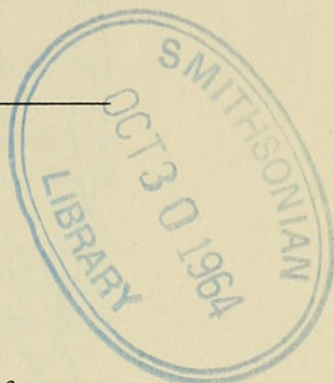


PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

THREE NEW POLYDESMOID MILLIPEDS
FROM CENTRAL AMERICA

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A small collection of millipeds, found in colonies of army ants in Costa Rica and Panama by Mr. Roger D. Akre and Dr. and Mrs. Carl W. Rettenmeyer, has recently been received for identification. Only two species are included but one is new and is here described to make its name available to the collectors for use in their studies of these ants.

Two other new species also are presented; one from the Maya ruins of Tikal, Dept. of Peten, Guatemala, the ninth member of the genus *Aceratophallus*. The second species is from a small but interesting collection made by Dr. G. B. Fairchild, in a remote and previously uncollected area of Panama, at considerable elevation close to the Colombian border. This collection contains females of *Glomeridesmus*, *Cyrtodesmus*, *Trichomorpha*, *Siphonophora*, and an unknown, but probably new, genus of chelodesmid. A second species of *Trichomorpha*, of which a male fortunately is present, allows a description and illustrations of essential features.

The holotype and at least one paratype of each species have been deposited in the U. S. National Museum. Most of the paratypes of the new *Calymmodesmus* have been returned to the collectors.

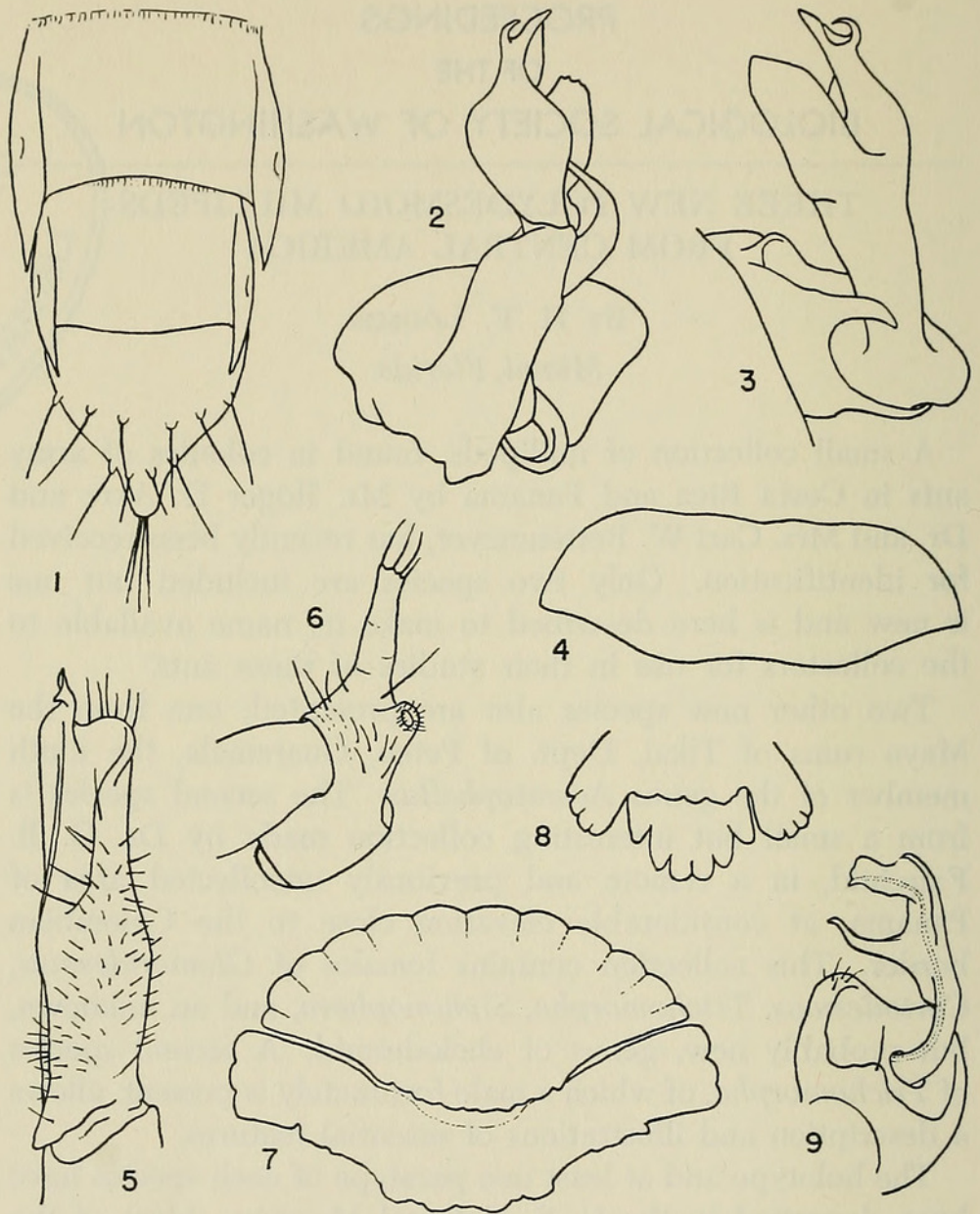
Family CHELODESMIDAE

Trichomorpha tacarcuna, new species

(Figs. 1-3)

Type specimen: Male holotype, U. S. National Museum 2983.

