



## An illustrated catalogue of the South American species of the cyphophthalmid family Neogoveidae (Arthropoda, Opiliones, Cyphophthalmi) with a report on 37 undescribed species

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### Abstract

We provide an illustrated catalog of the cyphophthalmid diversity of the Neotropics, including photographs of the holotypes and paratypes (when available) for all but one described South American Neogoveidae. These include the single species of *Huitaca*, two of the three *Metagovea* species, the four *Neogovea* species and ? Gen. *enigmaticus*. Furthermore we provide collecting data for 37 undescribed species of south American Neogoveidae, including *Huitaca* (8 spp.), *Neogovea* (12 spp.) and *Metagovea* (17 spp.). Distributional data of the species of Neogoveidae add the first records for French Guiana, Peru, Suriname, Trinidad and Tobago, and Venezuela. Colombia shows the largest diversity of Cyphophthalmi among South American countries, perhaps due to the large amount of ecosystems found in this country, but this could also reflect sampling effort.

**Key words:** Neotropics, Colombia, Arachnida, biodiversity hotspot

### Introduction

Cyphophthalmi are often considered an obscure group of mite-like harvestmen found in litter from tropical to temperate forests of almost all continental landmasses. Because they evolved early in the history of terrestrial animals and because they are found on all major continental fragments except Antarctica, they have recently attracted the attention of biogeographers (e.g., Juberthie 1988; Boyer *et al.* 2005; Boyer and Giribet in press). In connection with this recent attention to their biogeography and phylogeny, taxonomic studies have flourished. As a consequence, 16 of the 142 species and subspecies described so far have been proposed since the turn of the century, after the most recent catalogue of Cyphophthalmi was published (Giribet 2000). These 16 new species represent more than 11% of the known species and many more await to be described. Of the six families currently recognized, all but one have received taxonomic attention during this period of time. These include the description of one ogoveid with a revision of the family (Giribet and Prieto 2003), as well as the descriptions of several pettalids (Juberthie 2000; Boyer and Giribet 2003; Giribet 2003; Sharma and Giribet 2006), sironids (Dunlop and Giribet 2003; de Bivort and Giribet 2004; Novak and Giribet 2006), troglisironids (Sharma and Giribet 2005), and stylocellids (Giribet 2002; Schwendinger *et al.* 2004; Schwendinger and Giribet 2005). However, since the description of the last species of Neogoveidae (see Legg 1990) no taxonomic treatment has been provided for this family. In the particular case of the clade of neogoveids found in South America, the last species was described in 1980 (Goodnight and Goodnight 1980), and the last compre-

hensive studies of the group date back to the late 70s (Shear 1977; 1979).

South American neogoveids are currently classified into three genera, *Neogovea* Hinton, 1938 (4 spp.), *Metagovea* Rosas Costa, 1980 (3 spp.), and *Huitaca* Shear, 1979, the latter being monotypic. Another species named ? Gen. *enigmaticus* Martens, 1969 cannot be assigned to any described genera because no males are known. This adds up to a total of nine species (Giribet 2000; 2007)—certainly a small number of species for the otherwise megadiverse Neotropics. The current concept of Neogoveidae Shear, 1980 includes *Huitaca*, which was transferred from Ogoveidae (see Giribet and Prieto 2003). It also includes the North American *Metasiro americanus* (Davis, 1933), transferred from Sironidae (see Giribet 2007), but excludes the Mexican troglobitic '*Neogovea*' *mexasca* Shear, 1977 (see an updated catalogue of Cyphophthalmi at <http://collections.oeb.harvard.edu/Invertebrate/Cyphophthalmi/species.cfm>).

During the course of an ongoing revision of all available Cyphophthalmi we were able to examine a large collection of South American neogoveids from museum material as well as from recent collections in Colombia. Likewise we have revised the type material of all but one species of American neogoveids. The whereabouts of the type material of *Metagovea disparunguis* Rosas Costa, 1950 is unknown despite multiple inquiries to Argentinean institutions and colleagues. The new collections include material obtained by the authors during a series of field trips to three regions of Colombia in October–November 2004. But most importantly, they include a large collection of Cyphophthalmi assembled by M. Sharkey as a result of a large survey of the arthropod fauna of Colombia. In total, we have examined 397 specimens of South American neogoveids, including eight of the nine described species and an additional 37 undescribed species, for a total of 59 localities. Clearly, the formal description and proper documentation of all the new species will take several years to complete. Thus, we find it useful to make available basic collection information, along with images of types for all the South American neogoveids with the exception of *M. disparunguis*. This information, accompanied by a distribution map of all described and undescribed species, should serve to provide a broader view of the ubiquity of this understudied family of opilionids. It should, hopefully, also contribute towards stimulating taxonomic research on cyphophthalmids in the Neotropics.

