

NEW RECORDS OF *GERAEOCORMOBIUS SYLVARUM* (ARACHNIDA, OPILIONES, GONYLEPTIDAE), WITH A REMARKABLE DISJUNCTION IN NORTHWESTERN ARGENTINA

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Abstract: Several new records of the harvestman *Geraecormobius sylvarum* Holmberg (Opiliones, Gonyleptidae, Gonyleptinae) from the Argentinean provinces of Misiones, Corrientes, Chaco and Tucumán, and the Brazilian states of Paraná, Santa Catarina and Rio Grande do Sul are provided. Most known localities spread over the Paranense Biogeographic Province, while captures in northwestern Argentina represent a 640 km disjunction with the species core area (northeastern Argentina - southeastern Brazil). Some nomenclatural comments and a brief discussion on the causes of the disjunction are also given.

Key words. Opiliones, Gonyleptidae, Gonyleptinae, Neotropics, Brazil, Argentina, new records.

Nuevos registros de *Geraecormobius sylvarum* (Opiliones, Gonyleptidae, Gonyleptinae) con una destacable disyunción en el noroeste de Argentina.

Resumen: Se presentan nuevos registros del opilión *Geraecormobius sylvarum* Holmberg (Opiliones, Gonyleptidae, Gonyleptinae) de las provincias argentinas de Misiones, Corrientes, Chaco y Tucumán, y los estados brasileños de Paraná, Santa Catarina y Rio Grande do Sul. La mayor parte de los registros conocidos se localizan en la Provincia Biogeográfica Paranense, en tanto las capturas en el Noroeste argentino representan una disyunción de 640 km entre estas poblaciones y el área principal de la especie (NE de Argentina – SE de Brasil). Se agregan algunos comentarios nomenclaturales y breves consideraciones sobre posibles causas de la disyunción.

Palabras clave. Opiliones, Gonyleptidae, Gonyleptinae, Neotrópico, Brasil, Argentina, nuevos registros

The first aim of this note is to provide 21 new records of *Geraecormobius sylvarum* Holmberg 1887 (Opiliones, Gonyleptidae, Gonyleptinae). This conspicuous gonyleptid has been reported from several localities in province of Misiones, and a few sites in the neighboring province of Corrientes, and in Paraguay (Ringuelet, 1959; Soares & Soares, 1985). Materials and synonymies accounted by Kury (2003) (and depurating some wrong citations, as indicated therein), provided additional records from the Brazilian states of Rio Grande do Sul, Santa Catarina and Paraná. New records, from Argentina and Brazil, almost match in number the localities so far reported in the literature, and include materials collected by the authors, by colleagues and specimens stored in the collections studied. While most new records appear to be consistent with the previous knowledge, we also detected *G. sylvarum* in a quite unexpected location, the montane rainforests in northwestern Argentina, representing a long distance disjunction for the species. In several cases, and to get an updated picture of the species range, previous records were taxonomically verified and reported localities accurately assessed. Some misidentifications were thereby identified, as stated in the synonymy below (which is just aimed as a complement of the full reference list given by Kury, 2003).

Abbreviations: CDA: Cátedra de Diversidad Animal I, Universidad Nacional de Córdoba; HEMS: Collection Helia Eller Monteiro Soares (currently stored at MNRJ); LEA: collection Luis E. Acosta; MNRJ: Museu Nacional, Rio de Janeiro.

Geraecormobius sylvarum Holmberg 1887

Figs. 1-3

Geraecormobius sylvarum Holmberg 1887: 211; Roewer 1923: 585.

Weyhia armata: Mello-Leitão 1937: 292 (misidentification).

Geraecormobius sylvarum: Kury 2003: 125, in part: NEC material from Florianópolis (complete synonymy).

Geraecormobius armatus: Kury 2003: 124 (in part.).

NOMENCLATURAL NOTE: The correct (original) spelling of the generic name is *Geraecormobius*. Nearly all subsequent authors employed the incorrect spelling "Geraecormobius", often mentioning also erroneously the specific name ("sylvarum", cf. Kury, 2003). The only author using the genus and species name with its original spelling was Roewer (1923: 585). The type locality of *G. sylvarum*, not properly interpreted by Kury (2003), comprises two localities in the province of Misiones: "Santa Ana (H.)", where Holmberg himself collected a single specimen (27°22'S 55°36'W), and "near Pirai Miní river" [Piray Miní], a material sampled by Queirel (mentioned as "Quesnel inv." on p. 212, but corrected in a footnote on p. 281). Considering that in those times the region was principally accessible by boat, the most probable coordinate for the latter locality should be situated near the mouth of the mentioned river (circa 26°22'S 54°40'W).

