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REDESCRIPTION AND NEW COMBINATION FOR *EURYURUS FLAVOCARINATUS* DADAY, 1889, WITH A NEW NAME FOR THE HOMONYM *EURYURUS FLAVOCARINATUS* SILVESTRI, 1899 (DIPLOPODA, POLYDESMIDA, APHELIDESMIDAE)

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ABSTRACT

The Mexican millipede *Euryurus flavocarinatus* Daday, 1889, has remained as *incertae sedis* for over a century. Examination of the holotype shows that the species belongs to *Amplinus*, a genus of the large polydesmidan family Aphelidesmidae. Here, we present a full redescription of the holotype of *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.** On the other hand, *Euryurus flavocarinatus* Silvestri, 1899 (currently included in the genus *Pycnotropis*) is a junior primary homonym of *E. flavocarinatus* Daday, 1889 and, to solve this issue, the name *Pycnotropis silvestrii* Recuero & Aguado-Aranda **new name** is proposed to replace Silvestri's name.

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Keywords: *Amplinus*; *Pycnotropis*; taxonomy; nomenclature; homonymy; redescription.

RESUMEN

Redescripción y nueva combinación de *Euryurus flavocarinatus* Daday, 1889, y nuevo nombre para el homónimo *Euryurus flavocarinatus* Silvestri, 1899 (Diplopoda, Polydesmida, Aphelidesmidae)

El milpiés mexicano *Euryurus flavocarinatus* Daday, 1889, ha permanecido como *incertae sedis* por más de un siglo. El examen del holotipo demuestra que la especie pertenece al género *Amplinus* dentro de la amplia familia Aphelidesmidae, orden Polydesmida. En el presente trabajo presentamos una redescripción completa del holotipo de *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.** Por otro lado, *Euryurus flavocarinatus* Silvestri, 1899 (actualmente cosiderada dentro del género *Pycnotropis*) es un homónimo primario más reciente de *E. flavocarinatus* Daday, 1889, por lo que proponemos el nombre *Pycnotropis silvestrii* Recuero & Aguado-Aranda **nom. nov.** para sustituir el nombre de Silvestri y resolver la homonimia.

Palabras clave: *Amplinus*; *Pycnotropis*; taxonomia; nomenclatura; homonimia; redescripción.

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Introduction

The genus *Euryurus* Koch, 1847 was established to accommodate three species of Polydesmida of unknown geographic origin characterized by having a broad epiproct. Such a conspicuous feature seems to have been the source of a long history of taxonomic instability (Jorgensen, 2009, 2014). The three species

originally described by Koch (1847) in *Euryurus* (*E. maculatus* Koch, 1847, *E. margaritaceus* Koch, 1847 and *E. squamatus* Koch, 1847) actually appear to be unrelated and belong to different families (Hoffman, 1978; Jorgensen, 2014). Since then, about 30 other species, mostly from the Neotropical realm, have been described as *Euryurus*, either as a full genus or as a subgenus (see a detailed bibliographic review in Jorgensen, 2014), including taxa later reassigned to the families Aphelidesmidae Brölemann, 1916 and Platyrhacidae Pocock, 1895.

During the 19th and 20th centuries, new genera and subgenera were established to accommodate several of these broad-epiproct species (e.g., Humbert & Saussure, 1869; Pocock, 1909; Carl, 1914), and currently the name *Euryurus* is restricted to 8 species distributed exclusively in the eastern United States (Jorgensen, 2009). Its suprageneric classification has also changed recurrently, being considered either as part of a tribe or a subfamily in the large, inclusive family Platyrhacidae (Pocock, 1909; Brölemann, 1916; Hoffman, 1975), or as a full-rank family, Euryuridae Pocock, 1909 (Hoffman, 1954, 1998), or more recently, as part of the family Xystodesmidae Cook, 1895 (Shelley & Smith, 2018; Means *et al.*, 2021). Most species originally described in *Euryurus* are now reclassified in different genera.

According to Jorgensen (2014), of the multiple species once considered to be part of *Euryurus*, only two remain *incertae sedis*: *Euryurus pallipes* Koch, 1877 from Japan, and *E. flavocarinatus* Daday, 1889 from Mexico. Both species come from regions far from the known distribution of *Euryurus* and are most likely members of other genera.

Euryurus flavocarinatus was described from a single specimen collected in Mexico, without precise locality, by Janos Vadona (Daday, 1889). Unfortunately, ten years later Silvestri (1899) gave the exact same name to another species from Colombia, *Euryurus flavocarinatus* Silvestri, 1899. This case of primary homonymy was masked when Carl (1914) moved *Euryurus flavocarinatus* Silvestri into the newly created genus *Pycnotropis* Carl, 1914. However, probably as a consequence of this homonymy, it seems as if Daday's species had fallen into oblivion, and since its original description it has been incidentally mentioned only in just a few works (Attems, 1899; Korsós, 1983; Jorgensen, 2014). The holotype of *Euryurus flavocarinatus* Daday, a female specimen deposited in the Myriapod Collection at the Hungarian Natural History Museum, seems to have been revised at some point by R. L. Hoffman himself (E. A. Lazányi, pers. comm.), but to our knowledge he never published any observation of it, nor did he propose any new combination (e.g., Hoffman, 1978; 1999).