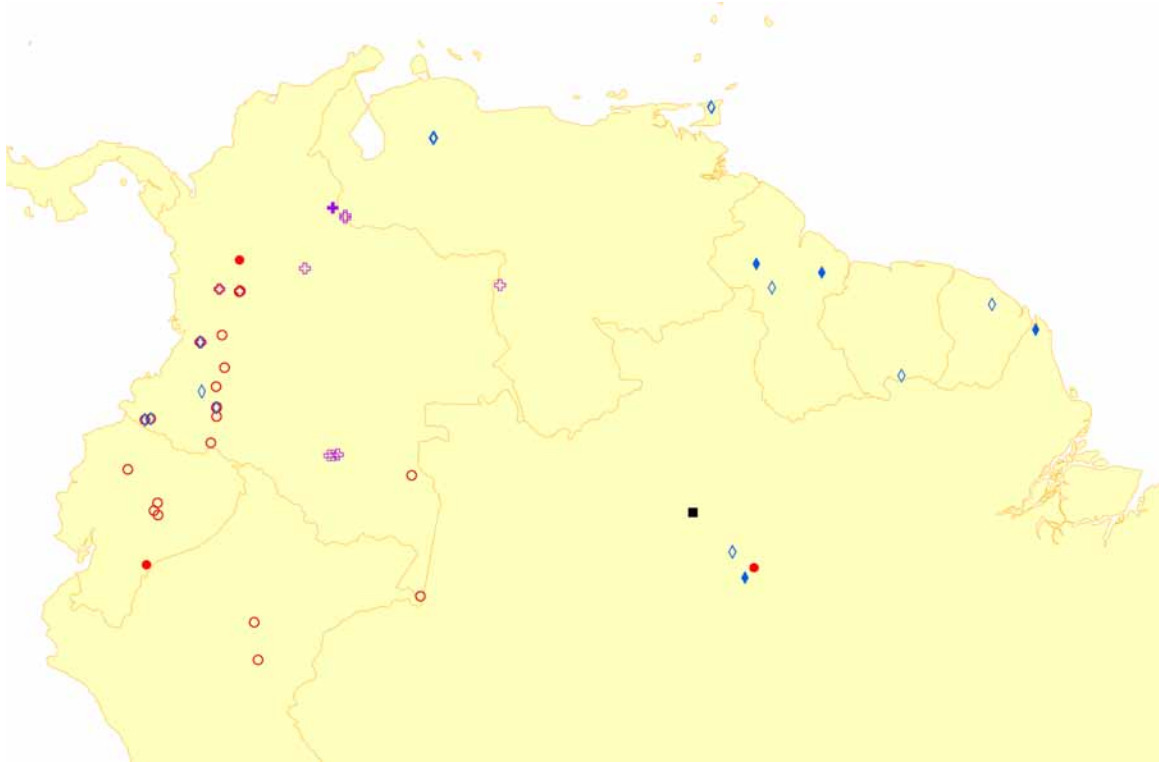
## Methods

Abbreviations for repository institutions:

AMNH	American Museum of Natural History, New York, NY, USA
BMNH	The Natural History Museum, London, United Kingdom
CAS	California Academy of Sciences, San Francisco, CA, USA
FMNH and FM (HD)	Field Museum of Natural History, Chicago, IL, USA
ICN-MHN	Instituto de Ciencias Naturales-Museo de Historia Natural, Universidad Nacional de Colombia, Bogotá, Colombia
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, MA, USA
MHNG	Muséum d'histoire naturelle, Geneva, Switzerland
MZUSP	Museu de Zoologia da Universidade de São Paulo, São Paulo, Brazil
SMF	Senckenberg Museum, Frankfurt am Main, Frankfurt, Germany

When available, one male and one female specimen of each species were photographed using a JVC KY-F70B digital camera mounted on a Leica MZ 12.5 stereomicroscope. A series of images (about 10) were taken at different focal planes and assembled with the dedicated software package Auto-Montage Pro Version 5.00.0271 (Syncroscopy, Frederick, MD, USA). Each specimen was photographed in dorsal, lateral and ventral views, and when available, the holotype was always photographed.

Locality records were compiled for all specimens, although some degree of uncertainty exists for old collections. The provenance of the material included in our analyses is shown in Figure 1, generated with the GIS software ArcMap 9.1 (ESRI Inc. 2005).



**FIGURE 1.** Distribution of the cyphophthalmid family Neogoveidae in South America. Locality data were generated with the GIS software ArcMap 9.1 (ESRI Inc. 2005). Colors and forms reflect current genera: Purple cross for *Huitaca*, red circle for *Metagovea*, blue diamond for *Neogovea*, black square for ? Genus *enigmaticus*. Solid symbols represent described species, empty symbols represent undescribed species.

## Taxonomy

### Order Opiliones Sundevall, 1833

#### Suborder Cyphophthalmi Simon, 1879

#### Neogoveidae Shear, 1980

**Type genus.** *Neogovea* Hinton, 1938.

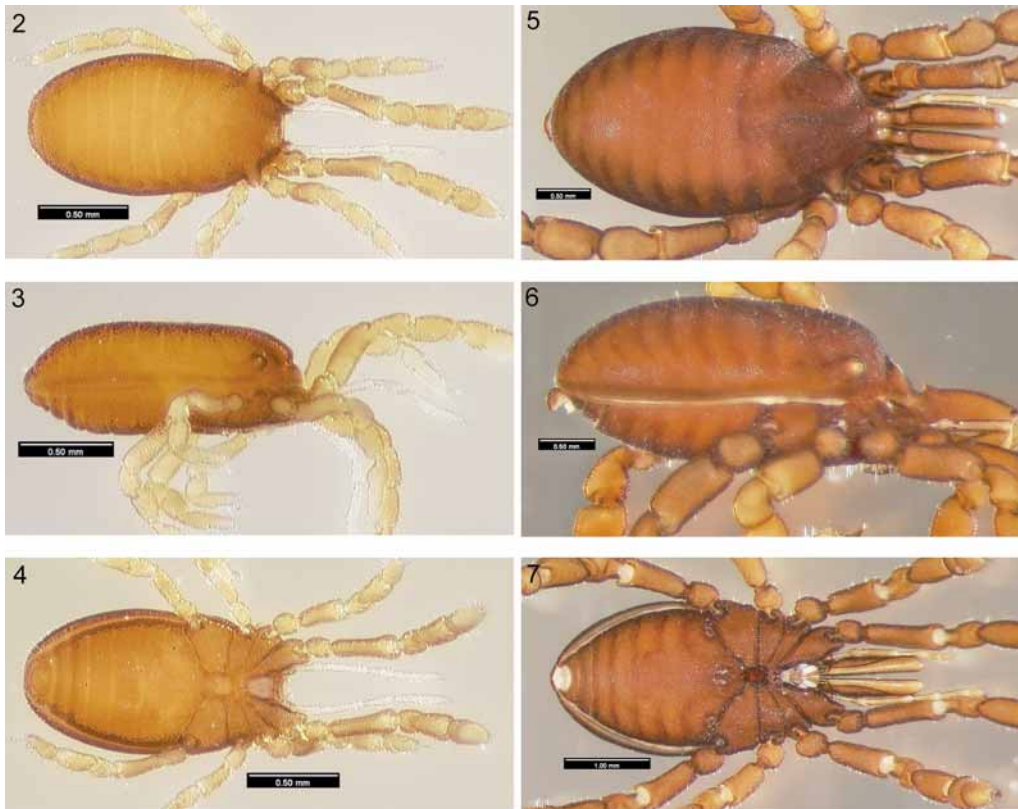
? **Gen. *enigmaticus* Martens, 1969** (Figs 2–4)

? *Gen. enigmaticus* Martens 1969: 116–118, figs 35–41.

