2 (Fig. 248B) and the absence of anterior tooth (Fig. 248A). It can be distinguished from the former by the shape of the clypeus in lateral view, which is not projected (Fig. 246B) and from the latter by the bigger size and the uncoiled embolus tip (Figs. 250D, 253C). Females resemble those of *G. sp. nov. 1* by the bean-shaped spermathecae, but are distinguished from the latter by the enlarged Prt2 (Fig. 248D).

Description: Male (CAS 9039650): habitus as in figures 245A-B. Carapace brown, darker along furrows. Sternum pale brown, darker on edges. Abdomen tan, dorsally with two diffused longitudinal black bands that join medially forming thin transverse bands in the posterior region. Venter with a median diffused black band that ramifies to the lateral surfaces from the tracheal spiracle. Silver guanine spots absent. Legs pale tan with distal parts of segments darker. Total length 2.47. Cephalothorax 1.17 long, 0.97 wide, 0.57 high. Abdomen 1.47 long, 1.20 wide, 1.12 high. Sternum 0.57 long, 0.65 wide. Eye diameters and interdistances: AME 0.10. ALE 0.09. PME 0.09. PLE 0.10. AME-AME 0.06, AME-ALE 0.06, PME-PME 0.08, PME-PLE 0.10, ALE-PLE 0.01. Clypeus height $1.80 \times$ AME diameter. Three promarginal and four retromarginal teeth. Ret2 enlarged, with a subapical pointed projection. Leg measurements: I: femur 1.65, patella 0.42, tibia 1.72, metatarsus 1.35, tarsus 0.80, total 5.95; II: 1.52, 0.42, 1.5, 1.15, 0.52, 5.12; III: 1.02, 0.30, 0.75, 0.80, 0.45, 3.32; IV: 1.35, 0.32, 1.27, 1.10, 0.57, 4.62. DTS 0.15. DTE 0.50. Epiandrous fusules as in figure 297C. Spinnerets as in figures 299C, 301B, 303B. Palp as in figures 249-250, 253. Conductor lamina with thin distal end in ventral view (Fig. 250B). Embolus tip curved (Figs. 250D, 253C-E).

Female (CAS 9039650): coloration and general habitus as in male (Figs. 245C-D). Cephalothorax, abdomen and legs clearer than the male. Abdomen without clearly defined black bands. Silver guanine spots absent. Total length 2.65. Cephalothorax 1.30

long, 0.95 wide, 0.75 high. Abdomen 1.55 long, 1.25 wide, 1.25 high. Sternum 0.57 long, 0.67 wide. Eye diameters and interdistances: AME 0.09. ALE 0.08. PME 0.08. PLE 0.08. AME-AME 0.07, AME-ALE 0.08, PME-PME 0.09, PME-PLE 0.11, ALE-PLE 0.01. Clypeus height $1.80 \times$ AME diameter. Three promarginal and four retromarginal teeth. Leg measurements: I: femur 1.62, patella 0.42, tibia 1.50, metatarsus 1.25, tarsus 0.75, total 5.55. II: 1.62, 0.37, 1.50, 1.22, 0.57, 5.30; III: 1.07, 0.35, 0.75, 0.77, 0.50, 3.45; IV: 1.55, 0.35, 1.27, 1.22, 0.57, 4.97. DTS 0.17. DTE 0.40. Female tracheal system as in figure 252. Spinnerets as in figures 298D, 300C, 302D. Internal genitalia with well-developed spermathecae, bean-shaped (Fig. 251). Uterus externus sac divided into two disc-shaped regions (Fig. 251A).

Variation: male total length 1.8-2.6 ($N = 10$; average 2.2), cephalothorax length 1.0-1.1 ($N = 10$; average 1.0), femur I length 1.0-1.6 ($N = 10$; average 1.3). Female total length 2.2-3.0 ($N = 10$; average 2.6), cephalothorax length 1.0-1.3 ($N = 10$; average 1.1), femur I length 1.1-1.6 ($N = 10$; average 1.2). Specimens from southern Brazil and Argentina exhibit a different coloration pattern (Figs. 246-247). In addition, the Ret2 of the males lacks a pointed projection (Figs. 245A-C).

Distribution: known in northwestern Peru, northern Argentina and Brazil (Fig. 307).

Additional material examined (N = 295): *New records:* **ARGENTINA:** *Buenos Aires:* Campana, Estación Río Luján, [34°9'S, 58°56'W], elev. [4m], C.J. Grismado, L. Damer, N. López, S. Trivero, I. Crudele & N. Olejnik leg., 1♂ 1♀ (MACN 12382); Campana, C. J. Grismado, I. Crudele, N. Olejnik & S. Trivero leg., 1♀ (MACN 12557); Campana, C. J. Grismado, L. Damer, N. López, S. Trivero, I. Crudele & N. Olejnik leg., 1♀ (MACN 12480); Delta del Paraná, Arroyo Sarmiento, [34°2'S, 58°31'W], elev. [10m], A. Bachmann leg., 2♀ 1♂ (MACN 24638); Delta Arroyo Caragatá, [34°22'S, 58°38'W], elev. [4m], A. Bachmann leg., 2♀ (MACN 24633a); Paraná de las Palmas, [34°17'S, 58°34'W], elev. [2m], M. E. Galiano leg., 1♀ 1 immature (MACN 24631a); Paraná de las Palmas y Canal 6, [34°17'S, 58°34'W], elev. [2m], M. E. Galiano leg., 1♂ (MACN 24628a); Delta, Estación Experimental INTA, [34°22'S, 58°38'W], elev. [4m], A. Bachmann leg., 1♀ 1♂ (MACN 24621); Campana, Reserva Natural Otamendi, Estación río Luján, 34.277352S, 58.888054W, elev. 5m, M. Ramírez, C. Grismado, L. Piacentini, E. Soto, M. E. González-Márquez, M. Guala, J. M. Andia Navarro, N.

López, I. Ortega Insaurralde y P. Zermoglio leg. (pastizal y bañado) 7♀ 13♂ (MACN); **Ciudad Autónoma de Buenos Aires**: Laguna de los Macáes, [34°36'21.7''S, 58°20'55''W, elev. [5m], 1.ix.2008, M. Turienzo leg., (Trampa de caída) 1♂ (MACN); 15.ix.2008, 1♂ (MACN); **Entre Ríos**: Río Gualaguaychú, [33°4'S, 58°26'W], elev. [6m], M. J. Ramírez & P. A. Goloboff leg., 1♀ (MACN 24624); **Jujuy**: P. N Calilegua, área de entrada al parque, [23°55'S, 64°50'W], elev. [800m], C. Szumik leg., 4♀ 1♂ 1 immature (MACN 24629); M. J. Ramírez, P. A. Goloboff & C. Szumik leg., 3♀ 3♂ 1 immature (MACN 24625); P. N. Calilegua, Aguas Negras, [23°55'S, 64°50'W], elev. [800m], M.J. Ramírez & L. Compagnuccileg., 1♂ (MACN 24627); **Misiones**: P. N. Iguazú [25°42'S, 54°26'W], elev. [204m], M. Ramírez leg., 3♀ 3♂ 4 immature (MACN 24627); **Misiones y Corrientes**: [27°30'S, 56°1'W], elev. [100m], 11-21.iv.1989, 1 ♀ 1 ♂ (MCTP 838); 21-31.vi.1989, 1♂ (MCTP 842); **Salta**: El Rey Nat. Park, Rio la Sala, [24°42'S, 64°38'W], elev. 900m, 5-15.xii.1987, S. & J. Peck leg., (Humid mossy chaco forest, Malaise FIT 87-137), 1♂ (AMNH); **Santa Fe**: Las Gamas, 20 km W de Vera, [29°25'S, 60°20'W], elev. [60m], M. J. Ramírez & J. Faivovich leg., 1♀ 1♂ (MACN 24623); **Tucumán**: Horco Molle, [26°46'S, 65°19'W], elev. [775m], M. E. Galiano leg., 3♀ 4♂ (MACN 24622). **BOLIVIA**: **Beni**: Estación Biológica Beni, [14°38'S, 66°17'W], elev. [187m], 9.ix.1987, S. Larcher leg., 1♀ (USNM). **BRAZIL**: **Ceará**: Fortaleza, Campus de Itaperi, UFCE, [3°47'S, 38°33'W], elev. [26m], 10.vi.2011, R. Azevedo leg., 1♂ (UFCE 830). **Goiás**: Goiana, [16°40'S, 59°16'W], elev. [750m], 12.vii.1957, B. Malkin leg., 1♂ (AMNH). **Paraná**: Guaraqueçaba, Serra do Itaqui, Tagaçaba, [25°16'S, 48°24'W], elev. [51m], 15-22.ix.2007, G. P. Perroni leg., 1♂ (IBSP 86529). **Rio Grande do Sul**: Bagé, Rodeio Bonito, [31°19'S, 54°4'W], elev. [213m], 10.ii.1967, C. Oliveira leg., 1♂ (MCN 489); Cachoeira do Sul, [30°0'S, 52°58'W], elev. [29m], 2.iv.1977, M. E. L. Souza leg., 1♂ (MCN 5240); 13.ix.1996, 1♂ (MCTP 9309); Canoas, Banhado Paquetá, Parque Estadual Delta do Jacuí, [29°59'S, 51°29'W], elev. [15m], 8.vii.1999, A. B. Bonaldo leg., 3♀ (MCN 31331); El dorado do Sul, [30°5'S, 51°36'W], elev. [36m], 14.i.2009, L. Fritz leg., 1 ♂ (MCN 45914); 9.i.2008, L. Fritz leg., 1♂ (MCN 43965); Estrela Velha, [29°10'S, 53°14'W], elev. [211m], 18.i.2000, M. P. Barros leg., 1♂ (MCN 33409); Ibarama, [29°25'S, 53°7'W], elev. [419m], 27.xi.1999, C. B. Kotzian leg., 1♀ 1♂ (MCTP 11248); Monte Negro, [29°41'S, 51°28'W], elev. [206m], 7.vii.1977, E. H. Buckup leg., 1♂ (MCN 6145); Nova Santa Rita, Banhado Paquetá, Parque Estadual Delta do Jacuí, [29°59'S, 51°29'W], elev. [15m], 8.vii.1999, I. Heidrich leg., 1♂ (MCN 31372); Novo Cabrais, Parque Witeck,

[29°44'S, 52°57'W], elev. [77m], 1.xi.2008, R. G. Buss leg., 1♂ (MCTP 27990); Pirapó, [28°2'S, 55°11'W], elev. [106m], 21-30.vi.1989, Garabi leg., 1♀ 1♂ (MCTP 841); Porto Alegre, [29°27'S, 50°33'W], elev. [649m], 5.xi.1998, M. P. Barros leg., 1♂ (MCN 30318); Rio Pardo, 29°58'S, 52°21'W, elev. [134m], 6.vii.1966, A. Lise leg., 59♀ 35♂ (MCN 267); 20.ii.1967, A. Lise leg., 2♂ (MCN 562); 6.vii.1966, A. Lise leg., 24 ♀ 18 ♂ 2 immature (MCZ 125524); Salvador Sul, [29°26'S, 51°30'W], elev. [485m], 1964, Padre Celio leg., 1 ♀ 2 ♂ (MZSP 4051); São Francisco de Paula, [29°26'S, 50°39'W], elev. [772m], 5.i.1985, A. Lise leg., 1♂ (MCN 13235); Triunfo, [29°56'S, 51°41'W], elev. [6m], 4.vi.1987, C. Marros leg., 1♀ (MCN 16935); 21.ix.1989, E. H. Buckup leg., 1♂ (MCN 18695), Estação Braskem de Proteção Ambiental, [29°56'S, 51°41'W], elev. [6m], 15.ix.2009, P. E. S. Rodrigues leg., 1♀ 1♂ (MCN 46671); 31.viii.2007, M. C. Pairet Jr. leg., 1♂ (MCN 46804); 15.ix.2009, E. N. L. Rodrigues leg., 2♂ (MCN 46622); 19.xi.2002, R. Ott leg., 1♀ (MCN 48508); 14.vi.2006, R. Ott leg., 1♀ 1♂ (MCN 42102), Fazenda Pontal, Parque Estadual Delta do Jacuí, [29°59'S, 51°29'W], elev. [6m], 22.vi.1999, A. B. Bonaldo leg., 1♂ (MCN 31244); Uruguaiana, [29°44'S, 57°6'W], elev. [51m], 16.ix.2008, R. Alves leg., 1♂ (MCTP 25962); Viamão, [30°6'S, 51°0'W], elev. [49m], 29.vii.2001, S. Torres leg., 1♂ (MCTP 15329); 25.x.1994, A. Lise leg., 1♂ (MCTP 5787). **Santa Catarina:** Garopaba, [28°1'S, 48°38'W], elev. [18m], 22.x.1993, M. P. de Barros leg., 1♂ (MCTP 4304). **São Paulo:** Paranapiacaba, [23°46'S, 46°18'W], elev. [837m], 7.vii.1957, B. Malkin leg., 2♀ 3♂ (AMNH); Jundiá, Serra do Japi, [23°14'S, 46°55'W], elev. [966m], 8-10.xii.1997, A. J. Santos leg., 1♀ (IBSP 36559); São Paulo, Jaraguá, [23°27'S, 46°45'W], elev. [891m], 8.vii.1994, R. Baptista leg., 11♀ 7♂ 2 immature (MNRJ 3495). **ECUADOR:** **Guayas:** Nobol (5.5km S), [1°54'S, 80°0'W], elev. [6m], 18.i.1978, P. J. Spangler & J. Anderson leg., 1♀ (USNM); Boliche (14.5Km S), [2°12'S, 79°35'W], elev. [20m], 14.i.1978, P. J. Spangler & J. Anderson leg., 1♂ (USNM). **Los Ríos:** Babahoyo, [1°48'S, 79°32'W], elev. [11m], 21.vi.1975, Lohen, Langley & Monnig leg., 1♂ (USNM). **PARAGUAY:** **Central:** Itá, [25°30'S, 57°21'W], elev. [141m], 12.iv.1980, P. J. Spangler leg., 1♀ (USNM); Areguá, [25°17'S, 57°24'W], elev. [143m], 31.viii.1986, 2♀ (USNM); 6.ix.1980, R. Cave leg., 3♀ (USNM); 15Km NE Asunción, [25°15'S, 57°41'W], elev. [61m], 21.vi.1969, P. & P. Spangler leg., 1 ♂ (USNM). **Cordillera:** San Bernardino, [25°16'S, 57°19'W], elev. [70m], 22.vi.1969, P. & P. Spangler leg., 1♂ (USNM). **PERU:** **Piura:** Quebrada Mogollón, [4°32'S, 81°4'W], elev. [700m], 24.ix.1939, HEF & DLF leg., 1♀ 1♂ (CAS 9039650).

***Glenognatha spherella* Chamberlin & Ivie, 1936**

(Figs. 254-261, 306)

Glenognatha spherella Chamberlin & Ivie, 1936: 66, pl. 17, fig. 154-156. (male holotype from Chilapa, Guerrero, Mexico, x.1929, female paratype from the type locality, both deposited in ZMB 26040, examined); Platnick, 2013.

Diagnosis: males of *G. spherella* resemble those of *G. gloriae* and *G. australis* by the prominent Ret2 (Fig. 256B) and the absence of anterior tooth (Fig. 256A). It can be distinguished from the former by the shape of the clypeus in lateral view, which is not projected (Fig. 254B) and from the latter by the smaller size and the coiled embolus tip (Figs. 258D, 261A-B). Females can be easily distinguished from all other *Glenognatha* species (except *G. sp. nov. 4*) by the presence of a postero-lateral cheliceral bulge (Figs. 256E-F); distinguished from *G. sp. nov. 4* by the presence of spermathecae (Fig. 259).

Description: Male (CAS 9046859): habitus as in figure 254. Carapace yellow-brownish, darker along furrows, with a clear median square. Sternum with darker edges. Abdomen oval, dorsally with two irregular black bands that join medially, forming transverse thin bands. Silver guanine spots scattered in lateral surfaces. Venter with a median black band that ramifies laterally before the posterior tracheal spiracle, two guanine silver spots anterior to the spinnerets. Legs pale yellow-brownish. Total length 1.45. Cephalothorax 0.67 long, 0.57 wide, 0.50 high. Abdomen 0.80 long, 0.62 wide, 0.57 high. Sternum 0.35 long, 0.40 wide. Eye diameters and interdistances: AME 0.07, ALE 0.07, PME 0.08, PLE 0.05. AME-AME 0.05, AME-ALE 0.06, PME-PME 0.08, PME-PLE 0.07, ALE-PLE 0.01. Clypeus height $2.00 \times$ AME diameter. Chelicerae yellow-brownish, with three promarginal and four retromarginal teeth (Figs. 256A-C). Ret2 enlarged (Figs. 256B). Leg measurements: I: femur 1.00, patella 0.25, tibia 1.05, metatarsus 0.80, tarsus 0.45, total 3.91; II: 0.90, 0.22, 0.87, 0.67, 0.40, 3.07; III: 0.52, 0.20, 0.40, 0.45, 0.25, 1.82; IV: 0.85, 0.15, 0.71, 0.50, 0.28, 2.50. DTS 0.08. DTE 0.35. Palp as in figures 257-258, 261. Embolus distal portion coiled and pointed (Figs. 258D, 261A-B).