Here, we present a redescription of the holotype of *Euryurus flavocarinatus* Daday and propose a new combination by including it within the genus *Amplinus* Attems, 1898 of the family Aphelidesmidae. We also propose a new name for *Euryurus flavocarinatus* Silvestri, to resolve the primary homonymy of both names.

Material and methods

The redescription of *Euryurus flavocarinatus* Daday, 1889 presented here is based on the examination of the holotype, the only known individual of the species. Examination and pictures of the holotype were made using a Leica MZ16A stereo microscope with a Leica DFC550 camera. Pictures were processed with software LAS v4.3. Measurements were taken with a Mitutoyo dial caliper with a resolution of 0.02 mm.

Results

After the examination of the holotype of *Euryurus flavocarinatus* Daday, 1889 it is clear that the species does not belong to *Euryurus* (Xystodesmidae). Instead, it is a species of *Amplinus* (Aphelidesmidae), as explained in the following taxonomic section. According to the article 57.2 of the International Code of Zoological Nomenclature, *Euryurus flavocarinatus* Daday, 1889 and *Euryurus flavocarinatus* Silvestri, 1899 are primary homonyms and the junior homonym is invalid; following article 60.1 the junior homonym must be replaced by an available and valid synonym or by a new substitute name. As there are no available synonyms for *Euryurus flavocarinatus* Silvestri, 1899, we propose a new name in the corresponding part of the taxonomic section:

Class **Diplopoda** de Blainville in Gervais, 1844
Order **Polydesmida** Pocock, 1887
Suborder **Leptodesmidea** Brölemann, 1916
Family **Aphelidesmidae** Brölemann, 1916

Genus ***Amplinus*** Attems, 1898

Amplinus Attems, 1898: 264. Type species: *Polydesmus Klugii* Brandt, 1839, by subsequent designation of Attems (1938).

Pseudamplinus Hoffman, 1954: 51. Type species: *Amplinus orphnius* Chamberlin, 1922, by original designation. Synonymized with *Amplinus* by Hoffman (1976).

Diagnosis (after Hoffman, 1954 and Vohland, 1998)

Head with prominent subantennal swellings. Collum as wide as second tergite. Tergites strongly tessellated by polygonal areas forming transversal rows (Figs. 1B–D, 2A–B). Ventral surface of paraterga granulated. Epiproct broadly truncate distally, quadrate in appearance (Fig. 1D–E). Hypoproct trapeziform in

shape; with two setigerous tubercles and with the margin between them straight or concave (Fig. 1E). Gonopods with very long, slender, coxosternal apodemes; coxae slender; prefemur and acropodite fused into a long, straight trunk, without sulcus between them; acropodite ending in a slender blade-like solenomerite and a thin flattened tibiotarsal process, both directed outwards, a third process present in a few species (see, for example, Hoffman, 1983: figs. 1–3, 5).

Remarks

The following species are currently recognized within *Amplinus*: *Amplinus areatus* Pocock, 1909; *Amplinus armatus* Pocock, 1909; *Amplinus bitumidus* (Loomis, 1969); *Amplinus constrictus* Chamberlin, 1953; *Amplinus convexus* (Carl, 1902); *Amplinus erichsonii* (Brandt, 1839); *Amplinus flavicornis* Pocock, 1909; *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.**; *Amplinus intermittens* Causey, 1954; *Amplinus klugii* (Brandt, 1839); *Amplinus leon* Chamberlin, 1952; *Amplinus manni* Chamberlin, 1922; *Amplinus mimus* Chamberlin, 1953; *Amplinus niteus* Chamberlin, 1922; *Amplinus nitidus* (Brölemann, 1900); *Amplinus orphnius* Chamberlin, 1922; *Amplinus palicaudatus* (Attems, 1901); *Amplinus permundus* Hoffman, 1976; *Amplinus pococki* (Cook, 1911); *Amplinus schmidti* Chamberlin, 1952; *Amplinus serratus* Kraus, 1954; *Amplinus tajumulco* Chamberlin, 1952; *Amplinus tapachulae* Chamberlin, 1943; *Amplinus triramus* Pocock, 1909; *Amplinus vergelanus* Chamberlin, 1943; *Amplinus xilitlus* Chamberlin, 1943; *Amplinus zunilus* Chamberlin, 1952.