**Types.** HOLOTYPE (Figs 2–4): Female (SMF 23965, slide SFM 23965) from Tauraí, Rio Jufari, Parque Nacional do Rio Branco, between the States of Amazonas and Roraima (Brazil). PARATYPES: Female and juvenile (SMF), same locality as for holotype.

#### *Huitaca* Shear, 1979

**Type species.** *Huitaca ventralis* Shear, 1979.



**FIGURES 2–7.** ? Gen. *enigmaticus* Martens, 1969, female holotype (SMF 23965) (2–4). *Huitaca ventralis*, male holotype (MCZ 14835) (5–7). 2, 5 dorsal view; 3, 6 lateral view; 4, 7 ventral view.

***Huitaca ventralis* Shear, 1979** (Figs 5–7)

*Huitaca ventralis* Shear, 1979: 240–242, figs 1–10.

**Types.** HOLOTYPE (Figs 5–7): Male (MCZ 14835) from 30 km south of Chinacota, 320 m, Departamento de Norte de Santander (Colombia), 14 May 1975. PARATYPES: One male (mounted on SEM stub; illustrated in de Bivort & Giribet 2004) and one juvenile (MCZ 30323), same collecting data as for holotype.

***Huitaca* sp. 1**

**Material examined.** Two males and two females (MCZ DNA101683) from Alto Bitaco (3°33'30"N 76°34'58"W), 2030 m, Finca Monte Bello, Municipio La Cumbre, Corregimiento Bitaco, Vereda Chicoral, Valle del Cauca (Colombia), 31 July 2003, I. Quintero leg.; two males and one female (MCZ DNA101684) from Finca Monte Bello (3°34'08"N 76°35'19"W), Municipio La Cumbre, Corregimiento Bitaco, Vereda Chicoral, Valle del Cauca (Colombia), 25 July 2003, I. Quintero and E. González leg.

***Huitaca* sp. 2**

**Material examined.** Nine males, six females and five juveniles (MCZ DNA101407) near road from Arcabuco to Moniquira (5°46'46"N 73°27'13"W), 2559 m, Departamento de Boyacá (Colombia), 30 October 2004, L. Benavides and G. Giribet leg.

### *Huitaca* sp. 3

**Material examined.** Eight males and three females (MCZ DNA101681) from Vereda El Paraíso (5°05'58.4"N 75°24'21.4"W), 3055 m, Manizales, Caldas (Colombia), 6 February 2004, L. Franco leg.

### *Huitaca* sp. 4

**Material examined.** Male (MCZ DNA101663) from Río Saramano (0°10'55"N 72°36'31"W), 300 m, Parque Nacional Natural Chiribiquete, Solano, Caqueta (Colombia), 12 April 2000, E. González leg.; female (MCZ DNA101662) from Río Saramano (0°10'47"N 72°37'24"W), 300 m, Parque Nacional Natural Chiribiquete, Solano, Caqueta (Colombia), 12 April 2000, E. González leg.; eight males and ten females (MCZ DNA101664, DNA101665, DNA101666) from Río Cuñaré-Amú (0°12'43"N 72°28'3"W), 300 m, Parque Nacional Natural Chiribiquete, Solano, Caqueta (Colombia), 25 November 2000, E. González & M. Ospina leg.

### *Huitaca* sp. 5

**Material examined.** 16 males and five females (MCZ DNA101671, DNA101673, DNA101675) from Alto de La Herrera (7°25'N 72°26'W), 1000 m, Vereda El Diamante, Parque Nacional Natural Tamá, Departamento de Norte de Santander (Colombia), 30 September 1999, E. González leg.; eight males and five females (MCZ DNA101672) from Sendero Binacional (7°25'N 72°26'W), 2470 m, Parque Nacional Natural Tamá, Departamento de Norte de Santander (Colombia), 1 September 1999, A. Cortes leg.

### *Huitaca* sp. 6

**Material examined.** Eight males and 11 females (MCZ DNA101674), from Camino Real (7°25'N 72°26'W), 2500 m, Parque Nacional Natural Tamá, Departamento de Norte de Santander (Colombia), 30 June 1999 A. Cortes leg.

### *Huitaca* sp. 7

**Material examined.** Juvenile (MCZ DNA100869) from Tobogán de La Selva, 40 km S–SE of Puerto Ayacucho, Estado del Amazonas (Venezuela), December 2002, A. Pérez González & A. Giupponi leg.

### *Huitaca* sp. 8

**Material examined.** 16 males and 17 females (MCZ DNA102150) from Parque Nacional Natural Tatamá (5°09'29"N 76°01'00"W), 2300 m, La Cumbre, Apia, Departamento de Risaralda (Colombia), 26–28 August 2004, A. Pulido & E. González leg.