Female (CAS 9046857): coloration and general habitus as in male (Fig. 255). Cephalothorax, abdomen and legs darker than the male. Thin transverse bands formed in the posterior region of the abdomen. Total length 1.50. Cephalothorax 0.67 long, 0.62

wide, 0.65 high. Abdomen 0.87 long, 0.77 wide, 0.80 high. Sternum 0.35 long, 0.41 wide. Eye diameters and interdistances: AME 0.07, ALE 0.06, PME 0.08, PLE 0.06. AME-AME 0.06, AME-ALE 0.07, PME-PME 0.09, PME-PLE 0.06, ALE-PLE 0.01. Clypeus height $1.7 \times$ AME diameter. Chelicerae brownish, with three promarginal and four retromarginal teeth (Figs. 256D-F). Leg measurements I: femur 0.82, patella 0.23, tibia 0.75, metatarsus 0.67, tarsus 0.42, total 2.91; II: 0.72, 0.18, 0.60, 0.60, 0.37, 2.48; III: 0.6, 0.15, 0.42, 0.33, 0.25, 1.76; IV: 0.77, 0.16, 0.57, 0.51, 0.31, 2.33. DTS 0.07. DTE 0.36. Tracheal system as in figure 260. Internal genitalia as in figure 259. Spermathecae well-developed (Fig. 259).

Variation: male total length 1.3-1.6 ($N = 10$; average 1.4), cephalothorax length 0.5-0.8 ($N = 10$; average 0.7), femur I length 0.9-1.1 ($N = 10$; average 1.0). Female total length 1.5-2.0 ($N = 10$; average 1.6), cephalothorax length 0.6-0.8 ($N = 10$; average 0.7), femur I length 0.7-0.9 ($N = 10$; average 0.8).

Distribution: known from Mexico to Peru (Fig. 306).

Additional material examined ($N = 1252$): **MEXICO: Guerrero:** Chilapa, [17°35'N, 99°10'W], elev. [1400m], 29.x.1934, L. Schultze leg., 1♂ (AMNH).

New records: **BELIZE: Cayo:** Near Belmopan, hummingbird hwy., [17°13'N, 84°46'W], elev. [74m], 30.vii.1972, Goodnight leg., 1♂ (AMNH). **COLOMBIA: Vaupés:** Taraira, Lago Taraira, Estación Biológica Caparu, 1°4'S, 69°29'W, elev. [128m], 11.iv.2004, J. Pinzón leg., 1♀ 2♂ (ICN 5978). **COSTA RICA: Cartago:** Turrialba, 9°54'N, 83°41'W, elev. [691m], 25.vii-13.viii.1965, A. M. Chickering leg., 2♀ 1♂ (MCZ 125512); 23.vii-13.viii.1965, Chickering leg., 9♀ 7♂ 2 immature (MCZ 125503). **Puntarenas:** 10 km N of Malpais, [9°37'N, 85°8'W], elev. 0-20m, xii.1987, W. Eberhard leg., 1♂ (MCZ 125519). [**San José**]: San José, [9°56'N, 84°4'W], elev. [1152m], E. Schmidt leg., 7♀ 3♂ (AMNH); San José, 9°59'N, 84°4'W, elev. [1198m], J. Zetek leg., 1♂ (AMNH); San José, San Antonio de Escazu, [9°53'N, 84°8'W], elev. 1300m, viii.1983, W. Eberhard leg., 1♂ (MCZ 125513); xii.1981, 1♂ (MCZ 125514); vi.1983, 1♀ (MCZ 125474). **GUATEMALA: Izabal:** Los Amates, [15°15'N, 89°5'W], elev. [89m], 1908, Kellerman leg., 1♂ (MCZ 125479). **MEXICO: Chiapas:** Ocosingo, [16°54'N, 92°6'W], elev. [958m], 25.vi.1950, C. & M. Goodnight, L. Stannard leg., 1♀ (AMNH); Lagos de Montebello, Laguna Pojoj, [16°4'N, 91°41'W], elev. 1500m,

2.vi.1990, H. & A. Howden & B. Gill leg., 1♂ (AMNH); Hillside 5 miles N.E. Chiapa, 16°45'N, 92°53'W, elev. [1444m], 22.viii.1966, J. & W. Ivie leg., 1♀ (AMNH); Sumidero, Barranca, NE Tuxtla Gutierrez, [16°46'N, 93°5'W], elev. [648m], 19.viii.1966, J. & W. Ivie leg., 1♂ (AMNH); Hillside 5 miles N.E. Chiapa, 16°45'N, 92°53'W, elev. [1444m], 26.viii.1966, J. & W. Ivie leg., 1♀ (AMNH); 5800' Finca Cuauhtemoc nr. Cacahoatan, [15°0'N, 92°10'W], elev. 526m, 6.viii.1950, C. Goodnight leg., 1♂ 1 immature (AMNH). **Hidalgo:** 3mi. N. Chapulhuacan, , 21°11'N, 98°54'W, elev. [814m], 20.iv.1963, W. J. Gertsch & W. Ivie leg., 1♀ (AMNH). **Michoacán:** Tepetates, 19°39'N, 100°45'W, elev. [2428]m, 8.v.1963, W. J. Gertsch & W. Ivie leg., 1♂ (AMNH); Zitacuaro, [19°25'N, 100°20'W], elev. [2011m], 27.vi.1936, Davis leg., 1♀ (AMNH); Basencheve National Park, 19°25'N, 100°10'W, elev. [2757m], 7.v.1963, W. J. Gertsch & W. Ivie leg., 1♀ 2♂ 2 immature (AMNH); Garnica Pass (summit, 9300ft), 19°40'N, 100°55'W, elev. [2332m], 8.v.1963, W. J. Gertsch & W. Ivie leg., 12♀ 23♂ 9 immature (AMNH). **San Luis Potosí:** Tamazunchale, [21°15'N, 98°47'W], elev. [135m], 6.vii.1941, L. I. Davies leg., 1♀ (AMNH); 26.vi.1947, B. Malkin leg., 1♀ (AMNH); 19.iv.1963, W. J. Gertsch & W. Ivie leg., 3♂ 1 immature (AMNH); 20.v.1944, F. Bonet leg., 1♂ (AMNH) 26.vi.1947, B. Malkin leg., 1♂ (AMNH); 8 mi. NNW. Tamazunchale, 21°20'N, 98°50'W, elev. [257m], 19.iv.1963, W. J. Gertsch & W. Ivie leg., 2♀ 2♂ 2 immature (AMNH); 5 mi. N Tamazunchale, [21°18'N, 98°47'W], elev. [282m], 2.vii.1936, A. M. & L. I. Davis leg., 1♂ (AMNH); Huichihuayan, 21°19'N, 98°50'W, elev. [423m], 24.vii.1966, J. & W. Ivie leg., 1♂ (AMNH); Xilitla, 21°23'50'N, 98°59'38'W, elev. 689m, 27-31.viii.2011, FAPLAB leg., 1♀ 3♂ (CAS 9046859); 14-18.xi.2011, FAPLAB leg., 1♂ (CAS 9046858); 3♂ (CAS 9046857). **Tabasco:** Pejelagarto, 18°3'N, 93°10'W, elev. [16m], 14.viii.1966, J. & W. Ivie leg., 2♂ (AMNH). **Tamaulipas:** Miramar Beach, near Tampico, [22°17'N, 97°48'W], elev. [3m], 29.xi.1941, L. I. Davies leg., 1♂ (AMNH). **Vera Cruz:** 5 miles N.E. Orizaba, 18°53'N, 97°2'W, elev. [1280m], 25.iv.1963, W. J. Gertsch & W. Ivie leg., 1♂ (AMNH); Istmo de Tehantepec, [17°31'N, 94°32'W], elev. [31m], 15.viii.1966, J. & W. Ivie leg., 1♂ (AMNH). **Yucatán:** Dry Cenote Chichen Itza, [20°40'N, 88°34'W], elev. [35m], 10.vii.1948, C. & M. Goodnight leg., 1♀ (AMNH); Chichen-Itza, [20°40'N, 88°34'W], elev. [35m], vi.1948, C. & M. Goodnight leg., 1♀ (AMNH). **PANAMA:** 9-14.viii.1950, Chickering leg., 2♀ 2♂ (MCZ 125538). **Chiriquí:** Chiri. 2Km E Cerro Punta, [8°51'N, 82°34'W], elev. 2200m, 8.vi.1977, S. Peck leg., 2♂ (AMNH); El Volcán, [8°46'N, 82°37'W], elev. [1433m], A. M. Chickering leg., 1♂ (MCZ 125527); Boquete, [8°46'N,

82°25'W], elev. [1094m], 4-11.viii.1954, Chickering leg., 1♂ (MCZ 125537); 4-11.viii.1954, A. M. Chickering leg., 1♀ (MCZ 125494). **Panamá:** Barro Colorado, Canal Zone, [9°9'N, 79°50'W], elev. [150m], 21.vii.1938, 1♀ (AMNH); 3-20.iv.1953, A. M. Nadler leg., 1♀ 1♂ (AMNH); 20.ii.1958, 1♀ 2♂ 2 immature (MCZ 84025); viii.1950, 21♀ 18♂ (MCZ 64707); vii.1950, 1♀ (MCZ 125515); viii.1954, 2♀ (MCZ 129044); i.1958, 43♀ 37♂ 4 immature (MCZ 125529); 20.ii.1958, 58♀ 89♂ 13 immature (MCZ 84026); 14.i.1958, 1♂ (MCZ 125536); 19-22.ii.1958, 1♀ 1♂ (MCZ 84028); 4-10.ii.1958, 49♀ 50♂ 2 immature (MCZ 84024); ii.1958, 2♀ 1♂ (MCZ 125552); viii.1954, 9♀ 10♂ 4 immature (MCZ 129045); 14.ii.1958, 2♀ (MCZ 125516); 21.xii.1957, 9♀ 2♂ (MCZ 125558); 21.vii.1954, 1♂ (MCZ 125541); 6.ii.1958, 6♀ 8♂ (MCZ 125551); ii.1958, 1♂ (MCZ 125518); same data, 2♀ 2♂ (MZC 125548); 21.xii.1957, 13♀ 8♂ (MCZ 129046); 19-22.ii.1958, 138♀ 106♂ 5 immature (MCZ 125554); 2.i.1958, 1♀ (MCZ 125533); 8.ii.1958, 15♀ 10♂ 1 immature (MCZ 125553); 21.xii.1957, 1♂ (MCZ 125555); 5.iii.1957, 20♀ 17♂ 7 immature (MCZ 125557); 18.ii.1958, 26♀ 22♂ 4 immature (MCZ 125556); ix.1975, 1♂ (MCZ 125517); 30.vii.1954, 2♀ (MCZ 125535); ii.1958, 8♀ 6♂ 1 immature (MCZ 125530); 28.ii.1958, 1♂ (MCZ 92670); iii.1958, 83♀ 66♂ 20 immature (MCZ 125520); 19-22.ii.1958, 1♂ (MCZ 92669); 18.ii.1958, 18♀ 19♂ (MCZ 125549); 4.ii.1958, 7♀ 11♂ 2 immature (MCZ 125559); 14.i-3.iii.1958, 3♀ 3♂ (MCZ 125550), all collected by A. M. Chickering; Barro Colorado, Canal Zone, Forest Reserve, [9°9'N, 79°50'W], elev. [150m], 28.vii.1954, A. M. Chickering leg. 1♂ (MCZ 84027); 28.ii.1958, 2♀ (MCZ 125545); 29.i.1958, 1♂ (MCZ 129049), all collected by A. M. Chickering; Gatun, Canal Zone, [9°17'N, 79°46'W], elev. [36m], 30.i.1958, , A. M. Chickering leg., 2♀ (MCZ 129048); Panama city, [8°59'N, 79°31'W], elev. [19m], 15-30.vii.1979, E. Broadhead *et al.* leg., 1♂ (USNM). **PERU: Loreto:** 25 Km SW Iquitos, Callicebus Res. Station. Mishana. Rio Nanay, [3°51'N, 73°23'W], elev. 120m, 10-17.i.1980, J. B. Heppener leg., 1♂ (USNM).

Glenognatha glorieae (Petrunkévitch, 1930)

(Figs. 262-268, 311)

Diplocephalus glorieae Petrunkévitch, 1930: 224, fig. 72-74 (male holotype from Luquillo Mountains, La Gloria, Puerto Rico, 30.i.1926, female paratype from El Yunque, Puerto Rico, 11.x.1925, both collected by A. Petrunkévitch, deposited in

YPM, only the female paratype examined; male paratype from Adjuntas, Puerto Rico, 8.vi.1915, deposited in AMNH, not examined).

Mimognatha glorioae: Crosby & Bishop, 1933: 108.

Glenognatha glorioae: Platnick, 2013.

Diagnosis: males of *G. glorioae* resemble those of *G. spherella* and *G. australis* by the prominent Ret2 (Figs. 264B) and the absence of anterior tooth (Fig. 264A). It can be distinguished from the latter two species by the strongly projected clypeus in lateral view (Figs. 262B, 263B). Females can be distinguished from *G. spherella* by the absence of cheliceral bulge (Figs. 264D-F) and from *G. australis* by having three retromarginal teeth (Fig. 264E-F).

Description: male described by Petrunkevitch (1930), additional data are presented here.

Male (MCZ 125482): habitus as in figure 262. Abdomen with scattered silver guanine spots in the dorsal, lateral and ventral surfaces. Total length 1.70. Cephalothorax 0.75 long, 0.62 wide, 0.52 high. Abdomen 0.92 long, 0.72 wide, 0.7 high. Sternum 0.36 long, 0.42 wide. Eye diameters and interdistances: AME 0.04. ALE 0.03. PME 0.06. PLE 0.03. AME-AME 0.04, AME-ALE 0.07, PME-PME 0.06, PME-PLE 0.07, ALE-PLE 0.01. Clypeus height $2.50 \times$ AME diameter. Chelicerae yellow-brownish. Three promarginal and three retromarginal teeth (Figs. 264A-C). Ret2 enlarged (Fig. 264B). Leg measurements: I: femur 1.15, patella 0.25, tibia 1.00, metatarsus 0.87, tarsus 0.47, 3.75 total; II: 1.10, 0.25, 1.02, 0.87, 0.40, 3.65; III: 0.75, 0.20, 0.55, 0.52, 0.30, 2.32; IV: 0.97, 0.20, 0.77, 0.72, 0.37, 3.05. DTS 0.10. DTE 0.50. Palp as in figures 265-266, 268. Conductor large enclosing almost totally the embolus (Figs. 266A, 268A-E). Embolus short, with coiled tip (Figs. 266D, 268D-E).

Female (MCZ 125485): habitus as in figure 263. Carapace pale yellow with two greyish longitudinal bands that join medially in the posterior region. Sternum dusky yellow, darker on edges. Abdomen greyish, dorsally with two diffused longitudinal black bands that join medially forming thin transverse bands. Silver guanine spots scattered in the dorsal and lateral surfaces Venter with two pale longitudinal bands covered with silver guanine spots. Legs pale yellow. Total length 1.55. Cephalothorax 0.67 long, 0.60 wide, 0.45 high. Abdomen 0.92 long, 0.72 wide, 0.65 high. Sternum

0.42 long, 0.42 wide. Eye diameters and interdistances: AME 0.03. ALE 0.04. PME 0.07. PLE 0.04. AME-AME 0.05, AME-ALE 0.06, PME-PME 0.09, PME-PLE 0.04, ALE-PLE 0.01. Clypeus height $3.10 \times$ AME diameter. Chelicerae pale yellow. Three promarginal and three retromarginal teeth (Figs. 264D-F). Leg measurements: I: femur 1.02, patella 0.30, tibia 0.87, metatarsus 0.82, tarsus 0.42, total 3.45; II: 0.90, 0.25, 0.87, 0.80, 0.37, 3.20; III: 0.65, 0.20, 0.52, 0.52, 0.30, 2.20; IV: 0.87, 0.22, 0.72, 0.67, 0.36, 2.86. DTS 0.07. DTE 0.32. Internal genitalia with well-developed spermathecae (Fig. 267).