The genus ranges from northern Mexico (Nuevo León) to Costa Rica. Some South American species from Colombia and Venezuela have been placed in *Amplinus* (Hoffman, 1954; Jeekel, 1963): *A. abstrusus* (Karsch, 1881); *A. ater* (Peters, 1864); *A. beebi* (Chamberlin, 1950); *A. cylindroides* (Chamberlin, 1923). The generic status of these species needs to be revised (Hoffman, 1999).

Amplinus flavocarinatus (Daday, 1889) **comb. nov.**

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Figs. 1, 2A

Euryurus flavocarinatus Daday, 1889: 137 (original description). – Attems, 1898. – Korsós, 1983 (type information). – Jorgensen, 2014 (comment on its taxonomic status as *incertae sedis*).

Examined material

Female holotype, deposited at the Myriapod Collection of the Hungarian Natural History Museum (Budapest), from Mexico, without precise locality, with two labels: "Mexico, Lg. Vadona Janos" (white label, handwritten), "799/1887 *Euryurus flavocarinatus* Dad. Typ. Det. Dr. Daday Jenő" (white label, handwritten).

Justification for the new combination and comments on potential diagnostic characters

Amplinus flavocarinatus **comb. nov.** presents the typical habitus of *Amplinus* species, including tergites strongly tessellated by polygonal areas forming transversal rows (Figs. 1B–D, 2A), epiproct broadly truncate distally (Fig. 1D), hypoproct trapeziform in shape; with two setigerous tubercles and with the margin between them concave (Fig. 1E) and ventral surface of paraterga granulated (Fig. 1F). We lack information on the gonopod structure of this species, which is a large impediment for a clear diagnosis; examination of the only available specimen has shown a combination of characters that can help to identify *Amplinus flavocarinatus* **comb. nov.** from many species in the genus. Particularly, the flat, non-elevated polygonal areas in midbody metazonites (Fig. 2A), with medium-sized tubercles conspicuously aligned along frontal and posterior margins, and with small tubercles isolated in the center of some lateral polygonal areas, mostly on paranota (Fig. 1C), differ from those observed in most other *Amplinus* species, whose polygonal areas present a clearly swollen appearance (as, for instance, in *Amplinus pococki* Fig. 2B) (see the remarks section for a more detailed explanation). Other helpful characters areanterior corners of paranota from segments 2–11 slightly produced laterally, forming small, blunt teeth (Fig. 1B–C) and ventro-lateral angles of paraprocts (adjacent to the base of hypoproct) produced into a large blunt tubercle (Fig. 1E). However, for a full diagnosis of the species, examination of further material including adult males would be necessary, as well as a detailed reexamination of many *Amplinus* species currently incompletely characterized.

Description

Measurements: ca. 63 mm long, width, at collum = 7.1 mm, at 2nd segment = 7.56 mm, at 10th segment = 8.94 mm, at 19th segment = 5.50 mm. General habitus slender, W/L ratio ca. 14.2 %, dorsum convex, paranota set high on sides of metazonites, very slightly downturned. Color completely faded after more than 130 years in ethanol; according to the original description shiny, dark brown with yellowish paranota.

Head (Fig. 1A) glabrous, except for some large setae on anterior half of gnathochilarium (ca. 19 in right side), and setae on labrum (7 on right side). Prelabral setal insertions present (3+3), but setae missing. Vertex, frons, and clypeus (except frontal part) coriaceous. Labrum tridentate. Epicranial sulcus deep in frontal part of vertex and shallower in posterior part. Antennae robust and short, not extending up to posterior margin of first segment when stretched backwards. Antennomeres covered with setae. Relative lengths of antennomeres 6>4=5=2=3>1>7.

Collum (Fig. 1B) glabrous, slightly elevated caudad, with anterior margin continuously arched and posterior margin almost straight; paranota tapering progressively, with blunt lateral ends. Surface with irregular, flat, non-elevated polygonal areas not forming transversal rows, larger in the middle. Medium sized tubercles concentrated on paranota and along posterior margin.

Body segments (Fig. 1B–C) with collum and second segment elevated caudad, following segments more

Fig. 1.— *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.** A) Head; B) Collum and segments 3–4; C) Segments 11–12; D) Segments 17–19 and epiproct; E) Epiproct, paraprocts and hypoproct; the arrow indicates the strong, blunt tubercle present in the posterior angles of the paraprocts; F) Sternites from segments 11–12.