### *Metagovea* Rosas Costa, 1950

**Type species.** *Metagovea disparunguis* Rosas Costa, 1950.

### *Metagovea disparunguis* Rosas Costa, 1950

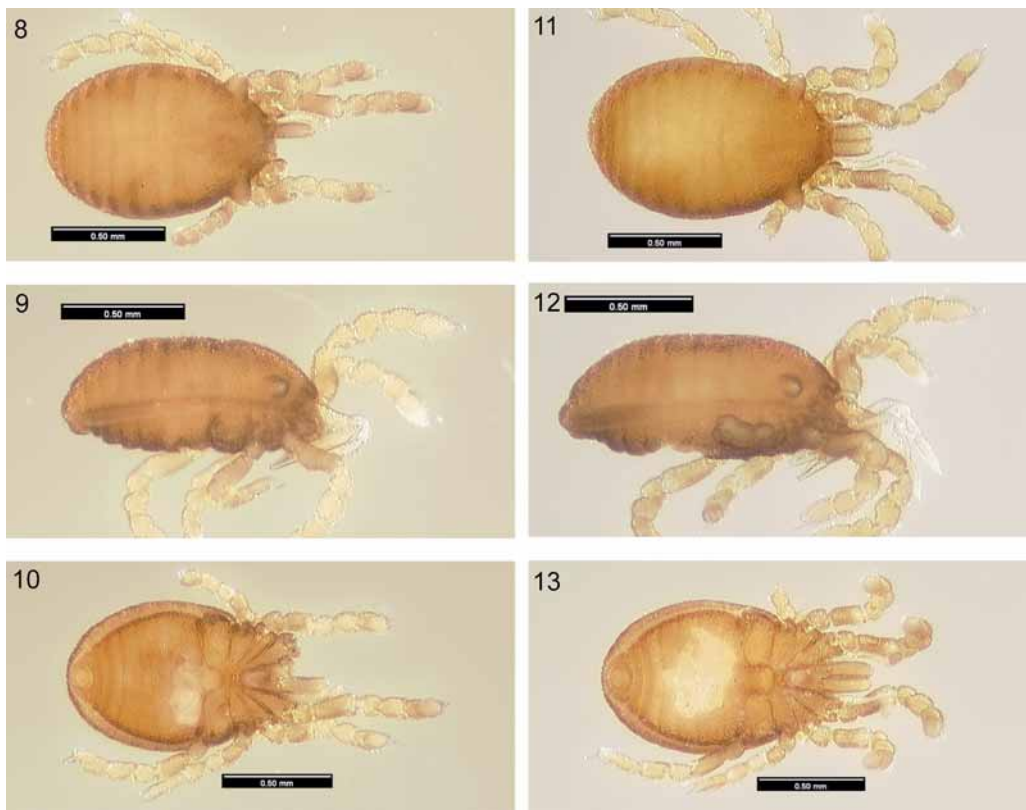
*Metagovea disparunguis* Rosas Costa, 1950: 131–136, figs 1–17.

**Types.** HOLOTYPE: Male (in Rosas Costa collection) from Rionegro, Departamento de Antioquia (Colombia). Whereabouts unknown<sup>1</sup>.

***Metagovea oviformis* Martens, 1969 (Figs 8–13)**

*Metagovea oviformis* Martens, 1969: 114–116, figs 21–34.

**Types.** HOLOTYPE (Figs 8–10): Male (SMF 23959, slides 23959 a/b) from Reserva Ducke, Manaus, State of Amazonas (Brazil), L. Beck leg. PARATYPES: Female (SFM 23960 [Figs 11–13]; slides 23960 a/b) and two juveniles (SFM 23961–2), same locality as for holotype.



**FIGURES 8–13.** *Metagovea oviformis* Martens, 1969, male holotype (SFM 23959) (8–10), female paratype (SFM 23960) (11–13). 8, 11 dorsal view; 9, 12 lateral view; 10, 13 ventral view.

***Metagovea philipi* Goodnight and Goodnight, 1980 (Figs 14–19)**

*Metagovea philipi* Goodnight and Goodnight, 1980: 130–131, figs 1–17.

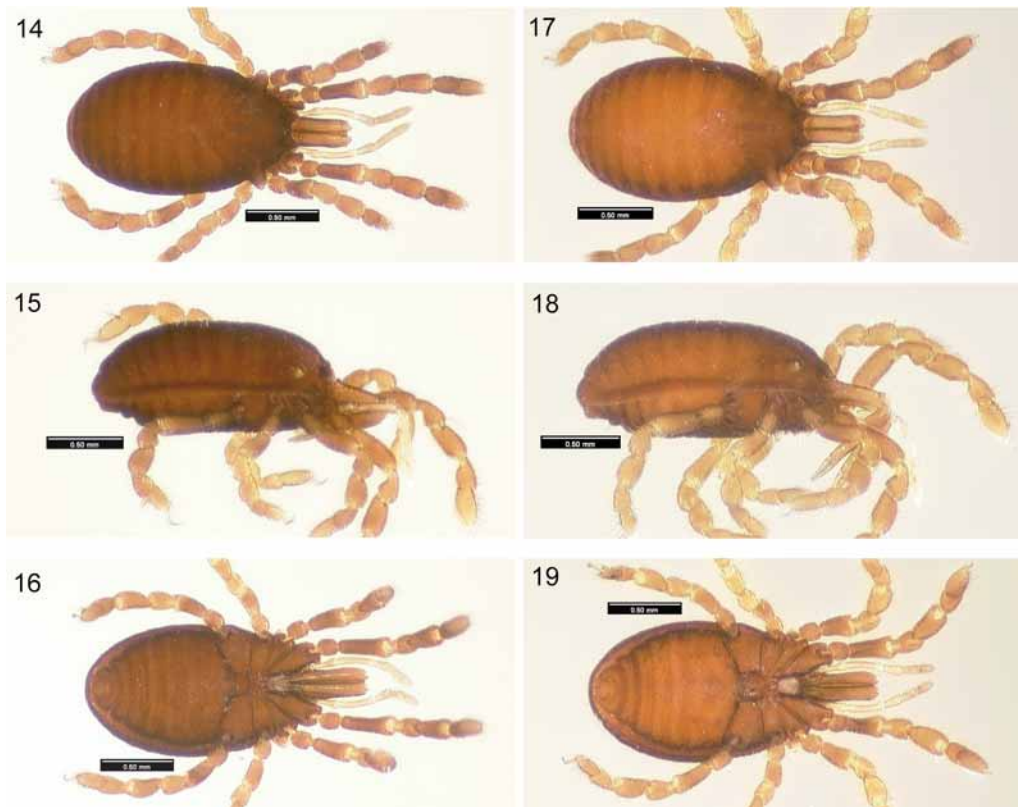
*Metagovea philipi*: Rambla and Juberthie, 1994: 217.