Variation: male total length 1.5-2.0 ($N = 7$; average 1.7), cephalothorax length 0.5-0.9 ($N = 7$; average 0.7), femur I length 1.0-1.2 ($N = 7$; average 1.1). Female total length 1.5-2.3 ($N = 4$; average 1.9), cephalothorax length 0.6-0.9 ($N = 4$; average 0.7), femur I length 0.7-1.3 ($N = 4$; average 1.0).

Distribution: known only from Puerto Rico (Fig. 311).

Remarks: Some vials with couples captured near the collection sites of the type material were available for study. After a careful comparison of the male specimens with the original description (Petrunkévitch, 1930) and the female paratype, they were identified as *G. glorie* considering the following characters: 1) all the individuals have a conspicuously projected clypeus as the female paratype and the illustration of the male holotype (Petrunkévitch, 1930 fig. 73), 2) the conductor is as depicted by Petrunkévitch (1930, fig. 74) and finally 3), the specimens presents the “spine-like” retromarginal teeth mentioned in the original description (Petrunkévitch, 1930). It is important to note that Petrunkévitch described the type of *G. glorie* as having only one retromarginal teeth (Ret2). Nevertheless that condition was not observed in any of the *Glenognatha* here examined, probably the Ret1 and the Ret 3 were lost in that specimen.

Additional material examined (N = 9): New records: PUERTO RICO: Bosque Estatal de Maricao, [18°6'N, 66°58'W], elev. [319m], vii.1958, A. F. Archer leg., 1♀ 1♂ (AMNH); [Parque Nacional el Yunque], Baño de Oro trail 1-2 Km West of Rd. 191, [18°17'N, 65°49'W], elev. 650m-700m, vii.1958, P. leg., 1♀ 1♂ (MCZ 125485); Cordillera Central, Area recreo Doña Juana N. of Villalba, [18°9'N, 66°29'W], elev. 1000m, 26.iii.1986, H. L. Levi leg., 1♀ 4♂ (MCZ 125482).

Glenognatha* sp. nov. 11*(Figs. 269-274, 306)**

Type material: male holotype from Nogales, Santa Cruz Co., Arizona, United States of America, [31°20'N, 110°56'W], elev. [1183m], 1.ix.1991, R. L. Edwards leg., deposited in USNM ENT 00879001; paratypes: 2♂ 1♀ from the type locality, same data as the holotype, deposited in USNM ENT 00879002; 1♂ from Lerma, Mexico, [19°17'N, 99°43'W], elev. [2400m], 25.vi.1941, A. M. & L. I. Davis leg., deposited in AMNH.

Diagnosis: males of *G. sp. nov. 11* resemble those of *G. emertoni*, *G. minuta* and *G. sp. nov. 7* by the enlarged Ret2 and Ret3 (Fig. 271B). It can be distinguished from the latter three species by the nearly 180° curved tip of the embolus (Fig. 272C), and the strongly curved Ret2 (Fig. 271B). Females can be distinguished from those of *G. emertoni* and *G. minuta* by the absence of spermathecae (Fig. 274) and from those of *G. sp. nov. 7* by the Prt1 base not enlarged (Fig. 271D).

Description: Male (Holotype, USNM): habitus as in figure 269. Carapace dark brown, darker along furrows. Sternum dark brown. Abdomen dorsally with two diffused longitudinal black bands in the anterior region and thin transversal black bands in its posterior region. Silver guanine spots scattered in dorsal and lateral surfaces. Venter with a median black band surrounded by silver guanine spots. Tracheal spiracle well-sclerotized. Legs yellow-brownish. Total length 3.95. Cephalothorax 1.80 long, 1.35 wide, 0.90 high. Abdomen 2.10 long, 1.65 wide, 1.55 high. Sternum 0.90 long, 0.87 wide. Eye diameters and interdistances: AME 0.09. ALE 0.10. PME 0.10. PLE 0.07. AME-AME 0.1, AME-ALE 0.20, PME-PME 0.16, PME-PL 0.20, ALE-PL 0.01. Clypeus height 2.10 × AME diameter. Chelicerae dark brown. Three promarginal and five retromarginal teeth (Figs. 271A-C). Ret2 strongly curved (Fig. 271B). Leg measurements: I: femur 2.10, patella 0.65, tibia 2.02, metatarsus 1.55, tarsus 0.82, total 7.15; II: 1.90, 0.62, 1.80, 1.60, 0.82; III: 1.35, 0.47, 1.00, 0.97, 0.55, 4.35; IV: 1.77, 0.47, 1.50, 1.30, 0.62, 5.67. DTS 0.45. DTE 0.90. Palp as in figures 272-273. Conductor and cymbium slender (Figs. 272A-C, 273A). Embolus tip nearly 180° curved (Fig. 272C).

Female (Paratype, USNM 00879002): coloration and general habitus as in male (Fig. 270). Cephalothorax, abdomen and legs clearer than the male. Abdomen without clearly

defined black bands. Silver guanine spots uniformly scattered in dorsal and lateral surfaces. Venter with a median diffused dark band clearer towards the petiole and surrounded by silver guanine spots. Tracheal spiracle well-sclerotized. Total length 4.25. Cephalothorax 1.67 long, 1.42 wide, 1.12 high. Abdomen 2.50 long, 2.02 wide, 1.87 high. Sternum 0.90 long, 0.90 wide. Eye diameters and interdistances: AME 0.09. ALE 0.10. PME 0.10. PLE 0.08. AME-AME 0.07, AME-ALE 0.17, PME-PME 0.13, PME-PLE 0.17, ALE-PLE 0.01. Clypeus height $1.90 \times$ AME diameter. Chelicerae brown. Three promarginal and four retromarginal teeth. (Figs. 271D-F). Leg measurements: I: femur 1.85, patella 0.62, tibia 1.77, metatarsus 1.50, tarsus 0.81, total 6.56; II: 1.77, 0.57, 1.65, 1.42, 0.78, 6.2; III: 1.25, 0.42, 0.87, 0.82, 0.50, 3.87; IV: 1.70, 0.40, 1.27, 1.22, 0.60, 5.20. DTS 0.47. DTE 0.56. Internal genitalia without spermathecae and copulatory ducts (Fig. 274).

Distribution: known from Arizona state in United States of America and Mexico state in Mexico (Fig. 306).

***Glenognatha* sp. nov. 7**

(Figs. 275-281, 312)

Type material: male holotype from Parque Nacional da Serra dos Órgãos, Teresópolis, Rio de Janeiro, Brazil, [22°29'35''S, 43°4'24''W], elev. [1700m], 20-23.x.2006, Exped. Arachné leg., deposited in MNRJ 6399; paratypes: 3♂ 3♀ 2 immature with the same data of the holotype, deposited in MNRJ 6598; 1♂ from Túnel do Garrafão, Alagoa, Minas Gerais, Brazil, 22°11'S, 44°44'W, elev. [1340m], 31.ix.2008, L.F.O. Bernardi leg., deposited in UFMG 8790.

Diagnosis: males of *G. sp. nov. 7* resemble those of *G. emertoni*, *G. minuta* and *G. sp. nov. 11* by the enlarged Ret2 and Ret3 (Fig. 277B). It can be distinguished from *G. emertoni* by the absence of an antero-marginal projection on the cheliceral basal segment (Fig. 277A); distinguished from *G. minuta* by the smaller size of the Ret3 relative to Ret2 (Fig. 277B) and from *G. sp. nov. 11* by the slightly curved Ret2 (Fig. 277B). Females can be distinguished from all other *Glenognatha* species by the enlarged base of the Prt1 (Fig. 277D).

Description: Male (Holotype): habitus as in figure 275. Carapace pale brown, darker along furrows. Sternum brown, darker on sides. Abdomen oval, dorsally with irregular pattern of two longitudinal black bands on sides that join medially at the posterior region forming thin transverse bands. Silver guanine spots scattered in two median longitudinal bands and on lateral surfaces. Venter with a pale black median band that ramifies towards the lateral surface from the tracheal spiracle. Silver guanine spots scattered in two lighter longitudinal bands between the tracheal spiracle and the epigastric furrow. Legs yellow-brownish. Tracheal spiracle well-sclerotized. Total length 3.75. Cephalothorax 1.75 long, 1.35 wide, 0.95 high. Abdomen 2.30 long, 1.80 wide, 1.80 high. Sternum 0.90 long, 0.90 wide. Eye diameters and interdistances: AME 0.12. ALE 0.10. PME 0.15. PLE 0.12. AME-AME 0.09, AME-ALE 0.12, PME-PME 0.15, PME-PL 0.13, ALE-PL 0.01. Clypeus height $1.80 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax and anteriorly projected (Fig. 275B). Three promarginal and four retromarginal teeth. (Figs. 277A-C). Cheliceral fang curved (Fig. 277C). Leg measurements: I: femur 2.40, patella 0.65, tibia 2.50, metatarsus 2.20, tarsus 1.10, total 8.85; II: 2.40, 0.65, 2.45, 2.00, 1.00, 8.50; III: 1.60, 0.40, 1.25, 1.15, 0.57, 4.97; IV: 1.80, 0.45, 1.60, 1.40, 0.62, 5.87. DTS 0.32. DTE 0.70. Palp as in figures 278-279. Paracymbium with distal and basal portions subequal (Fig. 278D). Embolus long with a nearly 90° curved tip (Figs. 278C, 279E).

Female (MNRJ 6400): coloration and general habitus as in male (Fig. 276). Abdomen with four dusky longitudinal bands. Pale patch anterior to the gonopore. Tracheal spiracle well-sclerotized. Total length 3.85. Cephalothorax 1.75 long, 1.50 wide, 1.15 high. Abdomen 2.35 long, 2.00 wide, 1.85 high. Sternum 1.00 long, 0.95 wide. Eye diameters and interdistances: AME 0.12. ALE 0.12. PME 0.15. PLE 0.13. AME-AME 0.11, AME-ALE 0.16, PME-PME 0.17, PME-PL 0.16, ALE-PL 0.01. Clypeus height $1.70 \times$ AME diameter. Chelicerae with the same coloration of the cephalothorax. Three promarginal and four retromarginal teeth (Figs. 277D-F). Ret1 with a basal enlargement (Fig. 277D). Leg measurements: I: femur 2.80, patella 0.75, tibia 2.75, metatarsus 2.25, tarsus 1.10, total 9.65; II: 2.50, 0.65, 2.37, 2.10, 1.05, 8.67; III: 1.60, 0.50, 1.20, 1.25, 0.70, 5.25; IV: 2.00, 0.40, 1.95, 1.50, 0.75, 6.60. DTS 0.27. DTE 0.25. Tracheal system as in figure 281. Spinnerets as in figures 298C, 300B, 302C. Internal genitalia without spermathecae (Fig. 280). Uterus externus sac rectangular (Fig. 280).

Variation: Male total length 3.2-3.7 ($N = 5$; average 3.5), cephalothorax length 1.5-1.7 ($N = 5$; average 1.6), femur I length 2.2-2.5 ($N = 5$; average 2.3). Female total length 3.7-4.5 ($N = 5$; average 3.9), cephalothorax length 1.6-2.0 ($N = 5$; average 1.8), femur I length 2.0-2.8 ($N = 5$; average 2.4).

Distribution: known from São Paulo, Rio de Janeiro and Minas Gerais states in Brazil (Fig. 312).

Additional material examined ($N = 3$): **BRAZIL: Minas Gerais:** Bocaina de Minas, [22°9′53.85″S, 44°23′27.55″W], elev. [1169m], 1-3.i.2008, E. H. Wienskoski leg., 1 immature (MNRJ 5034). **Rio de Janeiro:** Teresópolis, Parque Nacional da Serra dos Órgãos, , [22°29′35″S, 43°4′24″W], elev. [1700m], 4.viii.1996, 1♀ (MNRJ 6400). **São Paulo:** São José do Barreiro, Parque Nacional da Serra da Bocaina, [22°43′S, 44°36′W], elev. [900m], 28.iv -3.v.2002, Equipe Biota leg., 1♀ (IBSP 68554).

Glenognatha minuta Banks, 1898

(Figs. 282-289, 306)

Glenognatha minuta Banks, 1898: 218, pl. 15, fig. 15. (male syntype from Baja California, San Jose del Cabo, Mexico, Eisen & Vaslit leg., deposited in MCZ 125505, examined); Hormiga & Döbel, 1990: 202, figs. 25-30; Platnick, 2013.

Glenognatha centralis Chamberlin, 1925: 216 (male holotype from Panama, R. V. Chamberlin leg., deposited in MCZ 125347, examined). **New synonymy.**

Synonymy justification: male holotype of *G. centralis* (MCZ 125347) (collected from the stomach of a toad, *Bufo* sp.) was carefully examined. I conclude that the specimen is a subadult male due to the undeveloped male palp sclerites. This conclusion was supported by the finding of a subadult male of *G. foxi* (from Arizona, AMNH), caught in the molting process, that exhibits a similar palp morphology. After comparison with numerous *Glenognatha* specimens collected in Panama, I concluded that the morphology of the chelicerae in *G. centralis* is too similar with the diagnostic morphology found in *G. minuta* specimens; which is characterized by enlarged Ret2 and Ret3 (Figs. 284A-C). The chelicerae orientation and the size of the tegulum, cited as diagnostic for *G. centralis* by Hormiga & Döbel (1990), are not sufficient to maintain a separate species, as these characters can vary in *G. minuta*. The unusual shape of the

conductor, cited by Hormiga & Döbel (1990) also as a diagnostic character, can be an artifact of the developmental stage of the specimen, the preservation and the digestive process suffered.

Diagnosis: males of *G. minuta* can be easily distinguished from all other *Glenognatha* species by the morphology of the chelicerae, which has a small Ret1 and prominent Ret2 and Ret3, the latter being bigger (Figs. 284A-C). Females can be distinguished from all other *Glenognatha* (except *G. emertoni*) by the presence of an anterior cheliceral bulge (Figs. 284D, F); distinguished from *G. emertoni* by the well-developed spermathecae (Fig. 287) and the oval-shaped chelicerae in mesal view (Fig. 284F).

Description: Male (Mexico, Jalisco, Atenquique, AMNH): habitus as in figure 282. Carapace brown, darker along furrows. Sternum brown with darker edges. Abdomen oval, dorsally with diffused irregular lateral bands. Silver guanine spots scattered in dorsal and lateral surfaces. Venter pale greyish with scattered silver guanine spots. Tracheal spiracle well-sclerotized. Legs yellow-brownish. Total length 2.37. Cephalothorax 1.10 long, 0.82 wide, 0.62 high. Abdomen 1.30 long, 1.12 wide, 1.07 high. Sternum 0.55 long, 0.60 wide. Eye diameters and interdistances: AME 0.09. ALE 0.07. PME 0.08. PLE 0.08. AME-AME 0.06, AME-ALE 0.08, PME-PME 0.075, PME-PLP 0.075, ALE-PLP 0.01. Clypeus height $1.8 \times$ AME diameter. Chelicerae brown. Three promarginal and four retromarginal teeth (Figs. 284A-C). Ret2 and Ret3 enlarged (Fig. 284B). Leg measurements: I: femur 1.37, patella 0.35, tibia 1.25, metatarsus 1.15, tarsus 0.65, total 4.77; II: 1.30, 0.32, 1.25, 1.05, 0.65, 4.57; III: 0.87, 0.25, 0.62, 0.65, 0.40, 2.80; IV: 1.08, 0.25, 0.87, 0.85, 0.47, 3.53. DTS 0.20. DTE 0.50. Palp as in figures 285-286, 289. Distal end of the conductor lamina sharp (Fig. 286B-C).

Female (Mexico, Yucatán, AMNH): coloration and general habitus as in male (Fig. 283). Abdomen with silver guanine spots arranged in two longitudinal bands that extends to the lateral surfaces. Venter with a median diffused dark band. Total length 2.95. Cephalothorax 1.27 long, 0.92 wide, 0.85 high. Abdomen 1.75 long, 1.57 wide, 1.52 high. Sternum 0.17 long, 0.21 wide. Eye diameters and interdistances: AME 0.09. ALE 0.07. PME 0.08. PLE 0.07. AME-AME 0.07, AME-ALE 0.12, PME-PME 0.13, PME-PLP 0.13, ALE-PLP 0.01. Clypeus height $1.60 \times$ AME diameter. Chelicerae brown. Cheliceral basal segment with antero-marginal projection (Fig. 284D) and

anterior bulge (Figs. 284D, F). Three promarginal and four retromarginal teeth. (Figs. 284D-F). Leg measurements: I: femur 1.57, patella 0.40, tibia 1.47, metatarsus 1.27, tarsus 0.67, total 5.40; II: 1.47, 0.47, 1.30, 1.20, 0.65, 5.10; III: 0.95, 0.30, 0.65, 0.70, 0.37, 2.97; IV: 1.37, 0.30, 1.05, 0.80, 0.50, 4.02. DTS 0.08. DTE 0.14. Tracheal system as in figure 288. Internal genitalia with a well-developed spermathecae (Fig. 287). Uterus externus sac with a median tubiform projection (Figs. 287A-B).

