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ADDITIONS TO THE MILLIPEDS OF MEXICO (MYRIAPODA: DIPLOPODA)

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ABSTRACT

From a small collection of Mexican millipeds, some found in large bromeliads, four new species are described *Pseudamplinus bitumidus, Paraiulus gyratus, P. lateralis,* and *Rhinocricus putealis.* Three previously known species were identified, one, *Rhysodesmus rubrimarginis,* is redescribed.

RESUMEN

Se describen 4 nuevas especies de una pequeña colección de milpiés mexicanos, algunas encontradas en bromelias epífitas *Pseudamplinus bitumidus, Paraiulus gyratus, P. lateralis,* y *Rhinocricus putealis.* Se identificaron 3 especies previamente conocidas, y se redescribe una de ellas, *Rhrysodesmus rubrimarginis.*

A small collection of millipeds, of which four appear to be new species, was sent me for determination early in 1969 by Biol. Carlos R. Beutelspacher, Sección de Entomología, Instituto de Biología, México, D. F. Interestingly, some of these had been found in large bromeliads although obviously the creatures could not have been restricted to such a habitat.

In the following report the collector of the specimens is understood to be Biol. Beutelspacher, unless another person is named.

The four holotype specimens and a male of each previously named species have been deposited in the U.S. National Museum milliped collection. Remaining and paratypes have been deposited in the Instituto de Biología.

Chelodesmidae

An inmature male, unknown genus and species, found in *Vriesia chiapensis* Matuda, 6 Km from Bochil, Chiapas, 22 October 1968, Nº 6.

Euryuridae

Pseudamplinus bitumidus sp. nov.

Holotype male, plus 2 male, and 1 female paratypes, Estación Biológica Los Tuxtlas, municipality of San Andrés Tuxtla, Veracruz, 22 June 1969; male paratype, same locality, in *Aechmea bracteata* on ground, 16 November 1968.

Diagnosis: Resembling *P. vergelanus* (Chamberlin) in the few particulars mentioned, except color, for that species, which was based on a female, but this one is assumed to differ structurally in the tuberculate sterna of the females as well as the males, a character Chamberlin did not list and hardly could have overlooked, if present.

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Description: Largest male 67 mm long, 10 mm wide; largest female 72 mm long, 11 mm wide; males flatter than females. In preservative the prozonites almost black, metazonites dorsally brown to beyond base of keels, outer portions of which are colorless; ventral surfaces, legs, and antennae colorless to very light brown.

Clypeus with three macrosetae each side; labral setae more numerous and much smaller except one at each outer limit as large as clypeal ones.

Segment 1 with each outer keel acute, the front and back margins distinctly emarginate opposite its base; surface with four rather irregular rows of adjacent, shining swellings, those of first row smaller and more uniform in size and arrangement, inner pair of swellings of fourth row largest.

Segments 2-18 with three definite rows of adjacent, shining, and generally smooth swellings, rounded on anterior segments but becoming elongate oval thereafter; segment 19 with two rows of small swellings posteriorly, surface in front smooth; channels between swellings sharply depressed, generally smooth but somtimes rugulose; no dorsal granules present. Outer margin of keels faintly undulat, no distinct tooth at anterior corner of any keel; posterior margin of keels from segment 5-16 finely serrate. From segment 5 caudad the ventral margin of metazonite raised into elongate tubercle just behind spiracle of each anterior leg, a much smaller tubercle behind spiracle of other legs.

Anal valves with ventral limit of outer margin swollen into an elongate tubercle adjacent to lateral angle of scale, the latter deeply emarginate between the two prominent, swollen, subapical lobes.

Sterna of both sexes from third to last pair of legs with two rounded tubercles close to each leg except third legs where they are thin and long; anterior tubercle of each pair largest; apex of tubercles usually rugulose, especially on anterior half of body; longitudinal sulcus of sterna seldom evident, the transverse one more distinct.

Gonopod shown in Fig. 1.

Xystodesmidae

Rhysodesmus Cook

The difficulties of identifying specimens of this large tropical genus, many members of which are know from Mexico, have been pointed out by Loomis 1966. In the present collection two species are included from the Distrito Federal, one represented by unidentifyable females only, the other with both sexes and assigned to one of the five species that Chamberlin 1943 described from that small area. When his holotypes can be studied and compared with larger collections from the area, it is probably that one or more of the species will be relegated to synonymy. The current specimens seem best to agree with Chamberlin's meager description of *rubromarginis,* with the followings characters, similar to those used in my 1966 paper, being noted.