**Types.** HOLOTYPE (Figs 14–16): Male (AMNH) from Los Taxos Cave (3°6'S, 78°12'W), Morona Santiago Province (Ecuador), N.P. Ashmole. PARATYPES: Eight males (including one mounted on SEM stub, illustrated in de Bivort and Giribet 2004), five females (one illustrated in Figs 17–19) and two juveniles (AMNH). Several paratype specimens from the same locality as for the holotype are deposited at the University of Edinburgh, but we have not examined this material.

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1. We have been unable to locate the Rosas Costa collection despite contacting the curators of major Argentinean natural history museums.





**FIGURES 14–19.** *Metagovea philipi* Goodnight & Goodnight, 1980, male holotype (AMNH) (14–16), female paratype (AMNH) (17–19). 14, 17 dorsal view; 15, 18 lateral view; 16, 19 ventral view.

***Metagovea* sp. 1**

**Material examined.** Male (CAS) from Río Apapóris and Pirá (0°25'S 70°15'W), Departamento del Amazonas (Colombia), 7–16 February 1989, V. Roth and B. Roth leg.

***Metagovea* sp. 2**

**Material examined.** Four males and one female (MCZ DNA101680) from Finca La Navarra (5°04'39.7"N 75°25'14.8"W), 3100 m, Vereda El Desquite, Manizales, Departamento de Caldas (Colombia), 20 February 2004, I. Franco leg.; three males and one female (MCZ DNA101682) from Vereda El Paraíso (5°05'43.5"N 75°23'26.7"W), 3170 m, Manizales, Departamento de Caldas (Colombia), 4 March 2004, I. Franco leg.

***Metagovea* sp. 3**

**Material examined.** Female (MCZ DNA101661) from Vereda la Esmeralda (1°20'55"N 76°06'11"W), 1000 m, Alto del Río Yurayacu, San José de Fagua, Departamento de Caquetá (Colombia), 7 November 2000, E. González leg.

***Metagovea* sp. 4**

**Material examined.** Male (MCZ) from Vereda El Janeiro, 1900 m, Buga, Departamento del Valle del Cauca (Colombia), June 1989, E. Flórez leg.; two males and seven females (ICN-MHN), same collecting data.

### *Metagovea* sp. 5

**Material examined.** Three males and two females (MCZ DNA101657, DNA101659, DNA101660) from Cabaña Cedros (1°37'N 76°06'W), 1950 m, Parque Nacional Natural Cueva de Los Guacharos, Departamento del Huila (Colombia), March 2002, J. Urbano leg.; female (MCZ DNA101658) from Alto El Mirador (1°38'N 76°06'W), 1980 m, Parque Nacional Natural Cueva de Los Guacharos, Departamento del Huila (Colombia), August 2002, J. Fonseca leg.; seven males and five females (MCZ DNA101669) from camino al pesebre, sector Cedros (1°36'59"N 76°6'15"W), 2100 m, Parque Nacional Natural Cueva de Los Guacharos, Departamento del Huila (Colombia), November 2001, M. Ospina leg.

### *Metagovea* sp. 6

**Material examined.** Five males and three females (MCZ DNA101678, DNA101679) from Territorio Kofan (0°30'N 77°13'W), 700, 1000, 1430 m, Departamento de Nariño (Colombia), 24 September 1998, E. González leg.

### *Metagovea* sp. 7

**Material examined.** Five males, three females and three juveniles (MCZ DNA101408) from track to Calderón (4°2'41"S 69°59'23"W), 87 m, off km 22 N of Leticia, Departamento del Amazonas (Colombia), 6 November 2004, L. Benavides, G. Giribet and R. Mesa leg.

### *Metagovea* sp. 8

**Material examined.** Three females (MCZ) from Finca Heremberg, 2300 m, 12 km West of Belen, Departamento del Huila (Colombia), 12 February 1978, In nest of *Pachycondila impressa* in rot. log. pasture, Kluger and Hann leg.

### *Metagovea* sp. 9

**Material examined.** Nine males and four females (MCZ DNA101410) from Reserva Natural Río Ñambi (1°17'6"N 78°4'25"W), 1448 m, Municipio de Barbacoas, Corregimiento de Altaquer, Nariño (Colombia), 10–11 November 2004, L. Benavides and G. Giribet leg.; three males and two females (MCZ DNA101411) from Reserva Natural Río Ñambi (1°17'10"N 78°4'25"W), 1414 m, 10–11 November 2004, L. Benavides and G. Giribet leg.; one female (MCZ DNA101412) from Reserva Natural Río Ñambi (1°17'11"N 78°4'27"W), 1406 m, 10–11 November 2004, L. Benavides and G. Giribet leg.

### *Metagovea* sp. 10

**Material examined.** Eleven males and four females (FM (HD): 76–124, 76–125, 76–126, 76–127) from 20 km S of Tena, 600 m, Napo Province (Ecuador), 11 July 1976, S. Peck leg.; three males, four females and three juveniles (FM (HD) 76–128) from 25 km N Puyo, 1000 m, Pastaza Province (Ecuador), 13 July 1976, S. Peck leg.; two females (FM (HD) 76–129) from 22 km SE Puyo, 900 m, Pastaza Province (Ecuador), 14 July 1976, S. Peck leg.



### ***Metagovea* sp. 11**

**Material examined.** Male and female (MCZ DNA101667, DNA101668) from Finca Andalucía (2°47'51"N 7°51'18"W), 1800–2000m, Alto del Río Pato, Parque Nacional Natural Picachos, Inspección de Policía Guayabal, San Vicente del Caguán, Departamento de Caquetá (Colombia), 25–29 November 1997, E. González leg.