Variation: male total length 2.1-2.6 ($N = 10$; average 2.3), cephalothorax length 1.0-1.2 ($N = 10$; average 1.1), femur I length 1.3-1.6 ($N = 10$; average 1.5). Female total length 2.2-3.5 ($N = 10$; average 2.9), cephalothorax length 1.0-1.7 ($N = 10$; average 1.32), femur I length 1.2-2.0 ($N = 10$; average 1.5). In specimens from Panama the cheliceral anterior bulge is more sharpened.

Distribution: known in Mexico, Guatemala, Costa Rica, Panama and Cuba (Fig. 306).

Additional material examined ($N = 30$): **CUBA: Cienfuegos:** Soledad, [Jardín Botánico de Cienfuegos], [22°7'N, 80°20'W], elev. [50m], 1-11.viii.1934, P. J. Darlington leg., 1♂ (MZC 125505).

New records: **COSTA RICA: San Jose:** San Jose, [9°56'N, 84°4'W], elev. [1152m], E. Schmidt leg., 1♀ (AMNH); Machuca, [10°48'N, 83°36'W], elev. [14m], N. Banks leg., 1♀ (MCZ 66544). **GUATEMALA: Petén:** Tikal, [17°12'N, 89°37'W], elev. [312m], 1931, Dice & Bartlett leg., 1♀ (MZC 125478). **MEXICO: Jalisco:** Atenquique, [19°31'N, 103°26'W], elev. [1168m], 5.xii.1948, H.B. Leech leg., 1♂ (AMNH). **Nayarit:** Ixtlan del Rio, [21°1'N, 104°21'W], elev. [1051m], 22.ix.1922, B. Malkin leg., 1♀ (AMNH). **Nuevo León:** Monterrey, [25°37'N, 100°17'W], elev. [599m], 10.vi.1936, Davis leg., 1♂ (AMNH); Allende: Rio Ramos, [25°16'N, 100°52.13'W], elev. [663m], 18.viii.1954, F. N. Young leg., 1♂ (AMNH). **San Luis Potosí:** Tamazunchale, [21°15'N, 98°47'W], elev. [135m], 25.xi.1938, A. M. & L. I. Davis leg., 1♂ (AMNH); Tamazunchale, arroyo La Chorrera, [21°15'N, 98°47'W], elev. [135m], 28.iii.1937, A. M. & L. I. Davis leg., 1♂ (AMNH); 10 mi. N.E. Xilitla, 21°27'N, 98°55'W, elev. [132m], 19.iv.1963, W. J. Gertsch & W. Ivie leg., 2♂ 1 immature (AMNH). **Sinaloa:** Piaxtla (River), 23°50'N, 106°40'W, elev. [33m], 16.v.1963, W. J. Gertsch & W. Ivie leg., 1 immature (AMNH). **Sonora:** Hermosillo, [29°5'N, 110°56'W], elev. [235m], 9-16.vii.1953, B. Malkin leg., 1♀ (AMNH). **Yucatán:** Chichen Itza, Cenote Stolc.,

[20°40'N, 88°34'W], elev. [35m], 10.vii.1948, C. & M. Goodnight leg., 1♀ (AMNH) ; 26.v.1980, J. Coddington leg., 3♀ 1♂ (USNM); 1♀ (USNM). **PANAMA: Chiriquí:** El volcán, [8°46'N, 82°37'W], elev. [1400m], 26.ii.1936, W. J. Gertsch leg., 3♀ 3♂ (AMNH). **Panamá:** Barro Colorado Island, Canal Zone, [9°9'N, 79°50'W], elev. [150m], vi.1950, A. M. Chickering leg., 1♀ (MCZ 125496); Canal Zone, Forest reserve, [9°9'N, 79°50'W], elev. [150m], 29.i.1958, A. M. Chickering leg., 1♂ (MCZ 129050). **REPUBLICA DOMINICANA: La Romana:** Guaymate (14 Km N), [18°41'N, 68°58'W], elev. [264m], 16.ix.1984, R. Faitoute leg., 1♀ (USNM).

Glenognatha emertoni Simon, 1887

(Figs. 290-296, 298E, 300D, 302E, 304)

Glenognatha emertoni Simon, 1887: 194 (male syntypes from Arizona, United States of America, deposited in MNHN, examined); Simon, 1894: 717, figs. 790-791; Banks, 1913: 180, pl. 2, fig. 22; Levi, 1980: 66, figs. 255-271; Platnick, 2013.

Diagnosis: Males of *G. emertoni* are distinguished from the remaining *Glenognatha* by the presence of an antero-marginal projection in the cheliceral basal segment (Fig. 292A). Females resemble those of *G. minuta* in having an anterior cheliceral bulge (Fig. 292F), but differ by the reduced size of the spermathecae in relation with the uterus externus (Fig. 295) and the apical position of the cheliceral bulge (Fig. 292F).

Description: male and female described by Levi (1980), additional data are presented here.

Male (USA, Arizona, AMNH): habitus as in figure 290. Tracheal spiracle well-sclerotized. Total length 4.25. Cephalothorax 2.07 long, 1.57 wide, 1.15 high. Abdomen 2.32 long, 1.90 wide, 1.80 high. Sternum 1.00 long, 1.00 wide. Eye diameters and interdistances: AME 0.10, ALE 0.07, PME 0.12, PLE 0.09. AME-AME 0.1, AME-ALE 0.18, PME-PME 0.18, PME-PL 0.19, ALE-PL 0.01. Clypeus height $2.30 \times$ AME diameter. Three promarginal and four retromarginal teeth (Fig. 292A-C). Leg measurements: I: femur 2.80, patella 0.75, tibia 2.92, metatarsus 2.57, tarsus 0.82, total 9.87; II: 2.67, 0.75, 2.80, 2.40, 1.12, 9.75; III: 1.65, 0.50, 1.47, 1.50, 0.72, 5.85; IV: 2.27, 0.55, 2.00, 1.90, 0.90, 7.65. DTS 0.27. DTE 0.62. Palp as in figures 293-294. Conductor retrolateral apophysis rounded (Figs. 294B-C). Embolus with a nearly 90° curved tip (Fig. 293C).

Female (USA, Arizona, AMNH): habitus as in figure 291. Tracheal spiracle well-sclerotized. Total length 5.05. Cephalothorax 2.45 long, 1.92 wide, 1.55 high. Abdomen 2.90 long, 2.35 wide, 2.30 high. Sternum 1.32 long, 1.20 wide. Eye diameters and interdistances: AME 0.10, ALE 0.11, PME 0.13, PLE 0.10. AME-AME 0.15, AME-ALE 0.22, PME-PME 0.24, PME-PLE 0.27, ALE-PLE 0.01. Clypeus height $2.9 \times$ AME diameter. Three promarginal and four retromarginal teeth (Figs. 292D-F). Leg measurements: I: femur 3.00, patella 0.70, tibia 3.25, metatarsus 2.77, tarsus 1.30, total 11.07; II: 2.95, 0.90, 2.92, 2.50, 1.22, 10.5; III: 2.17, 0.62, 1.62, 1.65, 0.85, 6.92; IV: 2.65, 0.67, 2.17, 2.02, 0.92, 8.45. DTS 0.37. DTE 0.62. Tracheal system as in figure 296. Spinnerets as in figures 298E, 300D, 302E. Internal genitalia with strongly reduced spermathecae and copulatory ducts (Figs. 295).

Variation: male total length 3.8-5.2 ($N = 6$; average 4.6), cephalothorax length 1.8-2.3 ($N = 6$; average 2.1), femur I length 2.8-3.2 ($N = 6$; average 2.9). Female total length 4.0-5.1 ($N = 10$; average 4.5), cephalothorax length 1.8-2.6 ($N = 10$; average 2.1), femur I length 2.4-3.25 ($N = 10$; average 2.7).

Distribution: known in Arizona and New Mexico states in United States of America (Fig. 304).

Additional material examined (N = 24): UNITED STATES OF AMERICA: Arizona: Big Rock Camp., Madera Can., [31°43'N, 110°52'W], elev. [2100m], 10.ix.1941, W. Ivie leg., 1♀ (AMNH); 1♀ 1♂ (AMNH); Wet Canyon For. Camp, Graham Mts., [32°42'N, 109°52'W], elev. [2000m], 13.ix.1952, B. Malkin leg., 1♂ (AMNH); Southwestern Res. Sta., 5 miles west portal, [31°53'N, 109°12'W], elev. [1645m], 2-19.v.1956, M. Statham leg., 2♀ 1♂ (AMNH); 6-20.vii.1955, W. J. Gertsch leg., 3♀ (AMNH); 3mi.w.Paradise Chiricahua Mts., [31°55'N, 109°22'W], elev. [1989m], 9.ix.1950, W. J. Gertsch leg., 1♀ (AMNH); SWRS 5mi. W. Portal Cochise County, [31°53'N, 109°12'W], elev. [1645m], 17.vii.1964, J. A. Woods leg., 1♀ (AMNH); Santa Rita Mts., Madera Canyon, [31°43'N, 110°52'W], elev. [1552m], 16.vii.1940, W. J. Gertsch leg., 1♀ (AMNH); Cochise Co., Chiricahua Mts. SWRS, [31°49'N, 109°28'W], elev. [1700m], 14.vii.1966, J. Beatty leg., (under rock in dry stream), 2♀ (MCZ 64709); Madera Can. Santa Rita Mts., 31°43'N, 110°52', elev. [2100m], 8.ix.1941, W. Ivie leg., 3♀ 2♂ (MCZ 125499); 1♂ (MCZ 125500). **New Mexico:** Whitewater Canyon 4 mi. N.

E. Glenwood Catron Co., [33°21'N, 108°3'], elev. [2050m], 20.viii.1952, H. R. Leech & J. W. Green leg., 1♂ (AMNH).

Species inquerendae

Because crucial aspects for identification as the morphology of embolus, conductor and female genitalia are not documented adequately in the original descriptions, only one sex is described and the holotypes are lost, the following species are considered *species inquerendae*:

***Glenognatha caporiaccoi* Platnick, 1993**

Glenognatha chamberlini Caporiacco, 1947: 23; Caporiacco, 1948: 644, fig. 46 (male holotype from Tibicuri-Cuyaha, Demerara, Guiana, deposited in Museo di Zoologia di Specola, Firenze, lost). Preoccupied by *Hivaoa chamberlini* Berland, 1942.

Glenognatha caporiaccoi: Platnick, 1993: 373 (replacement name); Platnick, 2013.

***Glenognatha argenteoguttata* (Berland, 1935)**

Hivaoa argenteoguttata Berland, 1935: 51, figs. 16-19 (male holotype from Matuuna, Hivaoa, Marquesas Islands, 2.iii.1930, Munford et Adamson leg., deposited in Bernice Bishop Museum, Honolulu, lost).

Glenognatha argenteoguttata: Levi 1980: 64; Platnick, 2013.

***Glenognatha chamberlini* (Berland, 1942)**

Hivaoa chamberlini Berland, 1942: 18, figs. 7e-g (female holotype from Rapa, Austral Islands, vii.1934, deposited in Bernice Bishop Museum, Honolulu, lost)

Glenognatha chamberlini: Levi 1980: 64; Platnick, 2013.

***Glenognatha nigromaculata* (Berland, 1933)**

Dyschiriognatha nigrimaculata Berland, 1933: 64, figs. 46-48 (male holotype from Ooumu, Nukuhiva, Marquesas Islands, 13.xi.1929, Munford et Adamson leg., deposited in Bernice Bishop Museum, Honolulu, lost).

Hivaoa nigromaculata: Berland, 1935: 36, 41, 50.

Glenognatha nigromaculata: Levi 1980: 64; Platnick, 2013.

Glenognatha phalangiops (Berland, 1933)

Hivaoa phalangiops Berland, 1942: 18, figs. 7a-d (female holotype from Mt. Perahu, Rapa, Austral Islands, 21.vii.1934, deposited in Bernice Bishop Museum, Honolulu, lost).

Glenognatha phalangiops: Levi 1980: 64; Platnick, 2013.

7. Conclusions

- *Glenognatha* is a monophyletic genus supported by eight unambiguous synapomorphies, all free of homoplasy: l-shaped paracymbium, setae distributed only in the distal portion of the paracymbium, conductor without basal apophysis, conductor retrolateral apophysis prolaterally folded, embolus with medial groove (char. 32[1]), male Ret1 posteriorly displaced (char. 66), medial tracheal trunks branched (char. 81[1]) and large relative to lateral tracheae (char. 82 [1]).
- The plesiomorphic condition in *Glenognatha* corresponds to a short distal portion of the paracymbium and an embolic groove limited to the inner surface of the embolus. Spermathecae have been lost independently in several occasions within *Glenognatha*.
- Considering the geographic distribution of *Glenognatha*, the unknown females in some species and the high probability of finding undescribed species, future addition of taxa and characters might produce modifications of the relationships described herein and improve the internal support values.
- The following taxa are newly synonymized: *Dyschiriognatha montana* Simon, 1897, *Glenognatha mira* Bryant, 1945 and *Glenognatha maelfaiti* Baert, 1987 with *Glenognatha argyrostilba* (O. P.-Cambridge, 1876) and *Glenognatha centralis* Chamberlin, 1925 with *Glenognatha minuta* Banks, 1898.
- Three new combinations are proposed in congruence with the phylogenetic results: *Glenognatha argyrostilba* (O. P.-Cambridge, 1876), *Glenognatha dentata* (Zhu & Wen, 1978) and *Glenognatha tangi* (Zhu, Song & Zhang, 2003), all previously included in *Dyschiriognatha*.
- Eleven species are newly described: *G. sp. nov. 1*, *G. sp. nov. 3*, *G. sp. nov. 4* and *G. sp. nov. 7* from southeast Brazil, *G. sp. nov. 6*, *G. sp. nov. 9* and *G. sp. nov. 10* from the Amazonian region, *G. sp. nov. 2*, *G. sp. nov. 5* and *G. sp. nov. 8* from northern Andes and *G. sp. nov. 11* from central Mexico and Southern United States.
- The following taxa are considered *species inquerendae*: *Glenognatha caporiaccoi* Platnick, 1993; *Glenognatha argenteoguttata* (Berland, 1935), *Glenognatha chamberlini* (Berland, 1942), *Glenognatha nigromaculata* (Berland, 1933), and *Glenognatha phalangiops* (Berland, 1933).

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9. Appendix

9.1 List of specimens examined for character scoring.

Outgroup

Metainae

Chrysometa alajuela Levi, 1986

Characters coded after examination of figures and descriptions of Álvarez-Padilla & Hormiga (2011).

Tetragnathinae

Cyrtognatha espanola Bryant, 1945)

Characters coded after examination of figures and descriptions of Álvarez-Padilla & Hormiga (2011) and Dimitrov & Hormiga (2009).

Tetragnatha versicolor Walckenaer, 1841

USA: Washington, Pierce Co., Enumclaw/Buckley, [47°10'N, 122°0'W], elev. [224m], 14.viii.1964, P. C. & V. F. Holt leg., 2♀ 2♂ (USNM).

Pachygnatha autumnalis Marx, 1884

USA: Massachusetts, Barnstable Co., [41°37'N, 70°33'W], elev. [26m], R. L. Edwards leg., 3♀ 3♂ (USNM).

Pachygnatha clercki Sundevall, 1823

USA: Alaska, Eagle river flats nr. Anchorage, [61°13'N, 149°53'W], elev. [19m], F. S. Blanton leg., 1♀ (USNM). EUROPE, 2♀ 2♂ (USNM).

Dyschiriognatha dentata

MYANMAR: Sagaing: Chattin Wildlife Sanct. Takontaing, 23°37'20"N, 95°31'52"E, elev. [179m], 7-12.x.1998, Coddington & Baptista leg., 6♀ 3♂ (USNM); JAPAN: Okinawa: [26°9'N, 127°53'E], elev. [15m], 22.vii.1945, C. T. Parsons & F. G. Werner leg., 1♂ (MCZ 125497).