Fig. 1.— *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.** A) Cabeza; B) Collum y segmentos 3–4; C) Segmentos 11–12; D) Segmentos 17–19 y epiprocto; E) Epiprocto, paraproctos e hipoprocto; la flecha indica el fuerte tubérculo romo presente en los ángulos posteriores de los paraproctos; F) Esternitos de los segmentos 11–12.

leveled. Prozonites smooth. Surface of postcollum metaterga with three rows of well defined but flat, non-elevated polygonal areas in segments 2–5, larger in second row; in segments 6–17 the three rows more irregularly arranged and, in some areas, not clearly defined. In segments 18–19 polygonal areas less defined and mostly obscured by tubercles. Metaterga with medium sized tubercles aligned in single rows along frontal margin and, less conspicuously, posterior margin. Smaller tubercles present in center of lateral polygonal areas, strongly marked on paranota and progressively subdued towards the middle. Segments 18–19 (Fig. 1D) heavily tuberculate over their whole surface, with medium sized tubercles irregularly arranged in four to five irregular rows. Paranota (Fig. 1B–D) well-developed but narrow, with swollen lateral sides. Surface with polygonal areas and small tubercles. Anterior margin almost straight. Anterior corners of paranota from segments 2–11 slightly protruded laterally, forming small, blunt teeth; from segment 12 anterior corners rounded. Lateral margins slightly sinuous in outline, more clearly in pore-bearing segments. Posterior corner produced in a short tooth more obvious in central and posterior segments and not present in segment 2. Posterior margin slightly serrulated. Pores opening laterally following the regular distribution formula in segments 5, 7, 9, 10, 12, 13 and 15–19. Sternites (Fig. 1F) elevated, without longitudinal or transverse sulcus, and with small processes at base of each leg insertion, more conspicuous in posterior pairs, larger in anterior segments, progressively reduced and absent in segments 18–19. Lateral sides of metazonae granulated; with small tubercles in anterior and posterior margins and immediately below paranota. Legs with sparse setae, longer in coxa and prefemur, denser in tarsus. Claws short, about $\frac{1}{3}$ the length of the tarsi.

Telson with epiproct (Fig. 1D–E) coriaceous with parallel lateral sides and roughly rounded posterior caudal margin with 5 shallow crenatures and fringed by nine long setae. Lateral borders of preanal ring with 2+2 setae. Hypoproct (Fig. 1E) wider than long with well differentiated paramedian setigerous processes. Paraprocts (Fig. 1E) with central swellings topped with single, long setae. Posterior angles of paraprocts adjacent to hypoproct protruded as a blunt large tubercule (white arrow in Fig. 1E).

Remarks

Even if we have no information on the gonopod structure of *Amplinus flavocarinatus*, the female holotype presents a series of somatic features that could be useful as diagnostic characters, for instance the flat, non-elevated polygonal areas in three rows in midbody metazonites, with a well-developed row of tubercles along the anterior and posterior margins of metazonites and isolated small tubercles in the middle of some polygonal areas (Figs. 1C, 2A). In most species of *Amplinus* polygonal areas have a clearly swollen appearance, as tubercles are larger and more abundant, and in most polygonal areas they occupy the whole surface (Fig. 2B). In anterior and posterior most segments, metazonite tubercles are more similar to those found in other *Amplinus* species (Fig. 1B, D). In the case of *A. flavocarinatus* **comb. nov.**, the flat polygonal areas make the anterior and posterior rows of metazonite tubercles more conspicuous than in other *Amplinus* species (Fig. 2).

Genus ***Pycnotropis*** Carl, 1914

Pycnotropis Carl, 1914: 419. Type species: *Polydesmus (Euryurus) taenia* Peters, 1864, by original designation.

Amydrinus Chamberlin, 1941: 500. Type species: *Amydrinus pongus* Chamberlin, 1941, by original designation and monotypy. Synonymized with *Pycnotropis* by Hoffman (1951, 1995).

Phinotropis Chamberlin, 1941: 499. Type species: *Phinotropis tidus* Chamberlin, 1941, by original designation and monotypy. Synonymized with *Pycnotropis* by Hoffman (1980, 1995).

Ptyxogon Chamberlin, 1941: 500. Type species: *Ptyxogon incus* Chamberlin, 1941. Synonymized with *Pycnotropis* by Golovatch *et al.* (1998).

Diagnosis (after Hoffman, 1995, Golovatch *et al*., 1998 and Vohland, 1998)

Paranota thick. Caudal corners of paranota tapering in a more acute point only in paraterga 16 to 19. Polygonal areas weak, often restricted to lateral edges of paraterga or completely missing. Prefemur of gonopod about half total length of telopodite, set off distally by distinct constriction; two distal elements, one a short, falcate ventrally directed solenomerite with a distinct vesicle on ventral side of its base, the second (tibiotarsus) much longer, sinuate, flattened, ventrally directed (see, for example, Hoffman, 1995: figs. 1, 7, 11).