### ***Metagovea* sp. 12**

**Material examined.** Two males and one female (FM(HD) 75–297) from Chiriboga road, 1400–1768 m, 20–30 km NE Alluquirin, Pichincha (Ecuador), 19 June 1975, S. Peck leg.

### ***Metagovea* sp. 13**

**Material examined.** Five males and two females (MCZ DNA101639, DNA101646, DNA101647, DNA101648, DNA101654) from Reserva Natural La Planada (1°15'N 78°15'W), 1850 m, Departamento de Nariño (Colombia), G. Oliva leg.

### ***Metagovea* sp. 14**

**Material examined.** Male (MCZ DNA101677) from Territorio Kofan (0°30'N 77°13'W), 700 m, Departamento de Nariño (Colombia), 24 September 1998, E. González leg.

### ***Metagovea* sp. 15**

**Material examined.** Male and female (MCZ DNA101685) from Finca Monte Bello (3°34'08"N 76°35'19"W), Alto Bitaco, Vereda Chicoral, Corregimiento Bitaco, Municipio La Cumbre, Departamento de Valle del Cauca (Colombia), 25 July 2003, I. Quintero and E. González leg.

### ***Metagovea* sp. 16**

**Material examined.** Female (MHNG) from Río Yanayacu, Peruvian Amazon (Peru), 21 October 1980, C. Vaucher leg.

### ***Metagovea* sp. 17**

**Material examined.** Male, female and two juveniles (MCZ DNA102151) from Parque Nacional Natural Tatamá (5°09'29"N 76°01'00"W), 2300 m, La Cumbre, Apia, Departamento de Risaralda (Colombia), 26–28 August 2004, A. Pulido & E. González leg.

### ***Neogovea* Hinton, 1938**

*Siro* Latreille, 1796: Davis, 1937: 133 (partim).

*Neogovea* Hinton, 1938: 333–334 (type species *Neogovea immsi* Hinton, 1938); Hoffman, 1963: 137; Shear, 1977: 166–168; Shear, 1980: 14–15.

*Sirula* Goodnight and Goodnight, 1942: 1 (type species *Siro katarbo* Davis, 1937). Synonymized by Shear (1977: 166).

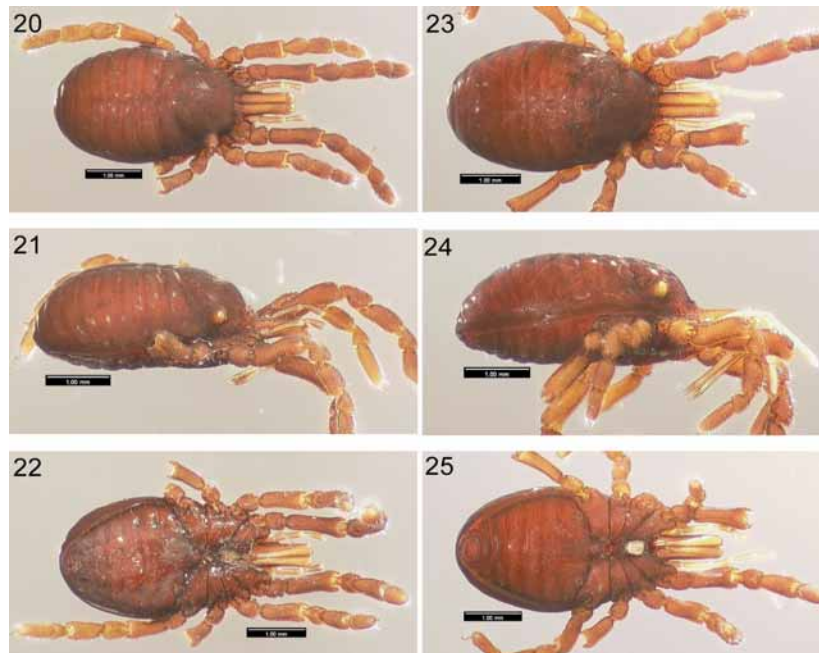
*Brasilogovea* Martens, 1969: 112 (type species *Brasilogovea microphaga* Martens, 1969). Synonymized by Shear (1980: 15).

### ***Neogovea immsi* Hinton, 1938 (Figs 20–25)**

*Neogovea immsi* Hinton, 1938: 334–338, figs 1–16.

*Neogovea immsi*: Hoffman, 1963: 137; Martens, 1969: 110–111, figs 1–8; Shear, 1977: 168; Martens, 1986: figs 12d–f.

**Types.** HOLOTYPE (Figs 20–22): Male (BMNH 1938.4.26.1) from Punta dos Indios (4°03'N 51°37'W), Amapá (Brasil), 6–9 October 1937, H. E. Hinton leg. PARATYPES: Female (BMNH 1938.4.26.2 [Figs 23–25]); one male and three females (BMNH 1941.1.9.1–4), same collecting data as for holotype.