Dyschiriognatha tangi

MYANMAR: Sagaing: Chattin Wildlife Sanct. Takontaing, 23°37'20"N, 95°31'52"E, elev. [179m], 7-12.x.1998, Coddington & Baptista leg., 1♀ 3♂ (USNM).

Ingroup

Glenognatha argyrostilba (O. P.-Cambridge, 1876)

BRAZIL: Ceará: Fortaleza, UFCE, Campus de Itaperi [3°47'S, 38°33'W], elev. [26m], 8.vii.2011, R. Azevedo leg., 1♀ (UFCE 852); 1♀ (UFCE 841). ECUADOR: *Galápagos*: Isabela, [0°55'S, 91°0'W], elev. 2m, 2-15.iii.1989, Peck & Sinclair leg., 1♂ (AMNH); [0°16'S, 90°41'W], elev. [300m], 10.iv.1982, Y. Lubin leg., 2♀ (MCZ 125476). NIGERIA : Kabba: Kabba, : [7°50'N, 6°4'E], elev. [458m], 19-23.ii.1949, B. Malkin leg., 2♀ 2♂ (CAS).

Glenognatha australis (Keyserling, 1883)

BRAZIL: Paraná: Guaraqueçaba, Serra do Itaqui, Tagaçaba, [25°16'S, 48°24'W], elev. [51m], 15-22.ix.2007, G. P. Perroni leg., 1♂ (IBSP 86529). Rio Grande do Sul: Estação Braskem de Proteção Ambiental, [29°56'S, 51°41'W], elev. [6m], 15.ix.2009, P. E. S. Rodrigues leg., 1♀ 1♂ (MCN 46671); 14.vi.2006, R. Ott leg., 1♀ 1♂ (MCN 42102); 15.ix.2009, P. E. S. Rodrigues leg., 1♀ 1♂ (MCN 46671). Rio Pardo, 29°58'S, 52°21'W, elev. [134m], 6.vii.1966, A. Lise leg., 24 ♀ 18 ♂ 2 immature (MCZ 125524). São Paulo: Jundiaí, Serra do Japi, [23°14'S, 46°55'W], elev. [966m], 8-10.xii.1997, A. J. Santos leg., 1♀ (IBSP 36559). PERU: [*Piura*]: Quebrada Mogollón, [4°32'S, 81°4'W], elev. [700m], 24.ix.1939, HEF & DLF leg., 1♀ 1♂ (CAS 9039650).

Glenognatha emertoni Simon, 1887

USA: Arizona: Big Rock Camp., Madera Can., [31°43'N, 110°52'W], elev. [2100m], 10.ix.1941, W. Ivie leg., 1♀ (AMNH); 1♀ 1♂ (AMNH); Southwestern Res. Sta., 5 miles west portal, [31°53'N, 109°12'W], elev. [1645m], 2-19.v.1956, M. Statham leg., 2♀ 1♂ (AMNH); Wet Canyon For. Camp, Graham Mts., [32°42'N, 109°52'W], elev. [2000m], 13.ix.1952, B. Malkin leg., 1♂ (AMNH); 3mi.w.Paradise Chiricahua Mts., [31°55'N, 109°22'W], elev. [1989m], 9.ix.1950, W. J. Gertsch leg., 1♀ (AMNH). Madera Can. Santa Rita Mts., 31°43'N, 110°52', elev. [2100m], 8.ix.1941, W. Ivie leg., 3♀ 2♂ (MCZ 125499). New Mexico: Whitewater Canyon 4 mi. N. E. Glenwood Catron Co., [33°21'N, 108°3'], elev. [2050m], 20.viii.1952, H. R. Leech & J. W. Green leg., 1♂ (AMNH).

Glenognatha foxi (McCook, 1894)

PANAMA: [Panamá]: Canal zone, Gatun, [9°17'N, 79°46'W], elev. [30m], ii.1958, 3♀ 15♂ (MCZ 125543). USA: Pennsylvania: N.E. of Jamison, Horseshoe Bend, Neshaminy Cr., 40°16'N, 75°3'W, elev. [49m], x.1954, W. Ivie leg., 9♀ 12♂ (AMNH).

Glenognatha gaujoni Simon, 1895

BRAZIL: Acre: Marechal Thaumaturgo, Parque Nacional da Serra do Divisor, [8°17'S, 73°19'W], elev. [262m], 14.iii.1997, L. Resende & R. Vieira leg., 1♀ 1♂ (IBSP 12182). Amazonas: Manaus, Reserva Florestal Adolpho Ducke, [2°59'S, 59°56'W], elev. [90m], vii.1999, A. J. Santos leg., 1♀ 2♂ (IBSP 26965); Reserva do PDBFF, [2°29'S, 60°2'W], elev. [115m], ii-ix.2001, E. M. Venticinque leg., 1♀ (IBSP 55545). PERU: Cuzco: Cashiriari, Rio Camisea, 11°52'S, 72°39'W, elev. 690m, xii.1997, S. Córdoba leg., 1♂ (MUSM 0504920). Madre de Dios: Zona Reserva Tambopata, [12°13'S, 69°51'W], elev. 290m, 10-11.v.1991, D. Silva leg., 7♀ 7♂ (MUSM 0504927).

Glenognatha globosa (Petrunkévitch, 1925)

COLOMBIA: Cundinamarca: Cachipay, [4°42'N, 74°29'W], elev. [1019m], 27.ii.2011, J. Cabra leg., 6♀ 8♂ 5 immature (ICN 5991). PANAMA: Chiriquí: Boquete, [8°46'N, 82°25'W], elev. [1094m], vii.1939, A. M. Chickering leg., 1♀ 1♂ (MCZ 67470).

Glenognatha gloriæ (Petrunkévitch, 1930)

PUERTO RICO: Bosque Estatal de Maricao, [18°6'N, 66°58'W], elev. [319m], vii.1958, A. F. Archer leg., 1♀ 1♂ (AMNH); [Parque Nacional el Yunque], Baño de Oro trail 1-2 Km West of Rd. 191, [18°17'N, 65°49'W], elev. 650m – 700m, vii.1958, P. leg., 1♀ 1♂ (MCZ 125485); Cordillera Central, Area recreo Doña Juana N. of Villalba, [18°9'N, 66°29'W], elev. 1000m, 26.iii.1986, H. L. Levi leg., 1♀ 4♂ (MCZ 125482).

Glenognatha heleios Hormiga, 1990

USA: New Jersey: Oceanville, [39°28'N, 74°27'W], elev. [12m], 26.ix.1949, P. F. Springer leg., 1♀ 1♂ (AMNH); Ocean Co., Tuckerton, 9.x.1984, H. Döbel leg., 6♀ 6♂ (USNM).

Glenognatha hirsutissima (Berland, 1935)

FRENCH POLYNESIA: Marquesas Islands: Nuku Hiva, Tekao Ridge, 8°51'39''S, 140°10'24''W, elev. 400m, 21.x.1999, D. A. & J. T. Polhemus leg., 2♂ 1♀ (USNM).

Glenognatha iviei Levi, 1980

USA: Mississippi, Gulfport, 18.viii.1922, W. Ivie leg. 1♂ (holotype) (AMNH).

Glenognatha lacteovittata (Mello-Leitão, 1944)

BRAZIL: Rio de Janeiro: Bom Jesus do Itabapua, São José do Calçado, Rio Itabapua, Usina Hidrelétrica de Rosal, [20°58'S, 41°43'W, elev. [605m], xi.1999, I. Knysak leg., 2♀ 3♂ (IBSP 26460). Santa Catarina: Bombinhas, Arie Costeira de Zimbros, [27°8'S, 48°31'W], elev. [74m], 4.vii.2011, A. L. Trivia & L. Malta leg., 1♀ (IBSP 163680); São Cristovão do Sul, Monte Alegre, [27°15'S, 50°26'W], elev. [1019m], 2001-2002, J. M. Moreira leg., 1♀ 1♂ (IBSP 141433). URUGUAY: [Montevideo]: Montevideo, Ruta 1 Km 12, [34°40'S, 56°29'W], elev. [3m], 2001, M. A. Benamu leg., 1♀ 1♂ (IBSP 44084). PERU: Madre de Dios: Zona Reservada Pakitza, 11°56'S, 71°17'W, elev. 356m, 18.viii.1992, D. Silva leg., 3♀ 7♂ (MUSM 0504907).

Glenognatha minuta Banks, 1898

COSTA RICA: [San Jose]: San Jose, [9°56'N, 84°4'W], elev. [1152m], E. Schmidt leg., 1♀ (AMNH); MEXICO: Nayarit: Ixtlan del Rio, [21°1'N, 104°21'W], elev. [1051m], 22.ix.1922, B. Malkin leg., 1♀ (AMNH). San Luis Potosí: 10 mi. N.E. Xilitla, 21°27'N, 98°55'W, elev. [132m], 19.iv.1963, W. J. Gertsch & W. Ivie leg., 2♂ 1 immature (AMNH). Sonora: Hermosillo, [29°5'N, 110°56'W], elev. [235m], 9-16.vii.1953, B. Malkin leg., 1♀ (AMNH). PANAMA: [Chiriquí]: El volcán, [8°46'N, 82°37'W], elev. [1400m], 26.ii.1936, W. J. Gertsch leg., 3♀ 3♂ (AMNH).

Glenognatha smilodon Bosmans & Bosselaers, 1994

CAMEROON, Poli Mountains, Pic Hosseré Vokré, 17.iv.1983, elev. 900m, Bosmans R. & Van Stelle leg., ♂ (holotype) (MRAC 202710).

Glenognatha spherella Chamberlin & Ivie, 1936

COSTA RICA: [San José]: San José, [9°56'N, 84°4'W], elev. [1152m], E. Schmidt leg., 7♀ 3♂ (AMNH). MEXICO: Michoacán: Garnica Pass (summit, 9300ft), 19°40'N,

100°55'W], elev. [2332m], 8.v.1963, W. J. Gertsch & W. Ivie leg., 12♀ 23♂ 9 immature (AMNH). San Luis Potosí, Xilitla, 21°23'50"N, 98°59'38"W, elev. 689m, 27-31.viii.2011, FAPLAB leg., 1♀ 3♂ (CAS 9046859); 14-18.xi.2011, FAPLAB leg., 1♂ (CAS 9046858); 3♂ (CAS 9046857). PANAMA: [Panamá]: Barro Colorado, Canal Zone, [9°9'N, 79°50'W], elev. [150m], viii.1950, 21♀ 18♂ (MCZ 64707).

Glenognatha sp. nov. 1

BRAZIL: Paraná: Antonina, Reserva Natural da Cachoeira, [25°24'2,4"S, 48°41'18.75"W], elev. [100m], 28.vi-2.vii.2003, H. Hofer *et al.* leg., 1♂ (paratype) (IBSP 131182). Rio Grande do Sul: Triunfo, Estação Braskem de Proteção Ambiental, [29°56'28,27"S, 51°41'24.41"W], elev. [6m], 19.xi.2002, R. Ott leg., 1♂ 2♀ (paratype) (MCN 34952). São Paulo: Salesópolis, Barragem do Rio Paraitinga, [23°32'S, 45°46'W], elev. [870m], 11-18.vi.2002, Eq. IBSP leg., 13♂ 10♀ (paratypes) (IBSP 147861); 18-25.vi.2002, 3♂ 5♀ (IBSP 147809).

Glenognatha sp. nov. 2

COLOMBIA: Valle Del Cauca: Dagua, Alto Queremal, Hacienda San Pedro, 3°29'5.42"N, 76°42'W, elev. 1800m, 21-26.xi.2009, J. Cabra leg., 12♂ 9♀ (paratypes) (ICN 5982). COSTA RICA: Punta Arenas/Alajuelas: Monte Verde Biological Reserve, [10°18'25.36"N, 84°48'34.36"W], elev. [1431m], 2.ii.1979, J. Coddington leg., 5 ♂ (MCZ 125511).

Glenognatha sp. nov. 3

BRAZIL: Rio Grande do Sul: São Francisco de Paula, Potreiro Velho, [29°28'S, 50°9'W], elev. [772m], 12-15.vi.1997, A. Lise leg., 1♂ (MCTP 13771); 18.iii.1997, J. Ketterl leg., 1♀ (MCTP 17493). São Paulo: São José do Barreiro, Parque Nacional da Serra da Bocaina, [22°43'S, 44°36'W], elev. [900m], 28.iv – 3.v.2002, Equipe Biota leg., Pitfall, 4♀ (IBSP 68552); 1♂ 1♀ (IBSP 57091); 1♂ (IBSP 57078).

Glenognatha sp. nov. 4

BRAZIL: São Paulo: Estação Biológica Boracéia, Salesópolis, São Paulo, Brazil, 23°39'20.6"S, 45°53'28.6"W, elev. [900m], 1.iv.2001, S.T.P. Amarante e Equipe leg., 4♂ 1♀ (MZSP 42538); [23°39'S, 45°33'W], 22-23.ii.1961, P. Biasi leg., 1♂ (MZSP 11062); 1.ii.1961, K. Lenko leg., 1♂ (MZSP 11551); 23°39'5.8"S, 45°33'44.6"W,

1.iv.2001, 1♀ (MZSP 39047); Trilha dos Pilões, 23°39'1.9"S, 45°53'36"W, 4.iv.2001, (varredura), 2♂ 1♀ (MZSP 39043).

Glenognatha sp. nov. 5

COLOMBIA: Cundinamarca: Mosquera, La Herrera, [4°42'31.1"N, 74°18'54.2"W], elev. 2600m, 9.ii.2002, J. Martinez, C. Niño, A. Castañeda, G. Mora leg., 43♂ 4♀ 8 immature (ICN 1973);

Glenognatha sp. nov. 6

COLOMBIA: Vaupés: Taraira, Lago Taraira. Estación Biológica Caparu, [1°4'S, 69°29'W], elev. [128m], 11.iv.2004, J. Pinzón leg., 1♂ (holotype) (ICN 5979); 2♂ 1♀ (paratypes) (ICN 5980); PERU: Loreto: P.N. Pacaya-Samiria Pithecia, 5°6'S, 74°50'W, elev. 100m, 16.viii.1989, D. Silva leg., 1 ♂ 3 ♀ 6 immature (MUSM 0504921). VENEZUELA: [Amazonas]: Igarapé forest of upper Rio Yaciba, [1°14'N, 66°44'W], elev. [109m], 7.xii.1953, W. M. Beebe leg., 1♂ 1♀ (AMNH).

Glenognatha sp. nov. 7

BRAZIL: Rio de Janeiro: Teresópolis, Parque Nacional da Serra dos Órgãos, [22°29'35"S, 43°4'24"W], elev. [1700m], 20-23.x.2006, Exped. Arachné leg., 3♂ 3♀ (paratypes) (MNRJ 6598); 4.viii.1996, 1♀ (MNRJ 6400). São Paulo: São José do Barreiro, Parque Nacional da Serra da Bocaina, [22°43'S, 44°36'W], elev. [900m], 28.iv-3.v.2002, Equipe Biota leg., 1♀ (IBSP 68554).

Glenognatha sp. nov. 8

COLOMBIA: Quindío: Filandia, [4°40'N, 75°40'W], elev. [1758m], 4.viii.2012, N. Hazzi leg., 6♀ 1♂ (ICN 5998) Valle Del Cauca: Dagua, Alto Queremal, Hacienda San Pedro, 3°29'N, 76°42'W, elev. 1800m, 21.ix.2009, J. Cabra leg., 4♂ 19♀ (paratypes) (ICN 5986).

Glenognatha sp. nov. 9

BRAZIL: Amazonas: Manaus, Lago Janauari, 3°20'S, 60°17'W, elev. [12m], vi.1987-vii.1988, J. Adis *et al.* leg., 1♂ (holotype) (IBSP 120209); 1♂ (paratype) (IBSP 120266); 1 ♂ (IBSP 120166); 1 ♂ (IBSP 120220).

Glenognatha sp. nov. 10

PERU: Cusco: La Convención, Río Camisea, 11°47'9.8''S, 72°42'5.3''W, elev. 474m, iii-iv.1997, S. Córdoba leg., 1♂ (holotype) (MUSM 0505885); 1♂ (paratype) (MUSM 0504913); 1♂ (MUSM 0504917); 11°51'51.3''S, 72°46'45.6''W, elev. 579m, v-vi.1997, S. Córdoba leg., 1♂ (MUSM 0504905)

Glenognatha sp. nov. 11

USA: Arizona: Santa Cruz Co., Nogales [31°20'N, 110°56'W], elev. [1183m], 1.ix.1991, R. L. Edwards leg., 1♂ (holotype) (USNMENT 00879001); 2♂ 1♀ (paratypes) (USNMENT 00879002); Lerma, Mexico, [19°17'N, 99°43'W], elev. [2400m], 25.vi.1941, A. M. & L. I. Davis leg. 1♂ (paratype) (AMNH).