Remarks

Pycnotropis has been revised and commented upon by Hoffman (1995), Golovatch *et al*. (1998) and Vohland (1998). The following species are currently recognized within *Pycnotropis*: *Pycnotropis achiraensis* Kraus, 1959; *P. acuticollis* (Attems, 1899); *P. carli* Golovatch, Vohland & Hoffman, 1998; *P. curvata* Golovatch, Vohland & Hoffman, 1998; *P. falcata* Golovatch, Vohland & Hoffman, 1998; *P. goeldii* Golovatch, Vohland & Hoffman, 1998; *P. haenschi* Carl, 1918; *P. inca* (Chamberlin, 1941); *P. jeekeli* Golovatch, Vohland & Hoffman, 1998; *P. latzeli* Attems, 1931; *P. madeira* Golovatch, Vohland & Hoffman, 1998; *P. mammata* (Attems, 1931); *P. melanostigma* (Silvestri, 1899); *P. nitida* Kraus, 1959; *P. pallidicornis* Golovatch, Vohland & Hoffman, 1998; *P. sigma* Golovatch, Vohland & Hoffman,

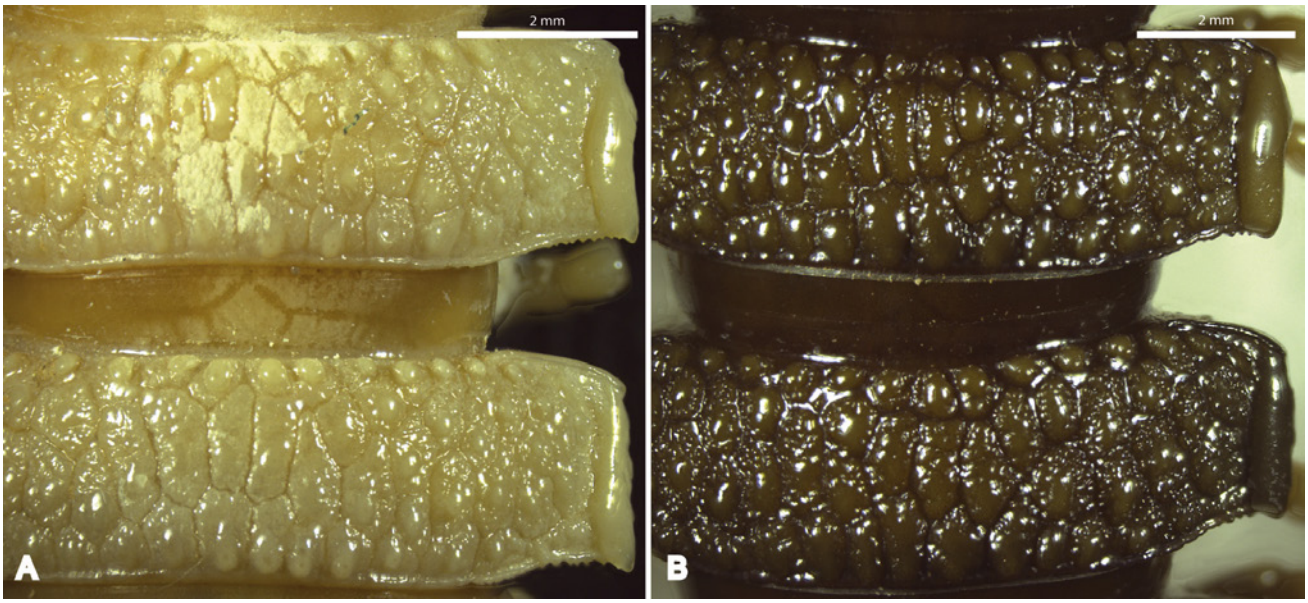

Fig. 2.— Detail of metazonites and paranota of segments 11–12 of A) *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.**, showing the flat polygonal areas and tubercles pattern and B) *Amplinus pococki* (Cook, 1911) from Orizaba, Veracruz, Mexico, showing the swollen polygonal areas typical in most *Amplinus* species.

Fig. 2.— Detalle de los metazonitos y paranotas de los segmentos 11–12 de A) *Amplinus flavocarinatus* (Daday, 1889) **comb. nov.**, mostrando las áreas poligonales aplanadas y el patrón de disposición de lso tubérculos y B) *Amplinus pococki* (Cook, 1911) de Orizaba, Veracruz, México, mostrando las áreas poligonales abultadas típicas en la mayoría de las especies de *Amplinus*.

1998; ***P. silvestrii* new name**; *P. similis* Golovatch, Vohland & Hoffman, 1998; *P. subareata* (Jeekel, 1963); *P. subfalcata* Golovatch, Vohland & Hoffman, 1998; *P. taenia* (Peters, 1864); *P. tida* (Chamberlin, 1941); *P. torresi* Golovatch, Vohland & Hoffman, 1998; *P. unapi* Golovatch, Vohland & Hoffman, 1998; *P. urucu* Golovatch, Vohland & Hoffman, 1998; *P. zumbii* Golovatch, Vohland & Hoffman, 1998.