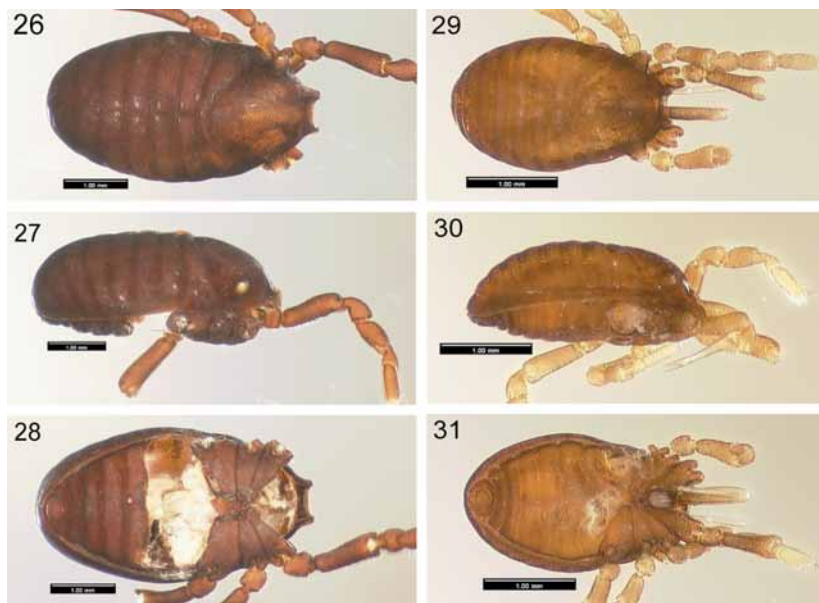


**FIGURES 20–25.** *Neogovea immsi* Hinton, 1938, male holotype (BMNH 1938.4.26.1) (20–22), female paratype (BMNH 1938.4.26.2) (23–25). 20, 23 dorsal view; 21, 24 lateral view; 22, 25 ventral view.

***Neogovea kamakusa* Shear, 1977 (Figs 26–28)**

*Sirula katarbo* Davies, 1937: Goodnight and Goodnight, 1942: 1 (partim).  
*Neogovea kamakusa* Shear, 1977: 171–172; Shear, 1980: 10–15, figs 21–25.

**Types.** HOLOTYPE (Figs 26–28): Male (AMNH) from Kamakusa (5°55'N 59°55'W), Essequibo District (Guyana), 1 January 1923, H. Hang and G. laVarre leg.



**FIGURES 26–31.** *Neogovea kamakusa* Shear, 1977, male holotype (AMNH) (26–28). *Neogovea microphaga* (Martens, 1969), male holotype (SFM 23963) (29–31). 26, 29 dorsal view; 27, 30 lateral view; 28, 31 ventral view.

***Neogovea kartabo* (Davis, 1937) (Figs 32–37)**

*Siro kartabo* Davis 1937: 133–134, Plate I, figs 1–12.

*Sirula kartabo*: Goodnight and Goodnight, 1942: 1 (partim); Rosas Costa, 1950: 147.

*Neogovea kartabo*: Hoffman, 1963: 137; Shear, 1977: 168–171, figs 1–9.

**Types.** HOLOTYPE (Figs 32–34): Male (AMNH) from Kartabo, Berbice District (Guyana), A. E. Miller leg.

PARATYPES: Male and female (Figs 35–37) (AMNH), same locality as for holotype.

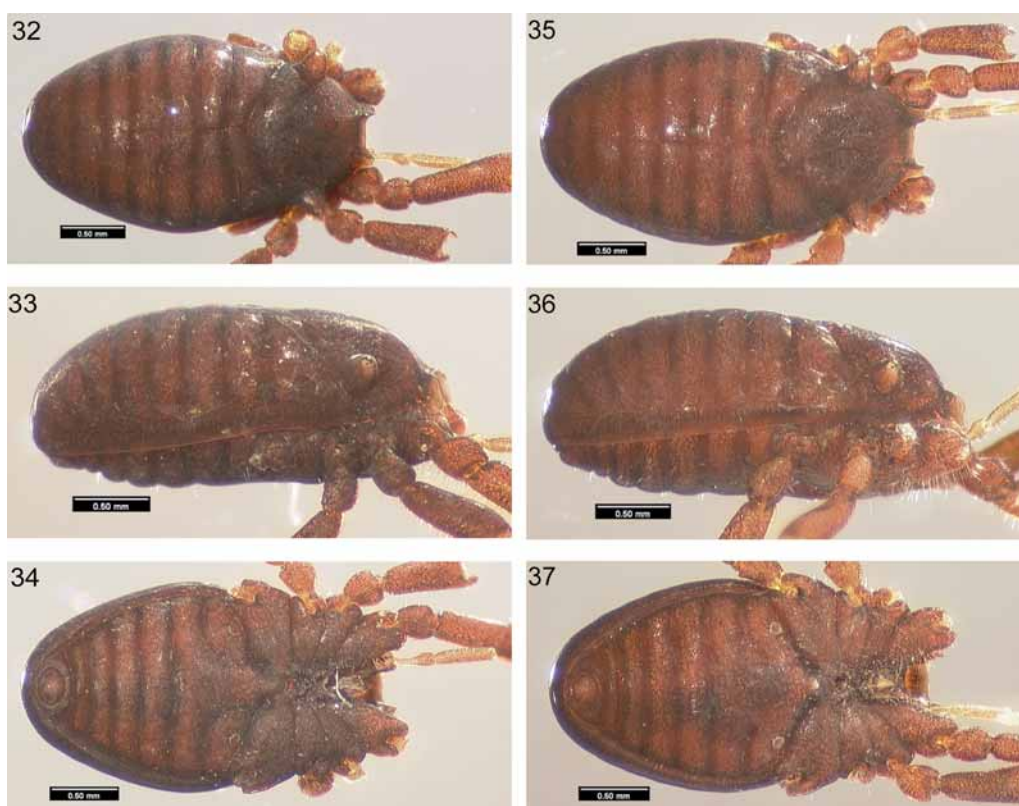
***Neogovea microphaga* (Martens, 1969) (Figs 29–31)**

*Brasilogovea microphaga* Martens, 1969: 112–114, figs 9–20.

*Neogovea microphaga*: Shear, 1980: 15.

**Types.** HOLOTYPE (Figs 29–31): Male (SMF 23963, slide SMF 23963) from Lago di Janauacá, ca. 50 km

SW of Manaus, State of Amazonas (Brazil), 5 March 1966, L. Beck leg. PARATYPE: juvenile (SMF 23964), same locality as for holotype.



**FIGURES 32–37.** *Neogovea kartabo* (Davis, 1937), male holotype (AMNH) (32–34), female paratype (AMNH) (35–37). 32, 35 dorsal view; 33, 36 lateral view; 34, 37 ventral view.