Type locality: Male and female collected from forest floor litter, elevation 1900 ft., Rio Tacarcuna, Darien Prov., Panama, 3-23 July 1963, by Dr. G. B. Fairchild, who stated that "the Rio Tacarcuna is a tributary



FIGS. 1-3. *Trichomorpha tacarcuna*, new species. 1, Segments 18-20 of male, the setae of segments 18 and 19 not shown; 2, Right gonopod, ventral view; 3, Same gonopod, lateral view. FIGS. 4-6. *Aceratophallus maya*, new species. 4, Segment 1 in outline; 5, Left gonopod, ventral view; 6, Left second coxa of male, cephalo-lateral view. FIGS. 7-9. *Calymmodesmus montanus*, new species. 7, Segments 1 and 2 of male in outline, dorsal view; 8, Segments 19 and 20 of male in outline, dorsal view; 9, Right gonopod, mesal view.

of the Rio Pacto, which flows into the north side of the Rio Tuira, and is about 5–10 air-line miles from the Colombian border." It is also about due east of the town of El Real.

Diagnosis: Insofar as the structure of the gonopods is concerned, this species appears most closely related to *T. propinqua* Carl, from near Medellin, Colombia, although it is only half the body size. It seems to be unique in the genus in the dense curl of very long setae on joint 1 of the third male legs.

Description: Male 10 mm long, 1.2 mm wide; female about the same length but a little wider and more flattened, with legs shorter and heavier. Dorsum quite uniform medium brown, the raised outer rim of the keels darker.

Head with a fine median sulcus extending forward from near segment 1 to between the antennae, except for a short interruption near upper level of the sockets; surface of head with scattered erect setae, longest behind the labrum.

Body rather conspicuously setose on a few terminal segments, the intervening ones with smaller setae of which many appear to have been rubbed off and indicated only by the tiny supporting granules which are more evident in the male. Surface of segments shining, the metazonites of segments 6–16 with a shallow transverse median depression more evident on segments 7–14, but hardly noticeable in the female. Lateral keels of male rising somewhat obliquely from sides of dorsum, especially on posterior half of body; female keels less extensive and more horizontal; keels with two outer marginal setae; posterior corners of keels long and acute in male, shorter in female, those of segments 18 and 19 of both sexes produced straight back (Fig. 1).

Segment 1 with an anterior submarginal row of approximately 14–16 erect setae, including the large one in each outer angle; a median and posterior row present, each composed of 10–12 setae. Segments 2–4 with three rows of setae, the median one of about 10, others with 12–14. Ensuing segments with setae less evident and none of the rows with full complement. Segments 18 and 19 with setae greatly increased in number and length, indiscriminately scattered, those of segment 19 distinctly longer in both sexes, the posterior ones equalling or exceeding the tips of the lateral keels; all setae set on tiny but easily seen granules. Last segment with dorsal setae on tubercles as seen in Fig. 2, the setae much longer than those projecting behind segment 19.

Males with gonopods as shown in Fig. 3. First and second legs with the two outer joints heavier than on following legs, the penultimate joint with a produced ventral lobe. Third legs with coxal joint bearing a long, narrowly crescentic and very dense cluster of long curving setae so closely in contact, except at tips, as to give the appearance of forming a large tubercle; the cluster borne along the ventral portion of the joint, adjacent to the sternum, and curving around and halfway along the posterior side. Legs 4–7 unmodified.

Family RHACHODESMIDAE

Aceratophallus maya, new species

Type specimen: Male holotype, U. S. National Museum 2984.

Type locality: Two males collected 13 Sept. 1962, at Tikal, Dept. of Peten, Guatemala, by Gerard Pitt, Coconut Grove, Fla., who remarked that he had seen many individuals.

Diagnosis: Most closely related to *A. guatemalae* Chamberlin, as shown by the gonopods, but it is a smaller species. The completely granular metazonites also distinguish it from all other known species.

Description: Holotype 37 mm long, 5.5 mm wide; paratype 32 mm long, 4.8 mm wide. Color bright yellow throughout except that the prozonites are somewhat lighter and the ventral portions of the zonites and the two basal joints of the legs are colorless.

Head not granular, slightly finely rugulose on either side of the impressed vertigial sulcus which extends to between the antennae; below antennae the front more roughened and with more numerous erect setae. Joint 5 of antenna with a long narrow sensory area of dense fine setae extending close to the apical margin on the outer side; a smaller area, similarly placed, on joint 6.