Most species in the genus *Pycnotropis* are endemic to Andean regions in Colombia, Ecuador and Peru, but some species are present in the Amazon Basin (Golovatch *et al*., 1998). One species, *P. latzeli*, was described based on a specimen apparently collected in Panama, although it could have been mislabeled (Golovatch *et al*., 1998).

Pycnotropis silvestrii new name

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Euryurus flavocarinatus Silvestri, 1899: 68. Primary junior homonym of *Euryurus flavocarinatus* Daday, 1889.

Pycnotropis flavocarinatus (Silvestri, 1899): Carl, 1914: 936.

Pycnotropis flavocarinata (Silvestri, 1899): Golovatch *et al*., 1998: 68. – Vohland, 1998: 144.

Diagnosis (following Golovatch *et al*., 1998)

Colour uniform dark brown with lighter paraterga. Gonopod tibiotarsus rounded and slender, sigmoid (S-shaped); base of solenomerite with a triangular process (unmodified in *P. madeira* and *P. urucu*) (see Golovatch *et al*., 1997: fig. 82).

Etymology

The species is named after Filippo Silvestri, who originally described the species, in honor of his great contribution to our knowledge of Diplopoda. The name is a noun in the genitive case.

Remarks

The species is known only from the type locality: "Villavicencio m. 1000, Monteredondo-Buenavista, Dr. Bürger leg". This is probably Villavicencio, Dept. Meta, about 65 km SE of Bogota.

Discussion

The classification of many groups of millipedes is still far from resolved, from species to family level (Sierwald & Bond, 2007). This is true even in large, conspicuous organisms such as species within genus *Amplinus*, with about 30 currently recognized nominal species (27 from Mexico to Costa Rica, plus four more species of dubious generic identity from Colombia and Venezuela) (Jeekel, 1963; Hoffman, 1999). Any advance towards a comprehensive knowledge of the genus is hindered by the fact that many of these species are very poorly known and insufficiently described and diagnosed, and while some of the already named species may be junior synonyms of others, many additional species are yet to be described (Hoffman, 1983). Consequently, a full taxonomic revision of the genus *Amplinus*, with detailed examination

and redescription of type specimens, would greatly help the study of its still largely unknown diversity (Hoffman, 1983; Vohland, 1998).

As in the case of *Amplinus flavocarinatus* **comb. nov.**, several descriptions of *Amplinus* species are based on female type material, and the gonopod structure of these species have not been described. However, gonopod structure is highly homogeneous in most species of *Amplinus*, and somatic peripheral characters should be considered as additional source of diagnostic features, as has been observed in other large tropical polydesmidan millipedes (Hoffman *et al*., 2011; Recuero & Sánchez-Vialas, 2018). Even if some of these characters can present some degree of intraspecific variability, others seem to be more constant. For instance, color intensity and shade can vary among individuals in some *Amplinus* populations, but color pattern is mostly stable, as is the tubercle patterns and tessellation on the metazona. A combination of somatic characters could allow for specific identification even of females or immature specimens, at least for many described species. For this reason, detailed illustration of somatic peripheral characters is particularly important when describing or redescribing these species, a much needed task within the genus *Amplinus* (Hoffman, 1983). It is also very important to gather information on the intraspecific variability of these characters, since most species are known and described from very few specimens, sometimes only the holotype, and often from one to very few populations. In this context it is hard to tell if these characters have taxonomic value or if they may be too variable, as has been suggested in other members of the family (Golovatch *et al*., 1997, 1998; Vohland, 1998)

According to its metazonite sculpture, but also to other characters as coloration pattern and form of paranota and hypoproct, *A. flavocarinatus* **comb. nov.** could be closer to *A. pococki* and, particularly, to *A. armatus* Pocock, 1909. In fact, the detailed original description of *A. armatus*, based also on a single female specimen, fits almost perfectly with the holotype of *A. flavocarinatus* **comb. nov.** and, as suggested by Hoffman (1983) for some described species in the genus, both names could be synonyms. However, a thorough revision of *Amplinus* is needed to finally clarify the identity of these two species.

The holotype of *A. flavocarinatus* **comb. nov.** is a female from Mexico with no further information (Daday, 1889). The holotype of *A. armatus*, originally at the British Museum collections (Pocock, 1909), and currently lost according to Hoffman (1999), also came from Mexico with no other specific geographical information. Janos Vadona travelled in the early 1880s across central Mexico, from Veracruz to Guerrero, so defining the geographic origin with a minimum of accuracy of the holotype of *A. flavocarinatus* **comb. nov.** is not possible, and the geographical distribution of the species remains unknown until it can be found again in the field or in collections with properly labeled material. Two specimens at the Virginia Museum of Natural History collection, collected in Valle Nacional, Oaxaca, in central Mexico, were tentatively assigned to *A. armatus* by Hoffman (1999), but given the similarity among both species, they could also correspond to *A. flavocarinatus* **comb. nov.**

The existence of homonyms, particularly in species from the same genus or family, can result in one of the taxa falling into oblivion, as often only one of the names is consistently considered in catalogues, checklists or revisions while the exclusion of the other name is inherited in successive studies. The case of *Amplinus flavocarinatus* **comb. nov.** is not new among Mexican polydesmid millipedes, and it has been observed also at least in a case of secondary homonymy within the genus *Myrmecodesmus* Silvestri, 1910 (Shear, 1977; Hoffman, 1999; Recuero, 2014). Resolving homonymy cases is a first step in putting these species back into consideration for their study.