Rhysodesmus rubromarginis Chamberlin

Male, 2 females, Pedregal San Angel, locality 24, D. F., 4 July 1961, Santiago Zaragoza; from Pedregal San Angel, "senecietum", D. F., male, 24 May 1968; last locality, male, female, and young, 3 August 1968, Héctor G. Almada.

Description: Largest male 32 mm long, 8 mm wide; largest female 34 mm, long, 8 mm wide. Body compact, lateral keels broad, almost continuing descent of dorsum; males a little broader than females. Color as Chamberlin gave but apical portion of last segment light.

Atennae with 10 terminal sense cones. Anterior segments with front rim of keels continuing as a fine line to join the descent of the prozonite as far back as segment 10 or 11. Legs with strong spine on joint 2.

In the bipedigerous segments of both sexes the anterior sternum rises gradually to a poorly defined transverse sulcus, posterior sternum continuing the rise to the high back margin which hides the margin of the metazonite. Posterior sternum of males, from segment 8-18, with a broad, low tubercle behind, close to each coxal opening; sterna rather deply but not sharply depressed along middle.

Gonopods with each terminal bifurcation small and held almost longitudinally; the gonopods of two males crossed near apex but in other male not crossed, as Chamberlin remarked was *typical* of the one specimen he had.

Rhysodesmus sp.

Three females (not preceding species), Pedregal San Angel, locality 8, D. F., 8 August 1961, Santiago Zaragoza. Young specimen of a still different species, Estacion Biologica Los Tuxtlas, municipality of San Andrés Tuxtla, Veracruz, 22 June 1967.

Paraiulidae

Paraiulus gyratus sp. nov.

Holotype male, plus 2 males, 3 females, and 1 young paratypes, Pedregal San Angel, "pinetum", D. F., 18 May 1968, No. 15-E.

Diagnosis: Closely related to *P. rosanus* Chamberlin but distinguished by details of the gonopods, especially the longer terminal branch of the posterior gonopods in an almost complete circle. Females have the cyphopods in front of the gynaspis father than in the usual position behind it.

Description: Body in preservative entirely dark; 28-30 mm long, 2.5 mm wide; surface of metazonites with short, coarse, closely spaced longitudinal acciculations. Mandibulary stipes of male (Fig. 2) rimmed on three sides, the simple lower margin strongly concave. Labrum of both sexes smooth, without raised rim. Segment 1 of male with a long, high ridge above the rim of lower margin, a deep furrow separating it from dorsal surface. Segment 2 of female extending much below segment 1, entire ventral margin broadly rounded. Segment 3 with lower margin not much extended but directed somewhat inward, rather than downward. Transverse sulcus of segments deep on sides and across dorsum, bowed forward for a considerable distance in front of pore, but not angled, its depressed peritreme removed from the sulcus by nearly its own diameter, except on front third of body where it is closser. Ventrolateral striae of metazonites distinct, uniformly separated, failing to reach pores by a considerable distance. Apex of last segment long, acute, and much exceeding anal valves.

Gonopods shown in Figs. 3 and 4, somewhat resembling those of *P. rosanus* but differences are obvious, especially the much longer main branch of the posterior gonopods which forms an almost complete circle. Anterior sternum of segment 8 extended into a high vertical lobe, broadly rounded from each side, in front of the anterior pair of legs. In females the cyphopods are deeply and tightly imbedded in the front face of the gynaspis and are widely separated as seen in Fig. 5, which also shows the rudimentary second legs.

In my 1968 paper, the gynaspis was described as "the shield which precedes the cyphopods", a statment now needing modification since the reverse is true in the above species. In the following species the front face of the gynaspis is fully exposed but the cyphopods are projected laterally and much of them is visible from in front.

Paraiulus lateralis sp. nov.

Holotype female, 6 km from Bochil, Chiapas, in *Vriesia chiapensis* Matuda, 22 October 1968, Nº 6.

Diagnosis: The striking color contrast of head and anterior segments with rest of body, and the peculiarities of the female organs justify founding this species on a female.

Description: Body 22 mm long, 1.7 mm wide; composed of 43 segments. Color unusual in that most of head and first three segments are conspicuously lighter than rest of body; head dark brown between eyes, colorless in front, vertex light brown with lighter aerolations; segment 1 dark brown for a short distance behind front margin and at back margin, the areas connected by a dark median line; segments 2 and 3 dark along middle but expanding at posterior margin; ventral half of body and legs colorless.