Segment 1 with anterior margin almost straight, only a little undulated behind vertex of head; posterior margin triarcuate as shown in Fig. 4. Surface granular behind, as on other segments, but toward the anterior rim the granules decrease in size but not in number.

Segment 2 slightly wider than any other, its surface and that of ensuing metazonites to segment 18, evenly, densely and finely granular throughout except on the smooth and strongly shining outer rim of the keels. Segment 19 with granules poorly defined, especially on the anterior half. Last segment with surface smooth but not strongly shining. Ventral surface of keels faintly granular but that of metazonites, to the sternum, similar to dorsum. Dorsal arch low; a broad shallow transverse depression on segments 4-18; lateral keels almost horizontal, the outer margin, especially those with pores, slightly raised to about height of mid-dorsum; keels of segments 2-15 or 16 with an acute tooth at anterior corner; posterior corners nearly square, increasingly produced caudad from 16-18, but much reduced in size and projection on 19. Anal valves with numerous vertical striations beginning near margin of scale and continuing upward beyond middle; margins thin, strongly raised and shining. Pre-anal scale large, triangular, its apex slightly produced; two widely separated seta-bearing tubercles at the apical third.

Gonopods as shown in Fig. 5, the apex much less deeply divided than in any other species. Second legs of male with disto-mesal portion of coxa produced into a subcylindrical process about $2\frac{1}{2}$ times as long as broad; thin and subtruncate at apex which bears three or four long setae; in front of the base of this process is a short, stout, subconic tubercle with an apical pore which apparently is the seminal opening

(Fig. 6). In other species where reference is made to the seminal process it appears to be the longer of the two shown in the figure.

Family STYLODESMIDAE

Calymmodesmus montanus, new species

Type specimen: Male holotype, U. S. National Museum 2985.

Type locality: An exceptional array of specimens collected in association with army ants at Monteverde, in the extreme northeast corner of the Province of Puntarenas, Costa Rica ($10^{\circ} 29' N$, $84^{\circ} 50' W$), at an elevation of 1400 m, as follows—from Colony 295, *Labidus praedator* (F. Smith), 14 of both sexes, 1 Feb. 1963; 54 of both sexes, including holotype, 2 Feb. 1963; 2 males, 3 Feb. 1963; 16 of both sexes, 7 Feb. 1963, R. D. Akre; 9 of both sexes, 2 Feb. 1963; 25 of both sexes, 6–8 Feb. 1963, C. W. and M. E. Rettenmeyer; from Colony E-294, *Neivamyrmex sumichrasti* (Norton), 1 male, 21 Feb. 1963, R. D. Akre; 1 female, 21 Feb. 1963; 2 females, 1 young male, 22 Feb. 1963, C. W. and M. E. Rettenmeyer.

Diagnosis: Gonopods indicating closest relationship with the Mexican *C. biensifer* Loomis but the apex of the terminal branch of each gonopod is more truncate. Also it is a smaller species with outer marginal lobes of segment 1 more distinct.

Description: Largest male 7 mm long, 1.8 mm wide but the size usually is closer to 6.5 mm long and 1.5 mm wide, some 6 mm long; females a little broader than males of same length, the largest 8 mm long, 2 mm wide.

Vertex of head deeply and narrowly impressed throughout its length; either side irregularly roughened with quite indefinite tubercles of different sizes, those near back of head small and more distinct; side of vertex rather sharply angled, with a long tubercle beginning opposite the middle of the antennal socket directed obliquely outward and upward; behind this tubercle is one about half as long but equally projecting, the two tubercles deeply separated. Front of head strongly contrasting with vertex, being whiter, very smooth and shining, densely and finely setose, but not separated from vertex by an impression.

Expanded margin of segment 1 long, horizontal and composed of 12 areas sharply defined by channels that are longer and even more impressed on ventral surface; outer area on each side about half as wide as the next; marginal areas ending in nearly uniform crenations (Fig. 7). Median area strongly convex, with 10 prominent primary tubercles, the inner two of each row usually largest; secondary tubercles distinct, scattered and about equal in size.

Ensuing segments with dorsum of males strongly convex, more so than in females, the lateral keels set low on the sides and obliquely descending. Primary tubercles large and well defined, only slightly higher on the posterior quarter of body but reduced on segment 18; low and not

well marked on segment 19; last segment with surface roughened, at most indistinctly granular. Segment 18 with posterior corners more angular than rounded. Last two segments shown in outline in Fig. 8.

Gonopods as shown in Fig. 9. Males without unusual modifications of anterior legs or sterna.

Cynedesmus trinus Loomis

A male of this species collected in Colony E-316 of *Eciton hamatum* (Fabricius), 2 March 1963, Barro Colorado Island, C. Z. by R. D. Akre. The species previously has been reported in association with *Neivamyrmex mexicanum panamense* Borgmeier, on the same island.



Loomis, H. F. 1964. "Three new polydesmoid millipeds from Central America." *Proceedings of the Biological Society of Washington* 77, 183–188.

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