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References

Attems, C., 1898. System der Polydesmiden. I. Theil. *Denkschriften der Kaiserlichen Akademie der Wissenschaften, Mathematisch-naturwissenschaftliche Classe*, 67: 221–482. Available from https://www.biodiversitylibrary.org/part/193340 [accessed 30 Mar. 2021].

Attems, C., 1899. System der Polydesmiden. II. Theil. *Denkschriften der Kaiserlichen Akademie der Wissenschaften, Mathematisch-naturwissenschaftliche Classe*, 68: 251–436. Available from https://www.biodiversitylibrary.org/item/110841#page/357/mode/1up [accessed 30 Mar. 2021].

Attems, C., 1938. Myriapoda 3. Polydesmoidea II. Fam. Leptodesmidae, Platyrhachidae, Oxydesmidae, Gomphodesmidae. *Das Tierreich*, 69: 1–487. https://doi.org/10.1515/9783111430645

Brölemann, H. W., 1916. Essai de classification des Polydesmiens (myriapodes). *Annales de la Société entomologique de France*, 84: 523–608. Available from https://www.biodiversitylibrary.org/page/8559505#page/562/mode/1up [accessed 30 Mar. 2021].

Carl, J., 1914. Die Diplopoden von Columbien nebst Beiträgen zur Morphologie der Stemmatoiuliden.

Memoires de la Société Neuchâteloise des Sciences naturelles, 5: 821–993.

Chamberlin, R. V., 1941. On a collection of millipedes and centipedes from Northeastern Peru. *Bulletin of the American Museum of Natural History*, 78: 473–535. Available from https://digitallibrary.amnh.org/handle/2246/1856 [accessed 30 Mar. 2021].

Daday, E., 1889. A Magyar nemzeti museum idegenföldi myriopodái. Myriapoda extranea Musaei Nationalis Hungarici. *Természetrajzi Füzetek*, 12: 115–158.

Golovatch, S. I., Hoffman, R. L., Adis, J., Vohland, K. & Mármol, A., 1997. On the identity of further two millipede species (Diplopoda) from the environs of Manaus, Central Amazonia, Brazil. *Amazoniana*, 14: 301–309.

Golovatch, S. I., Vohland, K., Hoffman, R. L., Adis, J., Mármol, A., Bachmann, L. & Tomiuk, J., 1998. Review of the Neotropical millipede genus *Pycnotropis* Carl, 1914 (Diplopoda, Polydesmida, Aphelidesmidae). *Amazoniana*, 15: 67–102.

Hoffman, R. L., 1951. A new genus of Central American milliped (family Euryuridae), with notes on the American genera. *Proceedings of the United States National Museum*, 102: 235–243. https://doi.org/10.5479/si.00963801.102-3300.235

Hoffman, R. L., 1954. Further studies on American millipeds of the family Euryuridae (Polydesmida). *Journal of the Washington Academy of Sciences*, 44: 49–58.

Hoffman, R. L., 1975. A new genus and species of euryurid millipeds from Chiapas (Polydesmida: Platyrhacidae). *Proceedings of the Biological Society of Washington*, 88: 211–216. Available from https://www.biodiversitylibrary.org/part/44182 [accessed 30 Mar. 2021].

Hoffman, R. L., 1976. A new species in the diplopod genus *Amplinus* from El Salvador with comments on other members of the genus. *Revue Suisse de Zoologie*, 83: 39–44.

Hoffman, R. L., 1978. North American millipeds of the genus *Euryurus* (Polydesmida: Platyrhacidae). *Transactions of the American Entomological Society*, 104: 37–68.

Hoffman, R. L., 1980. *Classification of the Diplopoda*. Muséum d'histoire naturelle. Genève. 237 pp.

Hoffman, R. L., 1983. On the status of two species of the diplopod genus *Amplinus* described by J.F. Brandt (Platyrhacidae: Euryurinae). *Deutsche Entomologische Zeitschrift*, 30: 31–35. https://doi.org/10.1002/mmnd.19830300105

Hoffman, R. L., 1995. Redefinition of the millipede genus *Pycnotropis*, and description of a new species from Manaus, Brazil (Polydesmida: Platyrhacidae: Euryurinae). *Amazoniana*, 13: 283–292.