Head with slightly raised rim along front margin of labrum. Sides of segments 1 and 2 shown in Fig. 6, the lobe of segment 2 projecting straight down; lower margin of segment 3 a little produced. Transverse sulcus of segments fine but sharply impressed on sides and across dorsum, seldom curved in front of pores which are removed from it by a space nearly equal to peritreme; latter barely depressed. Metazonites faintly convex, surface quite strongly marke by short, deep, longitudinal scratches; ventral surface, from base of legs to considerably below pores, crossed by deep, straight, well separated striae. Anal mucro long and acute.

Female organs with gynaspis broadly and somewhat irregularly rounded at apex, the cyphopods project laterally, are much exposed in front, and open outwardly, Figs. 7 and 8.

Paraiulus rosanus Chamberlin

Male and 1 young, Pedregal San Angel, "quercetum", D. F., 4 May 1968, Nº 10; male, Pedregal San Angel, "pinetum", D. F. 18 May 1968, Nº 15-T, Héctor Pérez.

Paraiulus zempoalus Chamberlin

Male, Pedregal San Angel, "pinetum", D. F., 18 May 1968, Nº 15-H, Héctor Pérez. Is same lot a female that may be this species, *P. rosanus,* or an even different species.

Rhinocricidae

Rhinocricus putealis sp. nov.

Holotype male, plus 4 females paratypes, under rotting logs, Estación Biológica Los Tuxtlas, municipality of San Andrés Tuxtla, Veracruz, 16 February 1969; female paratype, Cerro El Vigía, Santiago Tuxtla, Veracruz, in plant of *Aechmea mexicana,* 4 November 1967.

Diagnosis: Probably closely related to *R. dugesi* (Bollman 1893) as indicated by size, very short rim of segment 1, strong transverse sulcus of segments, and deep sulcus crossing metazonites behind pores. *R. dugesi* has not again been reported nor has its type been relocated in the U. S. National Museum, making any comparisons impossible. However, *putealis* does not have the anal mucro "large and long, tip slightly recurved", nor did Bollman mention a forward production each side of segment 1. Type localities of the two species are about 400 miles apart, making their syonymy rather unlikely.

Description: Size intermediate, male 57 mm long, 5 mm wide; largest female 65 mm long, 7 mm wide; both whit 49 segments; body distinctly annulate, metazonites lighter than prozonites.

Head with short, heavy antennae; sense cones four. Ocelli large, convex, about 33 in group more oval than round. Median sulcus of vertex fine, widely separated from that of front.

Segment 1 produced forward below middle of eye, lateral furrow very short, weak; shoulder of segment 2 weakly elevated below rounded outer limit of segment 1 (Fig. 9). Transverse sulcus of

segments sharply and desply impressed on sides and across dorsum from segment 2-44 or 45, but evident to penultimate one; sulcus not bent behind pores, its bottom with a row of punctations not quite crossing dorsum; metazonites strongly convex, prozonites less so but both strongly shining and finely aciculated. Pore of segment 6 almost in line with other; all pores set deep in larg peritreme followed by a deep sulcus across metazonite. Scobinae present from segment 9 to about segment 41, the pair separated by little more than their own diameter; pit slenderly subreniform evenly and deeply excavated, not gradually descending in front (Fig. 10). Ventral striae fine and weak, not extending beyond joint 4 or 5 of legs. Mucro of last segment not greatly projecting beyond the high, thick margins of valvas. Preanal scale subtriangular, posterior margin each side slightly concave.

Gonopods shown in Figs. 11 and 12.

Male legs 2-7 with coxae and next three joints swollen ventrally, most extreme on thir legs (Fig. 13). On legs 6 and 7 apex of coxae and lobe of next joint finely rugulose; behind gonopods similar rugulose areas on coxae to midbody, on second joint to segment 21 or 22, and on third joint to about segment 13. Prozonite of segment 7 strongly raised behind gonopods and rolled back into a thick, rather narrow or subacute median lobe high above and exceeding the concave posterior margin of the metazonite.

Spirobolidae

Female on unknown genus and species, Pedregal San Angel, locality 8, D. F., 8 August 1961, Santiago Zaragoza.

LITERATURE

Bollmann, C. H., 1893. The Myriapoda of North America, *U. S. Nat. Mus. Bull., 46,* p. 194.

Chamberlin, R. V., 1943. On Mexican Millipeds, *Bull. Univ. Utah,* 34 (7):3-03 3-103.

Loomis, H .F., 1966. Descriptions and Records of Mexican Diplopoda, *Ann. Ent. Soc. Amer.* 59 (1): 11-27.

——, 1968. New and Known Paraiulid Millipeds from Various Parts of the United States, *The Florida Ent.,* 51 (3): 159.