DISTRIBUTION: *Geraecormobius sylvarum* inhabits the southwestern edge of the genus range, which contains further 15 species in Brazil (Kury, 2003). The species range (Fig. 1) appears primarily related to subtropical forests of

the 'Paranense Biogeographical Province' (Cabrera & Willink, 1973), both to the so called 'deciduous mesophytic subtropical forests of eastern and southern Brazil', and to sectors of *Araucaria* forests (Hueck & Seibert, 1972). In a previous analysis of the Argentinean opiliofauna, this species was included within the opiliogeographical 'Mesopotamian area, Misiones sub-area' (Acosta, 2002), which roughly matches the Argentinean portion of the paranense forests. The mentioned areas correspond to the WWF Eco-regions NT0150 - Alto Paraná Atlantic forests, and NT0101 - *Araucaria* moist forests (World Wide Fund for Nature, 2007). In Brazil, the most divergent localities correspond to Cachoeirinha (old name for the railway station today called Arapotí), Guaraúna (type locality of *Anomaloleptes princeps* Piza, 1940, junior synonym of *G. sylvarum*), and Paranaíba (Soares & Soares, 1945; Kury, 2003; this paper), all three in the state of Paraná and fitting in the above mentioned ecoregions. A material from Itapiranga, state of Santa Catarina, cited by Mello-Leitão (1937) as *Weyhia armata* Roewer, 1913 (today under *Geraecormobius*), is determined to be a misidentification and hereby referred to *G. sylvarum*. In turn, the citation of *G. sylvarum* from Florianópolis, State of Santa Catarina (Kury, 2003) is here referred to *G. rohri* instead. Captures in Argentina outside (but close) the Misiones sub-area (provinces of Corrientes and Chaco) exceed the paranense forests into adjacent regions, seemingly associated to gallery forests and/or seasonal inundation sites (Hueck & Seibert, 1972; WWF Eco-regions: NT0708 - Humid Chaco and NT0909 - Southern Cone Mesopotamian savanna). Findings of *G. sylvarum* in montane forests in province of Tucumán, Argentina ('tucumano-boliviano' forests or 'yungas', Acosta, 2002; WWF Ecoregion NT0165 - Southern Andean Yungas) are therefore remarkable, since the yungas localities are separated by about 640 km from the nearest Mesopotamian records, with humid and sub-xeric Chaco in between (Fig. 1).

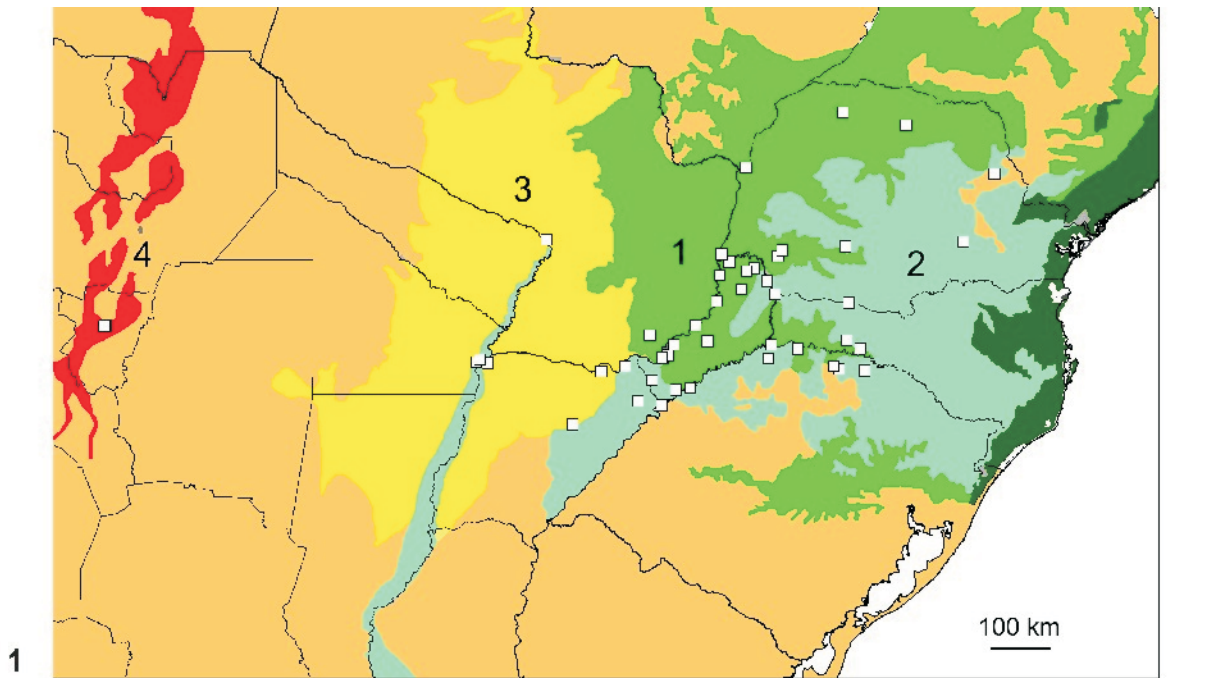
HABITAT: In Tucumán, populations of *G. sylvarum* were detected by the road ascending Cerro San Javier, between El Corte (around 500 m a.s.l.) and 'primera confitería' (ca. 700 m); additional specimens were also found close to a privet grove at 1250 m, between San Javier and Villa Nougés. All those sites evidence severe modification by humans, with the lowest captures corresponding to a suburban sector (El Corte is actually a western extension of the city of San Miguel de Tucumán). *Geraecormobius sylvarum* was collected both at the end of the southern summer (March) and in winter (August), though in the latter case temperatures were mild (sometimes above 25°C). In some cases, specimens shared their shelter (lower surface of fallen trunks, under stones or debris) with *Discocyrtus prospicius* (Holmberg, 1876) (Gonyleptidae, Pachylinae). Similarly to what was stressed for other findings of *D. prospicius* and *Discocyrtus dilatatus* Sørensen 1884 in the yungas, the alteration of the environment seems not to affect the apparently abundant populations of *G. sylvarum*, and specimens were detected even under masonry debris, among rubbish.