9.2 Data matrix

Taxa	Spigots												Male papal morphology																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	
<i>Ch. alajuela</i>	0	0	2	0	0	0	0	0	0	1	0	0	0	1	0	-	1	2	-	0	-	0	0	0	0	1	-	-	0	0	0	0	-	0	1	0	
<i>C. espanola</i>	0	0	2	0	0	0	1	0	0	1	1	1	1	0	1	-	0	1	0	0	-	0	0	0	0	0	0	1	0	0	0	0	-	0	1	0	
<i>T. versicolor</i>	0	0	2	0	0	0	0	0	1	1	0	0	1	0	1	-	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	1	1	
<i>P. autumnalis</i>	1	1	1	1	1	0	0	0	0	0	1	1	1	0	1	-	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	0	
<i>P. clercki</i>	1	1	?	1	1	0	0	0	0	0	1	1	1	0	1	-	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	-	0	0	1	
<i>D. dentata</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	1	0	1	1	1	2	1	0	0	0	0	0	0	0	2	1	1	0	0	0	
<i>D. tangi</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	1	0	1	1	1	0	0	0	0	0	1	0	0	0	0	1	1	0	0	0	
<i>G. argyrostilba</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	
<i>G. australis</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	1	0	0	0	0	1	1	0	0	0	
<i>G. emertoni</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	
<i>G. foxi</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	
<i>G. gaujoni</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	1
<i>G. globosa</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0	1	1	0	0	1	
<i>G. gloriae</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	0	1	0	0	1	1	0	0	0	
<i>G. heleios</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	1	0	1	1	1	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	
<i>G. hirsutissima</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	
<i>G. iviei</i>	?	?	?	?	?	?	0	?	0	?	?	1	1	0	2	1	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	
<i>G. lacteovittata</i>	0	1	0	0	0	0	0	0	0	0	1	1	1	0	2	0	0	0	1	1	1	0	0	0	1	0	0	0	2	0	2	1	0	0	0	0	
<i>G. minuta</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	0
<i>G. smilodon</i>	?	?	?	?	?	?	0	?	0	?	?	1	1	0	2	1	0	0	1	1	1	0	0	1	1	0	0	0	0	0	0	0	1	1	1	0	0
<i>G. spherella</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	1	1	0	0	1	1	0	0	0	
<i>G. sp. nov. 1</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	1	0	0	0	1	1	0	0	0	
<i>G. sp. nov. 2</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0
<i>G. sp. nov. 3</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	
<i>G. sp. nov. 4</i>	0	1	0	0	0	0	0	0	0	0	1	1	1	0	2	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	
<i>G. sp. nov. 5</i>	0	1	0	0	0	0	0	0	0	0	1	1	1	0	2	0	0	0	1	1	1	0	0	0	1	0	1	0	0	0	2	1	0	0	0	0	
<i>G. sp. nov. 6</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	1	0	1	0	0	1	0	0	0	0	1	1	0	0	0	
<i>G. sp. nov. 7</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	1	
<i>G. sp. nov. 8</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	0	0	0	1	0	0	1	0	1	1	0	0	1	
<i>G. sp. nov. 9</i>	0	?	1	?	?	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	
<i>G. sp. nov. 10</i>	0	?	1	?	?	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	
<i>G. sp. nov. 11</i>	0	1	1	0	0	1	0	1	0	0	1	1	1	0	2	1	0	0	1	1	1	0	0	1	0	0	1	0	0	0	0	1	1	0	0	0	

Taxa	Female genitalia											Cephalothorax, chelicerae and legs																									
	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68					
<i>Ch. alajuela</i>	0	0	1	0	0	2	0	-	-	-	0	1	1	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0	0	0	0	0					
<i>C. espanola</i>	1	0	-	0	0	0	1	0	-	0	1	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1	0					
<i>T. versicolor</i>	1	0	1	1	0	0	1	0	-	0	1	0	1	0	0	0	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0					
<i>P. autumnalis</i>	1	0	0	1	0	0	1	0	-	0	0	1	1	1	0	1	1	0	0	0	-	1	0	0	0	0	0	0	0	0	1	0					
<i>P. clercki</i>	1	0	0	1	0	0	1	0	-	1	0	1	1	1	0	1	1	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0					
<i>D. dentata</i>	1	0	0	0	1	1	1	0	-	1	0	1	2	1	1	1	1	1	0	0	-	1	0	0	0	0	0	1	0	1	1	0					
<i>D. tangi</i>	1	0	0	0	1	1	1	0	-	0	0	1	1	1	1	0	1	0	0	0	-	1	0	0	0	0	0	0	0	1	1	0					
<i>G. argyrostilba</i>	1	0	0	0	1	1	1	0	-	0	0	1	1	1	1	1	1	1	0	0	-	1	0	0	0	0	0	0	0	1	1	0					
<i>G. australis</i>	1	0	0	0	1	1	1	2	0	0	0	1	1	0	0	0	0	0	0	0	-	0	0	0	0	0	1	1	0	1	0	0					
<i>G. emertoni</i>	1	0	0	0	1	1	1	1	-	0	0	1	1	0	0	0	0	0	1	0	-	0	0	1	0	0	1	1	1	0	0	0					
<i>G. foxi</i>	1	0	0	0	1	1	1	0	-	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	1	0	0					
<i>G. gaujoni</i>	1	1	-	-	-	-	1	2	1	0	0	1	1	0	0	0	1	0	1	0	-	1	0	0	0	0	0	0	0	1	0	1					
<i>G. globosa</i>	1	1	-	-	-	-	1	2	1	0	0	1	1	0	0	0	1	0	1	0	-	0	0	0	0	0	0	0	0	1	0	1					
<i>G. gloriae</i>	1	0	0	0	1	1	1	1	-	0	0	1	2	0	0	0	0	0	0	0	-	0	0	0	0	0	1	1	0	1	1	0					
<i>G. heleios</i>	1	0	0	0	1	1	1	0	-	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	1	1	0	0	0	0	0	0					
<i>G. hirsutissima</i>	1	0	0	0	1	1	1	0	-	0	0	1	2	0	0	0	0	0	0	0	-	0	1	0	0	0	0	0	0	0	-	0					
<i>G. iviei</i>	?	?	?	?	?	?	?	?	?	?	?	?	1	0	0	0	0	0	0	1	0	1	0	0	1	2	0	0	0	0	0	?					
<i>G. lacteovittata</i>	1	1	-	-	-	-	1	1	-	0	0	1	1	0	0	0	0	0	0	0	-	1	0	0	0	0	0	0	0	1	0	0					
<i>G. minuta</i>	1	0	0	0	1	1	1	1	-	0	0	1	1	0	0	0	0	0	1	0	-	0	0	0	0	0	1	0	1	0	0	0					
<i>G. smilodon</i>	?	?	?	?	?	?	?	?	?	?	?	?	1	0	0	0	0	0	0	0	-	1	0	0	1	1	0	0	0	1	0	?					
<i>G. spherella</i>	1	0	0	0	1	1	1	1	-	0	0	1	1	0	0	0	0	0	0	0	-	0	0	0	0	0	1	1	0	1	1	0					
<i>G. sp. nov. 1</i>	1	0	0	0	1	1	1	2	0	0	0	1	1	0	0	0	0	0	1	0	-	0	0	0	0	0	0	0	0	1	0	0					
<i>G. sp. nov. 2</i>	1	0	0	0	1	1	1	1	-	0	0	1	1	0	0	0	0	0	1	0	-	1	0	0	0	0	0	0	0	1	0	0					
<i>G. sp. nov. 3</i>	1	0	0	0	1	1	1	2	0	0	0	1	1	0	0	0	0	0	0	1	0	1	0	0	1	0	0	0	0	1	0	0					
<i>G. sp. nov. 4</i>	1	1	-	-	-	-	1	1	-	0	0	1	2	0	0	0	0	0	0	0	-	1	0	0	0	0	0	0	0	1	0	0					
<i>G. sp. nov. 5</i>	1	1	-	-	-	-	1	1	-	0	0	1	1	0	0	0	0	0	0	0	-	1	0	0	0	0	0	0	0	1	0	0					
<i>G. sp. nov. 6</i>	1	0	0	0	1	1	1	2	0	0	0	1	1	0	0	0	0	0	1	1	1	1	0	0	1	0	0	0	0	1	1	0					
<i>G. sp. nov. 7</i>	1	1	-	-	-	-	1	1	-	0	0	1	1	0	0	0	0	0	1	0	-	0	0	0	0	0	1	1	1	1	0	0					
<i>G. sp. nov. 8</i>	1	1	-	-	-	-	1	2	1	0	0	1	1	0	0	0	1	0	1	0	-	0	0	0	0	0	0	0	0	1	0	0					
<i>G. sp. nov. 9</i>	?	?	?	?	?	?	?	?	?	?	?	?	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	?					
<i>G. sp. nov. 10</i>	?	?	?	?	?	?	?	?	?	?	?	?	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	?					
<i>G. sp. nov. 11</i>	1	1	-	-	-	-	1	1	-	0	0	1	1	0	0	0	0	0	1	0	-	0	0	0	0	0	1	1	1	1	1	0					

Taxa	Cephalothorax, chelicerae and legs											Abdomen		
	69	70	71	72	73	74	75	76	77	78	79	80	81	82
<i>Ch. alajuela</i>	0	0	0	0	0	-	0	0	0	-	0	0	0	0
<i>C. espanola</i>	0	0	0	0	0	-	0	0	1	1	0	0	0	0
<i>T. versicolor</i>	0	0	0	1	0	-	0	1	1	0	0	0	0	0
<i>P. autumnalis</i>	0	0	0	0	0	-	0	0	1	0	0	1	0	0
<i>P. clercki</i>	0	0	0	0	0	-	0	0	1	0	0	1	0	0
<i>D. dentata</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>D. tangi</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. argyrostilba</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. australis</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. emertoni</i>	0	0	1	1	0	-	0	0	1	0	0	1	1	1
<i>G. foxi</i>	1	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. gaujoni</i>	1	1	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. globosa</i>	0	0	0	0	0	-	0	1	1	0	0	1	1	1
<i>G. gloriae</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. heleios</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. hirsutissima</i>	0	0	0	0	0	-	0	0	1	0	1	1	1	1
<i>G. iviei</i>	?	?	?	?	?	?	?	0	1	0	0	?	?	?
<i>G. lacteovittata</i>	0	0	0	0	1	1	0	0	1	0	0	1	1	1
<i>G. minuta</i>	0	0	1	1	0	-	0	0	1	0	0	1	1	1
<i>G. smilodon</i>	?	?	?	?	?	?	?	0	1	0	0	?	?	?
<i>G. spherella</i>	0	0	0	0	1	0	0	0	1	0	0	1	1	1
<i>G. sp. nov. 1</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. sp. nov. 2</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. sp. nov. 3</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. sp. nov. 4</i>	0	0	0	0	1	0	0	0	1	0	0	1	1	1
<i>G. sp. nov. 5</i>	0	0	0	0	1	0	0	0	1	0	0	1	1	1
<i>G. sp. nov. 6</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1
<i>G. sp. nov. 7</i>	0	0	0	0	0	-	1	0	1	0	0	1	1	1
<i>G. sp. nov. 8</i>	0	1	0	0	0	-	0	1	1	0	0	1	1	1
<i>G. sp. nov. 9</i>	?	?	?	?	?	?	?	0	1	0	0	1	1	1
<i>G. sp. nov. 10</i>	?	?	?	?	?	?	?	0	1	0	0	1	1	1
<i>G. sp. nov. 11</i>	0	0	0	0	0	-	0	0	1	0	0	1	1	1

Figure 91. Habitats of *Glenognatha* species. **A**, *Glenognatha* sp. nov. 2 and *Glenognatha* sp. nov. 8, Colombia, Valle del Cauca. **B-C**, *Glenognatha gaujoni*. **B**, Brazil, Rondônia. **C**, Peru, Loreto. Photos 2B-C by Rafael Prezzi Indicatti.

Figure 92. Webs of *Glenognatha* sp. nov. 2 from Colombia, Valle del Cauca.

Figure 93. Webs of *Glenognatha* sp. nov. 8. **A-B**, Colombia, Valle del Cauca. **C**, Colombia, Nariño. Photo 2C by Nicolas Hazzi.

Figure 94. Webs and habitus of *Glenognatha gaujoni*. **A-B**, Brazil, Rondônia. **C-D**, Peru, Loreto. Photos 4A-B by Flávio Yamamoto, 4C-D by Rafael Prezzi Indicatti.

Figure 95. *Glenognatha* sp. nov. 4 from Brazil (MZSP 42538). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 96. *Glenognatha* sp. nov. 4 from Brazil (MZSP 42538). Female habitus. **A**, dorsal. **B**, lateral (arrow, cheliceral bulge). **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 97. *Glenognatha* sp. nov. 4 from Brazil. **A-C**, Male left chelicerae (MZSP 42538). **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae (MZSP 39047). **D**, anterior. **E**, posterior. **F**, mesal (arrow, cheliceral bulge). Scale bars, 100 μ m. CFO: cheliceral fang outgrowth. Ret: retromarginal tooth.

Figure 98. *Glenognatha* sp. nov. 4 from Brazil (MZSP 42538). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 99. *Glenognatha* sp. nov. 4 from Brazil (MZSP 42538). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 100. *Glenognatha* sp. nov. 4 from Brazil. Female genitalia. **A**, dorsal. **B**, lateral. Scale bars, 20 mm. UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 101. *Glenognatha* sp. nov. 4 from Brazil. Female tracheal system. **A**, dorsal. **B**, median trunk. **C**, lateral trunk. **D**, tracheal spiracle posterior view. Scale bars, 100 μ m (A), 10 μ m (B-D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 102. *Glenognatha* sp. nov. 4 from Brazil. Male left palp. **A**, ventral. **B**, embolus and conductor ventral. **C**, embolus and conductor dorsal. Scale bars 100 μ m (A), 50 μ m (B, C). C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 103. *Glenognatha* sp. nov. 5 from Colombia (ICN 1973). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 104. *Glenognatha* sp. nov. 5 from Colombia (ICN 1973). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 105. *Glenognatha* sp. nov. 5 from Colombia (ICN 2141). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal (arrow, cheliceral bulge). Scale bars, 100 μ m. CFO: cheliceral fang outgrowth. Ret: retromarginal tooth.

Figure 106. *Glenognatha* sp. nov. 5 from Colombia (ICN 1973). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 107. *Glenognatha* sp. nov. 5 from Colombia (Paratype ICN 2141). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. T: tegulum.

Figure 108. *Glenognatha* sp. nov. 5 from Colombia. Female genitalia. **A**, dorsal. **B**, lateral. **C**, anterior **D**, uterus externus cuticle. **E**, posterior. Scale bars, 100 μ m (A-D), 20 μ m (E). UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 109. *Glenognatha* sp. nov. 5 from Colombia. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μ m (A-C), 20 μ m (D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 110. *Glenognatha* sp. nov. 5 from Colombia. Male left palp. **A**, ventral. **B**, embolus and conductor. **C**, embolus and conductor tip. **D**, paracymbium. Scale bars 200 μ m (A), 100 μ m (B, D) 20 μ m (C). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. PBp: paracymbium basal portion. T: tegulum.

Figure 111. *Glenognatha lacteovittata* from Brazil (IBSP 141433). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 112. *Glenognatha lacteovittata* from Brazil (IBSP 163680). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 113. *Glenognatha lacteovittata* from Uruguay (IBSP 44084). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior (arrows, cheliceral bulges). **F**, mesal. Scale bars, 100 μm . CFO: cheliceral fang outgrowth. Ret: retromarginal tooth.

Figure 114. *Glenognatha lacteovittata* from Uruguay (IBSP 44084). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 115. *Glenognatha lacteovittata* from Brazil (IBSP 70038). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 116. *Glenognatha lacteovittata* from Brazil. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral **D-E**, uterus externus cuticle. Scale bars, 100 μ m (**A-D**), 10 μ m (**E**). UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 117. *Glenognatha lacteovittata* from Brazil. Female tracheal system. **A**, dorsal. **B**, median trunk cuticle. **C**, lateral trunk cuticle. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A-B), 10 μm (C-D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 118. *Glenognatha lacteovittata* from Uruguay. **A-D**, conductor. **A**, ventral. **B**, prolateral. **C**, dorsal. **D**, retrolateral. **E-G**, embolus (arrow, tooth-like projection). **H**, paracymbium. Scale bars 20 μm (A-D), (E-F) 30 μm , 10 μm (G), 100 μm (H). CRa: conductor retrolateral apophysis. EMg: embolic medial groove. PDP: paracymbium distal portion. PBp: paracymbium basal portion.