Hoffman, R. L., 1998. Reassessment of the Platyrhacidae, a family of polydesmidan millipeds. *Myriapodologica*, 5: 125–141.

Hoffman, R. L., 1999. Checklist of the millipedes of North and Middle America. *Virginia Museum of Natural History Special Publication*, 8: 1–584.

Hoffman, R. L., Martínez-Torres, D. & Florez, D. E., 2011. A new Colombian species in the milliped genus *Psammodesmus*, symbiotic host for bryophytes (Polydesmida: Platyrhacidae). *Zootaxa*, 3015: 52–60. https://doi.org/10.11646/zootaxa.3015.1.5

Humbert, A. & Saussure, H., 1869. Description de divers Myriapodes du Musée de Vienne. *Verhandlungen der Zoologisch-botanischen Gesellschaft in Wien*, 19: 669–692.

Jeekel, C. A. W., 1963. Diplopoda of Guiana (1–5). *Studies on the fauna of Suriname and other Guyanas*, 4: 1–157.

Jorgensen, M. C., 2009. A new species of *Euryurus* from southern Alabama and remarks on the status of *Illiniurus beattyi* Shear (Diplopoda: Polydesmida: Euryuridae). *The Great Lakes Entomologist*, 42: 80–90.

Jorgensen, M. C., 2014. *Systematic studies of Polydesmidan millipedes (Diplopoda, Polydesmida)*. PhD Thesis in Biological Sciences, University of Illinois. Chicago. 148 pp.

Koch, C. L., 1847. System der Myriapoden mit den Verzeichnissen und Berichtigungen zu Deutschlands Crustaceen, Myriapoden und Arachniden. *In*: Panzer G.W.F. & Herrich-Schäffer G.A. (eds) *Kritische Revision der Insectenfaune Deutschlands*, *III. Bändchen*. Pustet, Regensburg: 1–196. https://doi.org/10.5962/bhl.title.49866

Korsós, Z., 1983. Diplopod types in the Hungarian Natural History Museum, 1. *Annales historico-naturales Musei Nationalis Hungarici*, 75: 117–120.

Means, J. C., Hennen, D. A., Tanabe, T. & Marek, P. E., 2021. Phylogenetic systematics of the millipede Family Xystodesmidae. Insect Systematics and Diversity, 5:, 1–26. https://doi.org/10.1093/isd/ixab003

Pocock, R. I., 1909. Chilopoda and Diplopoda. *In*: Godman F.D. & Salvin O. (eds) *Biologia centrali-americana, contributions to the knowledge of the fauna and flora of Mexico and Central America*. Porter & Co. London: 89–200. https://doi.org/10.5962/bhl.title.730

Recuero, E., 2014. A new name for *Myrmecodesmus potosinus* (Shear) 1973, a homonym of *Myrmecodesmus potosinus* (Chamberlin) 1943 (Diplopoda, Polydesmida, Pyrgodesmidae). *Zootaxa*, 3869: 594–596. https://doi.org/10.11646/zootaxa.3869.5.10

Recuero, E. & Sánchez-Vialas, A., 2018. A new distinctive species of *Barydesmus* (Diplopoda, Polydesmida, Platyrhacidae) from Ecuador, with an annotated bibliographical checklist of the American Platyrhacidae. *Zootaxa*, 4482: 245–273. https://doi.org/10.11646/zootaxa.4482.2.2

Shear, W. A., 1977. Millipeds (Diplopoda) from Caves in Mexico, Belize and Guatemala. III. *Accademia Nazionale dei Lincei, Problemi Attuali di Scienza e di Cultura*, 171: 235–265.

Shelley, R. M. & Smith, J. M., 2018. Expanded concept and revised taxonomy of the milliped family Xystodesmidae Cook, 1895 (Polydesmida: Leptodesmidea: Xystodesmoidea): incorporations of Euryuridae Pocock, 1909 and Eurymerodesmidae Causey, 1951, taxon revivals/proposals/transferrals, and a distributional update. *Insecta Mundi*, 660: 1–41.

Sierwald, P. & Bond, J. E., 2007. Current status of the myriapod class Diplopoda (millipedes): taxonomic

diversity and phylogeny. *Annual Review of Entomology*, 52: 401–420.
https://doi.org/10.1146/annurev.ento.52.111805.090210

Silvestri, F., 1899. Diagnósticos de nuevos diplópodos sudamericanos. *Anales del Museo Nacional de Buenos Aires*, 6: 53–79.

Vohland, K., 1998. Review of the millipede subfamily Amplininae (Diplopoda, Polydesmida, Aphelidesmidae) with remarks on phylogeny and the description of some new South American genera and species. *Amazoniana*, 15: 129–163.