NEW RECORDS: ARGENTINA. *Province of Misiones*. Bernardo de Irigoyen, 27 Oct. 2006 (D. Martí), 1 male, 2 females (LEA); Urugua-í, Ruta 101, 20 Jan. 2001 (A. Ojanguren), 3 females (CDA 000.247); Arroyo Uruzú (Parque Provincial Urugua-í), 21 Jan. 2001 (A. Ojanguren), 2 females (CDA 000.249); Salto Encantado, 20 Jan. 2001 (A.

Ojanguren), 1 female (CDA 000.248); Campo San Juan, 37 km N Posadas (ruta 12), in rainforest, 21 Jan. 1991 (G. Flores), 2 males, 1 female (LEA 000.340). *Province of Corrientes*. Destacamento Garapé (Yaciretá), in rainforest, 18 Jan. 1992 (G. Flores), 5 males, 3 females (LEA 000.341); Isla de Monte, Las Marías, 19 Nov. 2000 (no coll.), 1 male, 1 female (LEA 000.339). *Province of Chaco* (first record). Río Tragadero (flood forest), May 2003 (M. Chatellán), 1 male (LEA 000.338), 10 km from Puerto Antequera to Isla del Cerrito, 24 Feb. 2005 (L. Acosta, G. Rubio, P. Olivero, M. García), 1 male (LEA). *Province of Tucumán* (first record). Road to Cerro San Javier, "primera confitería" (ca. 700 m), March 2002 (M. L. Juárez), 1 male, 2 females (LEA 000.336); same road, between El Corte and 'primera confitería' (ca. 500-700 m), 24 Aug. 2003 (L. Acosta, M.L. Juárez), 1 male, 3 juv. (LEA 000.335); 2 km from El Cristo to Villa Nougés, 16 Aug. 2005 (L. Acosta, M.L. Juárez), 3 males, 3 females (LEA 000.383). BRAZIL. *State of Paraná*. Parque Nacional de Ilha Grande, Feb. 2003 (L. M. Tiepolo), 1 male (MNRJ 17576); Paranaíba, Bosque Municipal, Apr. 2001 (R. Bérnils), 6 males, 7 females (MNRJ 04732); Caviúna (nowadays Rolândia), Fazenda Tocantins, Jan. 1947 (no coll.), 1 male 1 female (HEMS 0156); Capitão Leonidas Marques, left margin of Andrada river, Mata Sr Laurentino, 3-13 Apr. 2004 (A. Chagas Jr), 1 female (MNRJ 16220); forest near Capanema river, propr. Aryzone, 2004 (A. Chagas Jr), 3 males, 3 females (MNRJ 16222); Clevelândia, Fazenda Tunas, near Chopim river, Febr. 2001 (R. Bérnils), 1 male, 2 females (MNRJ 04734); Foz do Iguazu, 4-5 March 2002 (E. G. Vasconcelos), 3 males, 4 females (MNRJ 04810). *State of Santa Catarina*. Nova Teutônia, no date (F. Plaumann), 1 male, 5 females (MNRJ 04895); Itapiranga, no date, (P. Buck), 1 male (MNRJ 41948) [det. *Weyhia armata* by Mello-Leitão]. *State of Rio Grande do Sul*. Gaurama, 30 Oct. 1970 (M. Bruscht), 1 male, 1 female (MNRJ 17450).