Figure 119. *Glenognatha tangi* from Myanmar (USNM). Male habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 120. *Glenognatha tangi* from Myanmar (USNM). Female habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 121. *Glenognatha tangi* from Myanmar (USNM). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. Prt: promarginal tooth.

Figure 122. *Glenognatha tangi* from Myanmar (USNM). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 123. *Glenognatha tangi* from Myanmar (USNM). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum.

Figure 124. *Glenognatha tangi* from Myanmar. Female genitalia. **A**, dorsal. **B**, ventral. **C**, lateral. Scale bars, 100 μ m. CD: copulatory duct. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 125. *Glenognatha tangi* from Myanmar. Female cephalothorax. **A**, lateral. **B**, frontal. **C**, ventral. **E**, dorsal. **D**, **F** carapace lateral cuticle. Scale bars 100 μm (A-C, E), 20 μm (D, F).

Figure 126. *Glenognatha tangi* from Myanmar. Male left palp. **A**, ventral. **B**, dorsal. **C**, embolus and conductor ventral. **D**, embolus and conductor dorsal. **E**, paracymbium. Scale bars 100 μm (A-B), 10 μm (C-E). C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 127. *Glenognatha argyrostilba* from Nigeria (CAS). Male habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 128. *Glenognatha argyrostilba* from Nigeria (CAS). Female habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 129. *Glenognatha argyrostilba* from Nigeria (CAS). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. Prt: promarginal tooth. CFO: cheliceral fang outgrowth.

Figure 130. *Glenognatha argyrostilba* from Nigeria (CAS). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 131. *Glenognatha argyrostilba* from Nigeria (CAS). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum.

Figure 132. *Glenognatha argyrostilba* from Nigeria. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, spermathecae and copulatory duct. Scale bars, 100 μ m (**A**, **C**), 20 μ m (**B**), 10 μ m (**D,E**). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 133. *Glenognatha argyrostilba* from Nigeria. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A), 10 μm (B-D). LT: lateral trachea. MT: median trunks. TAG: tracheal atrium gland.

Figure 134. *Glenognatha argyrostilba* from Ecuador (AMNH). Male habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 135. *Glenognatha argyrostilba* from Ecuador (MCZ 125476). Female habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 136. *Glenognatha argyrostilba* from Ecuador (AMNH). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 µm. Prt: promarginal tooth. CFO: cheliceral fang outgrowth. Ret: retromarginal tooth.

Figure 137. *Glenognatha argyrostilba* from Ecuador. Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 138. *Glenognatha argyrostilba* from Ecuador. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, spermathecae and copulatory duct. Scale bars, 100 μ m (**A**, **C**), 20 μ m (**B**, **D**), 10 μ m (**E**). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 139. *Glenognatha argyrostilba* from Ecuador. Male left palp. **A.** retrolateral. **B.** ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 140. *Glenognatha argyrostilba* from Ecuador. Female cephalothorax. **A.** dorsal (arrow, lateral depressions). **B.** lateral (arrow, lateral depressions). **C.** ventral. Scale bars, 100 μ m.

Figure 141. *Glenognatha dentata* from Myanmar (USNM). Male habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 142. *Glenognatha dentata* from Myanmar (USNM). Female habitus. **A**, dorsal (arrow, lateral depressions). **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 143. *Glenognatha dentata* from Myanmar (USNM). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal (arrow, small tubercles). **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal (arrow, small tubercles). Scale bars, 100 μm . CFO: cheliceral fang outgrowth. Prt: promarginal tooth.

Figure 144. *Glenognatha dentata* from Myanmar (USNM). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 145. *Glenognatha dentata* from Vietnam (MCZ 84023). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum.

Figure 146. *Glenognatha dentata* from Myanmar. Female genitalia. **A**, dorsal (arrow, uterus externus chamber projection). **B**, lateral. **C**, ventral. **D-E**, spermathecae and copulatory duct. Scale bars, 20 μm (A, C), 10 μm (B), 10 μm (D, E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 147. *Glenognatha dentata* from Myanmar. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk cuticle. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A), 20 μm (B), 10 μm (C, D). LT: lateral trachea. MT: median trunks. TAG: tracheal atrium gland.

Figure 148. *Glenognatha dentata* from Myanmar. Female cephalothorax. **A**, lateral. **B**, frontal. **C**, ventral. **E**, dorsal. **D**, **F**, carapace lateral cuticle. **G**, sternum cuticle. Scale bars 100 μm (A-C, E), 20 μm (D), 10 μm (F, G).

Figure 149. *Glenognatha dentata* from Myanmar. Male left palp. . **A**, ventral. **B**, ventroretrolateral. **C**, dorsoretrolateral. **D**, embolus and conductor ventral. **E**, embolus and conductor dorsal, **F**, embolus and conductor apical. **G**, cymbium/paracymbium articulation. Scale bars, 100 μ m (A-C), 20 μ m (D-G). C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 150. *Glenognatha* sp. nov. 2 from Colombia (ICN 5982). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 151. *Glenognatha* sp. nov. 2 from Colombia (ICN 5982). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 152. *Glenognatha* sp. nov. 2 from Colombia (ICN 5982). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. CFO: cheliceral fang outgrowth. Ret: retromarginal tooth.

Figure 153. *Glenognatha* sp. nov. 2 from Colombia (ICN 5982). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 154. *Glenognatha* sp. nov. 2 from Colombia (ICN 5982). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 155. *Glenognatha* sp. nov. 2 from Colombia. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral **D-E**, spermathecae and copulatory duct. Scale bars, 20 μ m (**A-C**), 10 μ m (**D,E**). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 156. *Glenognatha* sp. nov. 2 from Colombia. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μ m (A), 20 μ m (B-D). LT: lateral trachea. MT: median trunks. TAG: tracheal atrium gland.

Figure 157. *Glenognatha* sp. nov. 2 from Colombia. Male left palp. **A**, ventral. **B**, retrolateral. **C**, conductor ventral. **D**, conductor dorsal. Scale bars 100 μm (A, B) 10 μm (C, D). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. PBp: paracymbium basal portion. PDp: paracymbium distal portion. T: tegulum.

Figure 158. *Glenognatha* sp. nov. 2 from Colombia. Embolus. **A**, ventral (arrow, inner membrane). **B**, dorsoprolateral (arrow, inner membrane). **C-D**, distal. Scale bars 20 μm (A,B), 10 μm (C,D).

Figure 159. *Glenognatha gaujoni* from Brazil (IBSP 26965). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 160. *Glenognatha gaujoni* from Brazil (IBSP 55545). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 161. *Glenognatha gaujoni* from Brazil. **A-C**, Male left chelicerae (IBSP 12182). **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae (IBSP 12612). **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 500 μ m. AT: anterior tooth. CFO: cheliceral fang outgrowth. EA: ectal apophysis. Prt: promarginal tooth. Ret: retromarginal tooth.

Figure 162. *Glenognatha gaujoni* from Brazil (IBSP 26965). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 163. *Glenognatha gaujoni* from Peru (MUSM 0504920). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 164. *Glenognatha gaujoni* from Peru. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, uterus externus cuticle. Scale bars, 100 μm (A-C), 20 μm (D), 10 μm (E). UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 165. *Glenognatha gaujoni* from Brazil. Female tracheal system. **A**, dorsal. **B-C**, median and lateral trunks. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A-C), 30 μm (D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 166. *Glenognatha gaujoni* from Brazil. Male left palp. **A**, ventral. **B**, ventroretrolateral. **C**, retrolateral. **D**, dorsal. **E**, prolateral. **F**, anterior. **G**, paracymbium. Scale bars 100 μ m (A-F), 30 μ m (G). C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. ED: ejaculatory duct. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 167. *Glenognatha gaujoni* from Brazil. **A-C**, Embolus. **A**, ventroretrolateral (arrow, inner membrane). **B**, ventral (arrow, inner membrane). **C**, dorsal (arrow, scale-shaped projections). Scale bars, 100 μm (A-C).

Figure 168. *Glenognatha* sp. nov. 8 from Colombia (ICN 5986). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 169. *Glenognatha* sp. nov. 8 from Colombia (ICN 5986). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 170. *Glenognatha* sp. nov. 8 from Colombia (ICN 5986). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. EA: ectal apophysis. Ret: retromarginal tooth.

Figure 171. *Glenognatha* sp. nov. 8 from Colombia (ICN 5986). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 172. *Glenognatha* sp. nov. 8 from Colombia (ICN 5986). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 173. *Glenognatha* sp. nov. 8 from Colombia. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral **D**, uterus externus cuticle. Scale bars, 100 μ m (A-C), 20 μ m (D). UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 174. *Glenognatha* sp. nov. 8 from Colombia. Female tracheal system. **A**, dorsal whole montage. **B**, dorsal. **C**, median and lateral trunks. **D**, tracheal spiracle posterior view. **E**, median trunk transversal cut. Scale bars, 200 μm (A), 100 μm (B, C), 20 μm (D, E). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 175. *Glenognatha* sp. nov. 8 from Colombia. Male left palp. **A**, ventral. **B**, embolus and conductor ventral. **C**, embolus and conductor dorsal (arrow, inner membrane). Scale bars 200 μ m (**A**), 100 μ m (**B**, **C**). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 176. *Glenognatha globosa* from Colombia (ICN 5991). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 177. *Glenognatha globosa* from Colombia (ICN 5991). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 178. *Glenognatha globosa* from Colombia (ICN 5991). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 200 μ m. AT: anterior tooth. Ret: retromarginal tooth.

Figure 179. *Glenognatha globosa* from Colombia (ICN 5991). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μm . C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 180. *Glenognatha globosa* from Colombia (ICN 5991). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 181. *Glenognatha globosa* from Colombia. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, uterus externus cuticle. Scale bars, 100 μm (A-C), 20 μm (D, E). UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 182. *Glenognatha globosa* from Colombia. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A-C), 10 μm (D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 183. *Glenognatha globosa* from Colombia. Male left palp. **A**, retrolateral. **B**, embolus and conductor. **C**, paracymbium. Scale bars 100 μm . C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. PBp: paracymbium basal portion. PDp: paracymbium basal portion. T: tegulum.

Figure 184. *Glenognatha* sp. nov. 6 from Colombia (Holotype, ICN 5979). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 185. *Glenognatha* sp. nov. 6 from Venezuela (AMNH). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 186. *Glenognatha* sp. nov. 6 from Colombia (Paratype ICN 5980). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. AT: anterior tooth. CFO: cheliceral fang outgrowth. Ret: retromarginal tooth.

Figure 187. *Glenognatha* sp. nov. 6 from Colombia (Holotype ICN 5979). Male left palp **A-D**. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 188. *Glenognatha* sp. nov. 6 from Colombia (Paratype ICN 5980). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 189. *Glenognatha* sp. nov. 6 from Colombia. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral (arrows, divisions of the uterus externus sac) **D-E**, spermathecae and copulatory duct. Scale bars, 20 μm (A-C), 10 μm (D, E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 190. *Glenognatha* sp. nov. 6 from Colombia. Female tracheal system. **A**, dorsal. **B**, tracheal spiracle posterior view. **C**, median trunk cuticle. Scale bars, 100 µm (A), 10 µm (B, C). LT: lateral trachea. MT: median trunks. TAG: tracheal atrium gland.

Figure 191. *Glenognatha* sp. nov. 6 from Peru. **A-C**, embolus and conductor. **A**, ventral. **B**, dorsal (arrow, pointed projections). **C**, anteroventral. **D**, paracymbium. Scale bars 20 μm (A-C), 100 μm (D). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolus medial groove. PBp: paracymbium basal portion. PDp: paracymbium distal portion.

Figure 192. *Glenognatha* sp. nov. 3 from Brazil (MCTP 13771). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 193. *Glenognatha* sp. nov. 3 from Brazil (MCTP 17493). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 194. *Glenognatha* sp. nov. 3 from Brazil. **A-C**, Male left chelicerae (IBSP 57091). **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae (IBSP 57078). **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. AT: Anterior tooth. CFO: cheliceral fang outgrowth. Prt: promarginal tooth.

Figure 195. *Glenognatha* sp. nov. 3 from Brazil (MCTP 13771). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral (arrow, paracymbium process). Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 196. *Glenognatha* sp. nov. 3 from Brazil (IBSP 57090). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 197. *Glenognatha* sp. nov. 3 from Brazil. Female genitalia. **A**, dorsal. **B**, lateral (arrow, disc-shaped basal region). **C**, ventral (arrow, disc-shaped basal region). **D-E**, spermathecae and copulatory duct. Scale bars, 20 μ m (**A-C**), 10 μ m (**D, E**). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 198. *Glenognatha* sp. nov. 3 from Brazil. Female tracheal system. **A**, dorsal. **B**, median trunk distal. Scale bars 100 μ m (**A**), 20 μ m (**B**). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 199. *Glenognatha* sp. nov. 3 from Brazil. Male left palp. **A**, ventral. **B**, embolus and conductor ventral. **C**, embolus and conductor dorsal. Scale bars 20 μ m. C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. T: tegulum.

Figure 200. *Glenognatha foxi* from USA (AMNH). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m.

Figure 201. *Glenognatha foxi* from USA (AMNH). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m.

Figure 202. *Glenognatha foxi* from USA (AMNH). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μm. AT: anterior tooth. CFO: cheliceral fang outgrowth.

Figure 203. *Glenognatha foxi* from USA (AMNH). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 204. *Glenognatha foxi* from USA (AMNH). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal (arrow, excavation). **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 205. *Glenognatha foxi* from USA. Female genitalia. **A**, dorsal. **B**, lateral. **C**, anterior. **D-E**, spermathecae and copulatory duct. Scale bars, 20 µm (A-C), 10 µm (D, E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 206. *Glenognatha foxi* from USA. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 20 μm (A), 10 μm (B-D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 207. *Glenognatha foxi* from USA. **A**, Male left palp ventral. **B**, Embolus and conductor ventroretrolateral. **C**, Paracymbium. **D**, Embolus and conductor dorsal (arrow, excavation). Scale bars 100 μm (A, C), 10 μm (B, D). C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 208. *Glenognatha* sp. nov. 9 from Brazil (Holotype IBSP 120209). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 µm. TS: tracheal spiracle.

Figure 209. *Glenognatha* sp. nov. 9 from Brazil (IBSP120220). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. Scale bars, 100 µm. AT: anterior tooth.

Figure 210. *Glenognatha* sp. nov. 9 from Brazil (Holotype IBSP 120209). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 211. *Glenognatha* sp. nov. 9 from Brazil (IBSP 120220). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 212. *Glenognatha* sp. nov. 10 from Peru (MUSM 054913). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 µm. TS: tracheal spiracle.

Figure 213. *Glenognatha* sp. nov. 10 from Peru (MUSM 0504905). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 µm. AT: anterior tooth.

Figure 214. *Glenognatha* sp. nov. 10 from Peru (Holotype MUSM 050913). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 215. *Glenognatha* sp. nov. 10 from Peru (Holotype MUSM 050913). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 µm. C: conductor. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 216. *Glenognatha* sp. nov. 10 from Peru. Male left palp. **A**, ventroretrolateral. **B**, dorsal. **C**, anterior. . Scale bars 100 µm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 217. *Glenognatha smilodon* from Cameroon (Holotype MRAC 202710). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 218. *Glenognatha smilodon* from Cameroon (Holotype MRAC 202710). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 219. *Glenognatha smilodon* from Cameroon (Holotype MRAC 202710). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 220. *Glenognatha iviei* from USA (Holotype AMNH). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. AT: Anterior tooth. Prt: promarginal tooth. TS: tracheal spiracle.

Figure 221. *Glenognatha iviei* from USA (Holotype AMNH). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. P: paracymbium. T: tegulum.

Figure 222. *Glenognatha iviei* from USA (Holotype AMNH). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral (arrow, paracymbium process). Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 223. *Glenognatha heleios* from USA (AMNH). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal (Paratype). Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 224. *Glenognatha heleios* from USA (Paratype AMNH). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 225. *Glenognatha heleios* from USA (AMNH). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. AT: anterior tooth. CFO: cheliceral fang outgrowth. Prt: promarginal tooth.