***Neogovea* sp. 1**

**Material examined.** Male, female and juvenile (MHNG) from Ile de Cayenne (French Guiana), 3 September 1976, D. Koop leg.

***Neogovea* sp. 2**

**Material examined.** Three males and one female (MCZ DNA101670) from Camino al Pesebre (1°36'59"N 76°6'15"W), 2100 m, sector Cedros, Parque Nacional Natural Cueva de Los Guacharos, Departamento del Huila (Colombia), M. Ospina leg.

*Neogovea* sp. 3

**Material examined.** Three males, four females and one juvenile (MCZ DNA101409) from Reserva Natural Río Ñambi (1°17'6"N 78°4'25"W), 1448 m, Municipio de Barbacoas, Corregimiento de Altaquer, Nariño (Colombia), 10–11 November 2004, L. Benavides and G. Giribet leg.

*Neogovea* sp. 4

**Material examined.** 14 males and 17 females (MCZ DNA101642–DNA101645, DNA101649–DNA101653, DNA101656) from Reserva Natural La Planada (1°15'N 78°15'W), 1850–1930 m, Departamento de Nariño (Colombia), December 2000 to December 2001, G. Oliva leg.

*Neogovea* sp. 5

**Material examined.** Female (MCZ) from near cabaña San Nicolás, 2800 m, Parque Nacional Natural Puracé, Departamento del Cauca (Colombia), 15 October 1992, E. Flórez leg.

*Neogovea* sp. 6

**Material examined.** Male and female (MNHN 2960) from Pará (Suriname), 17 March 1909, F. Geay Expedition leg.

*Neogovea* sp. 7

**Material examined.** Female (AMNH) from Las Lapas road (off Blanchisseuse Road), Arima, St. George Co., Trinidad (Trinidad and Tobago), 23 July 1979, L. N. Sorkin leg.

*Neogovea* sp. 8

**Material examined.** Female (MCZ) from 10 km N Arima, tower between 9 and 10 mile posts of Blanchisseuse Road Telecommunications System of Trinidad and Tobago (TSTT), Trinidad (Trinidad and Tobago), 13–21 September 1996, R. G. Holmberg leg.

*Neogovea* sp. 9

**Material examined.** Juvenile (AMNH) from Tukeit (5 12'0"N 59 27'0"W), Cuyuni-Mazaruni (Guiana), 21 July 1911, F. E. Lutz leg.

*Neogovea* sp. 10

**Material examined.** Five males, one female and 12 juveniles (MCUSP) from Turuma Mirim, State of Amazonas, Brazil, 26 June 1982, no collector data.

*Neogovea* sp. 11

**Material examined.** Male (MCZ DNA101686) from Finca Monte Bello (3°34'08"N 76°35'19"W), Alto Bitaco, Vereda Chicoral, Corregimiento Bitaco, Municipio La Cumbre, Departamento de Valle del Cauca (Colombia), 25 July 2003, I. Quintero leg.

## *Neogovea* sp. 12

**Material examined.** 17 females (AMNH) from Parque Nacional Yacambú (9°42'22"N 69°34'42"W), 1500–1800 m, 10.4 to 14.4 km SE Sanare, Lara, Cordillera de Mérida (Venezuela), May 1998, R. Anderson leg.

## Discussion

Despite having been neglected for quite some time, the opiliofauna of the family Neogoveidae constitutes an important component of the Neotropical biodiversity. Although only nine species have been described to date, the group may be at least one order of magnitude more diverse than this number suggests, as virtually every locality sampled in Colombia has yielded one or more species and most of the Neotropics remains unstudied for small soil arthropods. This study opens a first window into Neotropical neogoveid diversity, expanding the known distribution range considerably, including the first representatives for French Guiana, Peru, Suriname, Trinidad and Tobago and Venezuela (Fig. 1).

The number of species available to us and tentatively assigned to each of the three valid genera of Neotropical Neogoveidae is much larger than the currently described ones. *Huitaca*, monotypic until now, has eight other species broadly distributed in Colombia from about 300 m to more than 3000 m altitude along the Andes (Fig. 1). Likewise, *Neogovea* increases its diversity from four described species to twelve, including forms from Trinidad and possibly also Martens' ? Gen. *enigmaticus*. Some of the *Neogovea* species are found in the lowlands of the Amazonas and Orinoco basins, but others also occur at higher elevation in the Colombian Andes and Venezuela (Fig. 1). Detailed studies of the *Neogovea* species may reveal a greater generic diversity than is currently understood, especially after careful examination of genitalia and molecular data (authors' work in progress). Finally, *Metagovea* is the most diverse genus with three described and 17 undescribed species living mostly along the Andes, plus a few found in the Amazonas basin (Fig. 1), including an altitudinal range of over 3000 m. As in *Neogovea*, this genus may actually include more diversity than is currently recognized and further studies may resurrect the genus *Brasilogovea* (currently in the synonymy of *Neogovea*).

Numerous Neogoveidae (28 spp.) concentrate in Colombia, which may reflect the enormous habitat diversity of this country (Myers 2005) on the one hand and the sampling effort on the other. Indeed, Colombia's location and variety of ecosystems place it among the world's top five countries in terms of biodiversity. Despite a lag in biodiversity research and incomplete inventories of flora and fauna, it is currently accepted that Colombia ranks first in species of birds and amphibians, second in vascular plants, and third in mammals worldwide (Myers 2005).

From the data presented here there is no doubt that the Neotropics host a large amount of undescribed taxa, with about 400% of the cyphophthalmid fauna being undescribed. Large efforts, such as the broad survey facilitated by Michael Sharkey in Colombia, are excellent examples of how to approach fauna inventories in the megadiverse neotropical rainforests. Plenty of work is still to be done in cyphophthalmid research in South America, which together with other faunas in western equatorial Africa and Southeast Asia remain the three largest unknowns in terms of soil fauna.

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