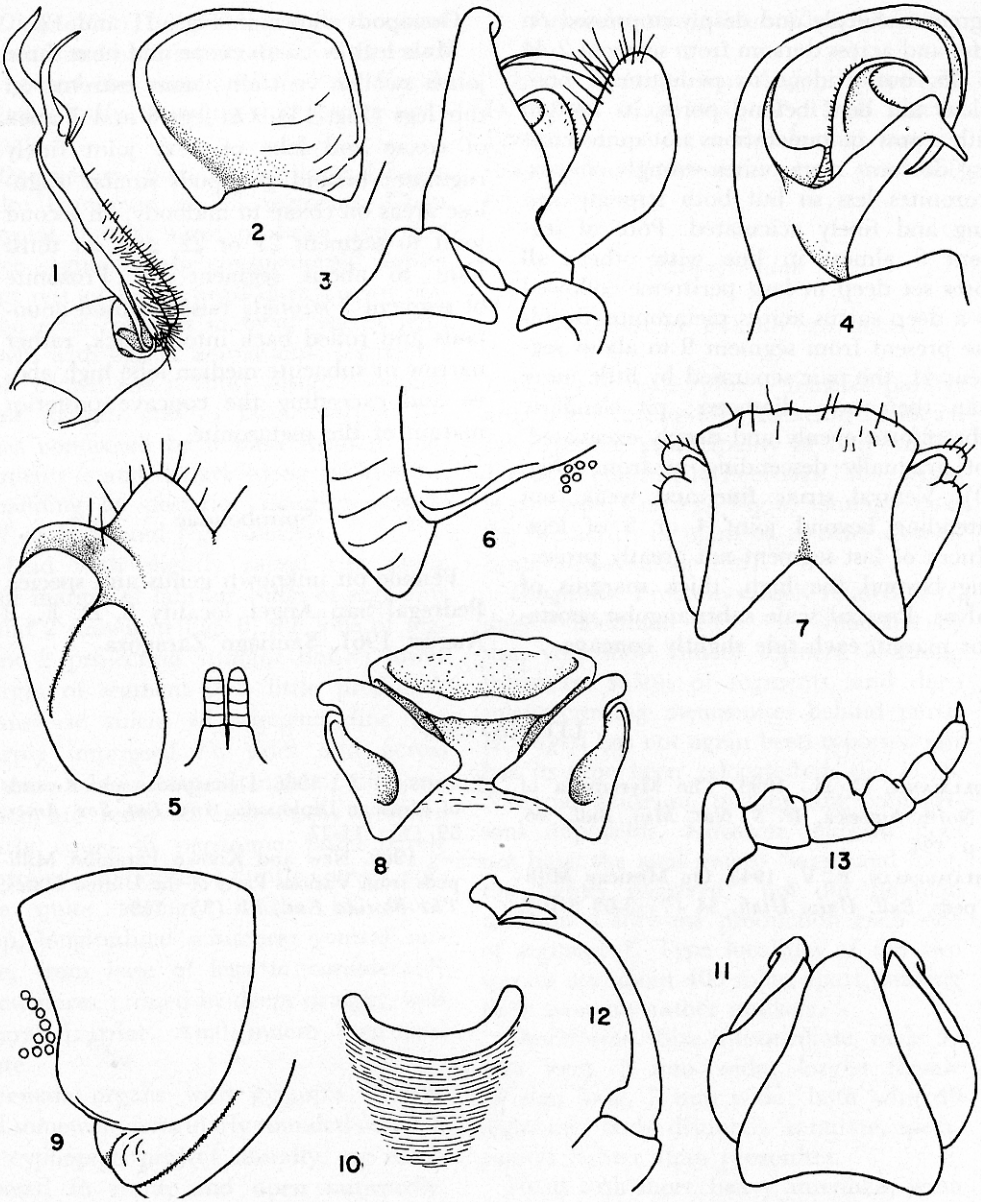

Fig. 1. *Pseudamplinus bitumidus.* Left gonopod, mesal view.

Figs. 2-5. *Paraiulus gyratus.* 2. Mandibulary stipes of male. 3. Right gonopods and sternum, anterior view. 4. Right posterior gonopod, posterior view. 5. Second legs, left cyphopod, and part of gynaspis, anterior view.

Fig. 6-8. *Paraiulus lateralis.* 6. Side of segments 1 and 2, lateral view. 7. Gynaspis and cyphopods, anterior view. 8. Same, posterior view.

Figs. 9-13. *Rhinocricus putealis.* 9. Segments 1 and 2, lateral view. 10. Scobina of male from midbody. 11. Gonopods, anterior view. 12. Inner left gonopod, posterior view. 13. Third male leg, posterior view.