Figure 226. *Glenognatha heleios* from USA (Paratype AMNH). Male left palp. **A**, ventral. **B**, dorsal (arrow, paracymbium process). **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 227. *Glenognatha heleios* from USA (Paratype AMNH). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 228. *Glenognatha heleios* from USA. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, constricted base). **D-E**, spermathecae and copulatory duct. Scale bars, 20 μm (A-C), 10 μm (D, E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 229. *Glenognatha heleios* from USA. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A), 10 μm (B-D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 230. *Glenognatha heleios* from USA. **A-D**, Male left palp. **A**, ventral. **B**, dorsal. **C**, retrolateral. **D**, anterior. **E-G**, embolus and Conductor. **E**, ventral. **F**, dorsal. **G**, retrolateral. **H**, paracymbium (arrow, paracymbium process). Scale bars 100 μ m (**A-D**), 20 μ m (**E-H**). C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. PBp: paracymbium basal portion. T: tegulum.

Figure 231. *Glenognatha* sp. nov. 1 from Brazil (IBSP 147809). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 232. *Glenognatha* sp. nov. 1 from Brazil (IBSP 147809). Female habitus. **A**, dorsal. **B**, ventral. **C**, lateral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 233. *Glenognatha* sp. nov. 1 from Brazil (IBSP 147861). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. Ret: retromarginal tooth.

Figure 234. *Glenognatha* sp. nov. 1 from Brazil (IBSP 147809). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 235. *Glenognatha* sp. nov. 1 from Brazil (Paratype IBSP 147861). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 236. *Glenognatha* sp. nov. 1 from Brazil. Female genitalia. **A**, dorsal (arrows, disc-shaped portions). **B**, lateral. **C**, ventral **D-E**, spermathecae and copulatory duct. Scale bars, 20 μ m (A-C), 10 μ m (D-E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 237. *Glenognatha* sp. nov. 1 from Brazil. Female tracheal system. **A**, dorsal. **B**, median trunk distal. **C**, median trunk basal. **D**, tracheal spiracle posterior view. Scale bars, 100 μ m (**A**), 10 μ m (**B-D**). LT: lateral trachea. MT: median trunks. TAG: tracheal atrium gland.

Figure 238. *Glenognatha* sp. nov. 1 from Brazil. Male left palp. **A**, ventral. **B**, embolus and conductor ventral. **C**, embolus tip. **D**, embolus and conductor retrolateral. **E**, anteroretrolateral. **F**, cymbium. Scale bars, 100 μm (A), 50 μm (B, D-F), 10 μm (C). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. T: tegulum. TO: tarsal organ.

Figure 239. *Glenognatha hirsutissima* from Marquesas Islands (USNM). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 240. *Glenognatha hirsutissima* from Marquesas Islands (USNM). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 241. *Glenognatha hirsutissima* from Marquesas Islands (USNM). **A-C**, Male left chelicerae. **A**, anterior (arrow, anterior macrosetae). **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior (arrow, anterior spine socket). **E**, posterior. **F**, mesal. Scale bars, 100 μm.

Figure 242. *Glenognatha hirsutissima* from Marquesas Islands (USNM). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 243. *Glenognatha hirsutissima* from Marquesas Islands (USNM). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 µm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 244. *Glenognatha hirsutissima* from Marquesas Islands (USNM). Female genitalia. **A**, dorsal. **B**, ventral. **C**, lateral. Scale bars, 200 µm. CD: copulatory duct. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 245. *Glenognatha australis* from Peru (CAS 9039650). **A-B**, Male habitus. **A**, dorsal. **B**, ventral. **C-D**, Female habitus. **C**, dorsal. **D**, ventral. Scale bars 200 μm . TS: tracheal spiracle.

Figure 246. *Glenognatha australis* from Brazil (MCN 46671). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 247. *Glenognatha australis* from Brazil (MCN 46671). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 248. *Glenognatha australis*. **A-C**, Male left chelicerae from Argentina (MCT 838). **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae from Brazil (MCN 42102). **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 µm. Ret: retromarginal tooth.

Figure 249. *Glenognatha australis* from Brazil (MCN 46671). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 250. *Glenognatha australis* from Brazil (MCTP 841). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 µm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 251. *Glenognatha australis* from Brazil. Female genitalia. **A**, dorsal (arrows, disc-shaped portions). **B**, lateral. **C**, ventral. **D-E**, spermathecae and copulatory duct. Scale bars, 100 μ m (A-C), 10 μ m (D, E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 252. *Glenognatha australis* from Brazil. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A), 20 μm (B-C), 10 μm (D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 253. *Glenognatha australis* from Brazil. **A**, male left palp frontal. **B**, conductor ventral (tip broken). **C**, embolus and conductor ventral. **D**, embolus (arrow, inner membrane). **E**, embolus and conductor dorsal. Scale bars 100 μm (A), 20 μm (B,D), 50 μm (C,E). CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 254. *Glenognatha spherella* from Mexico (CAS 9046858). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 255. *Glenognatha spherella* from Mexico (CAS 9046857). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 256. *Glenognatha spherella* from Mexico. **A-C** (CAS 9046858), Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F** (CAS 9046857), Female left chelicerae. **D**, anterior. **E**, posterior (arrow, postero-lateral bulge). **F**, mesal (arrow, postero-lateral bulge). Scale bars, 100 µm. Ret: retromarginal tooth.

Figure 257. *Glenognatha spherella* from Mexico (CAS 9046858). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 258. *Glenognatha spherella* from Mexico (AMNH). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 259. *Glenognatha spherella* from Costa Rica. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral **D-E**, spermathecae and copulatory duct. Scale bars, 20 μ m (**A**, **C**), 10 μ m (**B**, **D-E**). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 260. *Glenognatha spherella* from Mexico. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A), 20 μm (B, C), 10 μm (D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 261. *Glenognatha spherella* from Costa Rica. **A**, male left palp ventral. **B**, embolus and conductor ventral. **C**, embolus and conductor dorsal. **D**, embolus and conductor retrolateral. **E**, paracymbium. Scale bars 20 μm (A), 10 μm (B-E). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. PBp: paracymbium basal portion. PDp: paracymbium distal portion. T: tegulum.

Figure 262. *Glenognatha gloriae* from Puerto Rico (MCZ 125485). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal (MCZ 125482). Scale bars, 200 μ m (A-C), 100 μ m (D). TS: tracheal spiracle.

Figure 263. *Glenognatha gloriae* from Puerto Rico (MCZ 125485). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m (A-C), 100 μ m (D). TS: tracheal spiracle.

Figure 264. *Glenognatha gloriae* from Puerto Rico. **A-C**, Male left chelicerae (MCZ 125482). **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae (MCZ 125482). **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. Ret: retromarginal tooth.

Figure 265. *Glenognatha glorieae* from Puerto Rico (MCZ 125485). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 266. *Glenognatha gloriae* from Puerto Rico (MCZ 125485). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 267. *Glenognatha gloriae* from Puerto Rico. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, spermathecae and copulatory duct. Scale bars, 20 μm (A-C), 10 μm (D, E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 268. *Glenognatha gloriae* from Puerto Rico. **A**, Male left palp ventral. **B-E**, embolus and conductor. **B**, ventroretrolateral. **C**, ventroanterior. **D**, ventral. **E**, dorsal. **F**, paracymbium. Scale bars 20 μ m. C: conductor. CRa: conductor retrolateral apophysis. E: embolus. PBp: paracymbium basal portion. PDp: Paracymbium distal portion. T: tegulum.

Figure 269. *Glenognatha* sp. nov. 11 from USA (*Paratype*, USNM). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 270. *Glenognatha* sp. nov. 11 from USA (*Paratype*, USNM). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 271. *Glenognatha* sp. nov. 11 from USA (*Paratypes*, USNM). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 200 μ m. Prt: promarginal tooth. Ret: retromarginal tooth.

Figure 272. *Glenognatha* sp. nov. 11 from USA (Paratype, USNM). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 273. *Glenognatha* sp. nov. 11 from USA (USNM). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 µm. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 274. *Glenognatha* sp. nov. 11 from USA (Paratype, USNM). Female genitalia. Female genitalia. **A**, dorsal. **B**, ventral. Scale bars, 100 µm. UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 275. *Glenognatha* sp. nov. 7 from Brazil (MNRJ 6598). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 276. *Glenognatha* sp. nov. 7 from Brazil (MNRJ 6598). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral (arrow, pleural bar). **D**, frontal. Scale bars, 500 μ m. TS: tracheal spiracle.

Figure 277. *Glenognatha* sp. nov. 7 from Brazil (MNRJ 6598). **A-C**, Male left chelicerae. **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, female left chelicerae. **D**, anterior. **E**, posterior. **F**, mesal. Scale bars, 100 μ m. Prt: promarginal tooth. Ret: retromarginal tooth.

Figure 278. *Glenognatha* sp. nov. 7 from Brazil (MNRJ 6598). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 279. *Glenognatha* sp. nov. 7 from Brazil (MNRJ 6598). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 280. *Glenognatha* sp. nov. 7 from Brazil. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, uterus externus cuticle. Scale bars, 100 µm (A-C), 30 µm (D), 20 µm (E). UEc: uterus externus chamber. UEs: uterus externus sac.

Figure 281. *Glenognatha* sp. nov. 7 from Brazil. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μ m (A, B), 20 μ m (C), 10 μ m (D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 282. *Glenognatha minuta* from Mexico (AMNH). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 283. *Glenognatha minuta* from Mexico (AMNH). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 200 μ m. TS: tracheal spiracle.

Figure 284. *Glenognatha minuta*. **A-C**, male left chelicerae from Panama (AMNH). **A**, anterior. **B**, posterior. **C**, mesal. **D-F**, female left chelicerae from Mexico (AMNH). **D**, anterior (arrow, cheliceral basal segment projection). **E**, posterior. **F**, mesal (arrow, cheliceral bulge). Scale bars, 100 μ m. Ret: retromarginal tooth.

Figure 285. *Glenognatha minuta* from Mexico (AMNH). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum.

Figure 286. *Glenognatha minuta* from Mexico (AMNH). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μm . C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 287. *Glenognatha minuta* from Mexico. Female genitalia. **A**, dorsal (arrow, tubiform projection). **B**, lateral. **C**, ventral **D**, anterior. **E**, spermathecae. Scale bars, 100 μm (A-D), 10 μm (E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 288. *Glenognatha minuta* from Mexico. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, tracheal spiracle posterior view. Scale bars, 100 μ m (**A**-**B**), 20 μ m (**C**). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 289. *Glenognatha minuta* from Panama. Male left palp. **A**, ventral. **B**, embolus and conductor ventral. **C**, embolus and conductor dorsal. **D**, paracymbium. Scale bars 100 μ m (**A**, **D**), 20 μ m (**B**-**C**). C: conductor. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic median groove. PBp: paracymbium basal portion. PDp: paracymbium distal portion. T: tegulum.

Figure 290. *Glenognatha emertoni* from USA (AMNH). Male habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 500 μm . TS: tracheal spiracle.

Figure 291. *Glenognatha emertoni* from USA (AMNH). Female habitus. **A**, dorsal. **B**, lateral. **C**, ventral. **D**, frontal. Scale bars, 500 μm . TS: tracheal spiracle.

Figure 292. *Glenognatha emertoni* from USA (AMNH). **A-C**, Male left chelicerae. **A**, anterior (arrow, cheliceral basal segment projection). **B**, posterior. **C**, mesal. **D-F**, Female left chelicerae. **D**, anterior (arrow, cheliceral basal segment projection). **E**, posterior. **F**, mesal (arrow, cheliceral bulge). Scale bars, 500 μm . Prt: Promarginal tooth. Ret: retromarginal tooth.

Figure 293. *Glenognatha emertoni* from USA (AMNH). Male left palp. **A**, ventral. **B**, dorsal. **C**, prolateral. **D**, retrolateral. Scale bars, 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. EMg: embolic medial groove. P: paracymbium. T: tegulum. TO: tarsal organ.

Figure 294. *Glenognatha emertoni* from USA (AMNH). Male left palp, schematic. **A**, ventral. **B**, conductor ventral. **C**, conductor dorsal. **D**, embolus ventral. Scale bars 100 μ m. C: conductor. CB: cymbium. CRa: conductor retrolateral apophysis. E: embolus. ED: ejaculatory duct. P: paracymbium. T: tegulum.

Figure 295. *Glenognatha emertoni* from USA. Female genitalia. **A**, dorsal. **B**, lateral. **C**, ventral. **D-E**, spermathecae and copulatory duct. Scale bars, 100 μm (A-C), 10 μm (D,E). CD: copulatory duct. LSD: long-stem gland ducts. UEc: uterus externus chamber. UEs: uterus externus sac. S: spermathecae.

Figure 296. *Glenognatha emertoni* from USA. Female tracheal system. **A**, dorsal. **B**, median and lateral trunks. **C**, median trunk distal. **D**, tracheal spiracle posterior view. Scale bars, 100 μm (A, B), 20 μm (C, D). LT: lateral tracheae. MT: median trunks. TAG: tracheal atrium gland.

Figure 297. Epiandrous fusules. **A**, *Glenognatha dentata*. **B**, *Glenognatha tangi*. **C**, *Glenognatha australis*. **D**, *Glenognatha gaujoni*. **E**, *Glenognatha globosa*. **F**, *Glenognatha* sp. nov. 2. **G**, *Glenognatha* sp. nov. 3. **H**, *Glenognatha* sp. nov. 10. **I**, *Glenognatha lacteovittata*. **J**, *Glenognatha* sp. nov. 5. Scale bars 10 μ m.

Figure 298. Female anterior lateral spinnerets. **A**, *Glenognatha* sp. nov. 1. **B**, *Glenognatha* sp. nov. 2. **C**, *Glenognatha* sp. nov. 7. **D**, *Glenognatha australis*. **E**, *Glenognatha emertoni*. **F**, *Glenognatha gaujoni*. **G**, *Glenognatha globosa*. **H**, *Glenognatha lacteovittata*. Scale bars 10 μ m.

Figure 299. Male anterior lateral spinnerets. **A**, *Glenognatha* sp. nov. 1 **B**, *Glenognatha* sp. nov. 2. **C**, *Glenognatha australis*. **D**, *Glenognatha gaujoni*. **E**, *Glenognatha globosa*. **F**, *Glenognatha lacteovittata*. **G**, *Glenognatha dentata*. **H**, *Glenognatha tangi*. Scale bars 10 μm .

Figure 300. Female posterior median spinnerets. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha* sp. nov. 7. **C**, *Glenognatha australis*. **D**, *Glenognatha emertoni*. **E**, *Glenognatha gaujoni*. **F**, *Glenognatha globosa*. **G**, *Glenognatha lacteovittata*. Scale bars 10 μ m.

Figure 301. Male posterior median spinnerets. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha australis*. **C**, *Glenognatha gaujoni*. **D**, *Glenognatha globosa*. **E**, *Glenognatha lacteovittata*. **F**, *Glenognatha tangi*. Scale bars 10 μm.

Figure 302. Female posterior lateral spinnerets. **A**, *Glenognatha* sp. nov. 1. **B**, *Glenognatha* sp. nov. 2. **C**, *Glenognatha* sp. nov. 7. **D**, *Glenognatha australis*. **E**, *Glenognatha emertoni*. **F**, *Glenognatha gaujoni*. **G**, *Glenognatha globosa*. **H**, *Glenognatha lacteovittata*. Scale bars 10 μ m.

Figure 303. Male posterior lateral spinnerets. **A**, *Glenognatha* sp. nov. 2. **B**, *Glenognatha australis*. **C**, *Glenognatha gaujoni*. **D**, *Glenognatha globosa*. **E**, *Glenognatha lacteovittata*. **F**, *Glenognatha tangi*. Scale bars 10 μ m.

Figure 304. Distribution of *G. emertoni*, *G. heleios* and *G. iviei*.

Figure 305. Distribution of *G. foxi*.

Figure 306. Distribution of *G. minuta*, *G. spherella* and *G. sp. nov. 11*.

Figure 307. Distribution of *G. australis*.

Figure 308. Distribution of *G. lacteovittata*.

Figure 309. Distribution of *G. gaujoni*, *G. sp. nov. 6*, *G. sp. nov. 9* and *G. sp. nov. 10*.

Figure 310. Distribution of *G. globosa*, *G. sp. nov. 8*, *G. sp. nov. 5* and *G. sp. nov. 2*.

Figure 311. Distribution of *G. glorieae*.

Figure 312. Distribution of *G. sp. nov. 4*, *G. sp. nov. 7*, *G. sp. nov. 1* and *G. sp. nov. 3*.

Figure 313. Distribution of *G. argyrostylba* and *G. smilodon*.

Figure 314. Distribution of *G. dentata* and *G. tangi*.

Figure 315. Distribution of *G. hirsutissima*.