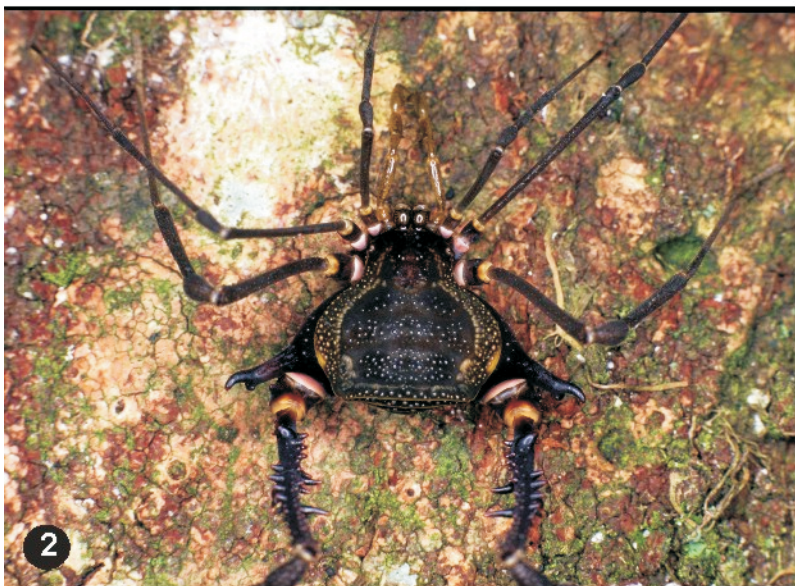
DISCUSSION: Both *G. sylvarum* and the mentioned *Discocyrtus* species were defined as 'Mesopotamian' (Acosta, 2002), considering on one hand their core area and, in the other, where their congeneric species are distributed. Their presence in the yungas might therefore be regarded as secondary (or marginal) to their main range. This fact alone would not be surprising without considering that between the yungas and the Mesopotamia a wide inhospitable area is interposed: the 'semiarid Chaco', a region with very poor representation of the Order Opiliones and very unlikely as suitable habitat for any harvestman common in humid forests (Acosta, 2002). Although, to some extent, the Mesopotamian vegetation shows an 'expansion' to the West, in the form of gallery forests along major rivers (Hueck & Seibert, 1972), this is not enough to ensure its continuity with the yungas forests, separated by no less than 450 km of xeric environments (Nores, 1992).

In the case of *D. prospicius* and *D. dilatatus*, the presumed yungas-Mesopotamia disjunction has been suggested to be a consequence of paleoclimatic cycles, with associated expansion/retraction events affecting the humid forests (Acosta, 1995, 2002). A hypothetical forest 'bridge' (as proposed by Nores, 1992 for birds) would have acted as corridor, enabling Mesopotamian harvestmen to expand their ranges up to the yungas, and leaving there isolated populations as climate turned rigorous again and forests retracted.



References for WWF Ecoregions 1 ■ : Alto Paraná Atlantic forests; 2 ■ : *Araucaria* moist forests; 3 ■ : Humid Chaco, including adjacent flooding areas in lighter grey; 4 ■ : Southern Andean Yungas. ■ indicates the Serra do Mar coastal forests.

Fig. 1. Known localities of *Geraecormobius sylvorum* Holmberg (white squares) in Argentina, Brazil and Paraguay, based on Ringuelet (1959), Kury (2003) and new records (this paper).



Figs. 2-3. Male (2) and female (3) of *Geraecormobius sylvorum*, from Foz do Iguazú (State of Paraná, Brazil); both pictures courtesy of Ricardo Pinto-da-Rocha.

For birds distribution, the mentioned 'paranense bridge' has deserved some criticism and alternative explanations were suggested, such as that ranges with disjoint appearance in Argentina may well be continuous across southern Bolivia or even central Brazil (Silva, 1994). As an additional alternative for the alleged 'paleobridge', the possibility that mesopotamian harvestmen were indeed introduced in the yungas cannot be discarded. The only harvestman known to be introduced in Argentina is the European sclerosomatid *Nelima doriae* (Canestrini, 1871) (Acosta & Cokendolpher, 1990), but no positive evidence on internal introductions among regions is so far available.

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