

SOME BLUE-GREEN RHACHODESMID MILLIPEDS OF MEXICO RELATED TO *STRONGYLODESMUS* SAUSSURE<sup>1</sup>H. F. LOOMIS<sup>2</sup>

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## ABSTRACT

*Ceuthauxus mediator* Chamberlin is redescribed and illustrated, with *C. hispidipes* Loomis made a synonym of *C. nuevus* Chamberlin; 2 n. gen., 3 n. spp. are described and illustrated, *Chromodesmus* (n. gen.) *woodruffi* type species, *C. planus*, *C. viridis*, *Ceuthauxus potosianus* Chamberlin transferred to this genus; *Strongyloidesmus harri-soni* Causey made type of *Mexidesmus* n. gen., illustrated.

The first known of these unusually colored millipeds was *Strongyloidesmus cyaneus*, made the type of the genus by Saussure, in 1859, saying it was either blue or green. He illustrated it in beautiful color in 1860. Since then, more or less similarly colored species have been named, principally in the genera *Strongyloidesmus*, *Pararhachistes* Pocock, and *Ceuthauxus* Chamberlin. The color, in some of the species at least, changes from a shade of blue in life to one of green when held in preservative. The generic assignment of some of the recently described species is in doubt. Several months ago, in identifying a collection of millipeds for the Florida State Collection of Arthropods, 3 new species of this group were found, and, in studying them, it became possible to verify the correctness of the generic position of some of the previously described species.

Holotypes and available allotypes of the n. spp. are in the Florida State Collection of Arthropods, Gainesville, with male paratypes, where available, in the National Museum of Natural History, Smithsonian Institution, Washington, D. C.

*Ceuthauxus* Chamberlin

R. V. Chamberlin founded this genus in 1942 on *Pararhachistes nuevus*, which he had described a year earlier. His 1942 paper also included the very small new species, *C. palmitonus*. In 1943 he added *C. morelus* and *C. cruzanus*, and described *C. mediator* and *C. potosianus* in 1947, thus bringing the total species in the genus to 6. It is a curious fact that in none of these descriptions did he mention the pore formula, or the genus *Strongyloidesmus*, although 2 of his species are known to have the unusual formula of that genus. Since *Pararhachistes* has the normal formula of most large polydesmoids, it was assumed that the type species, *C. nuevus* was no exception, borne out by what I now consider its synonym, *C. hirsutipes* Loomis 1968a (p. 383). Recent examination of the holotype of *nuevus* by Dr. R. L. Hoffman, who is cataloging the Chamberlin type collection of millipeds for the National Museum of Natural History, verified its normal pore formula. In Loomis 1968a (p. 383) it was stated that a topotype of

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*C. morelus* had the formula of *Strongylodesmus*, as also was found to be the case, in the present study, of the holotype of *C. potosianus*. This holotype and that of *C. mediator* were lent to me by The Academy of Natural Sciences of Philadelphia.

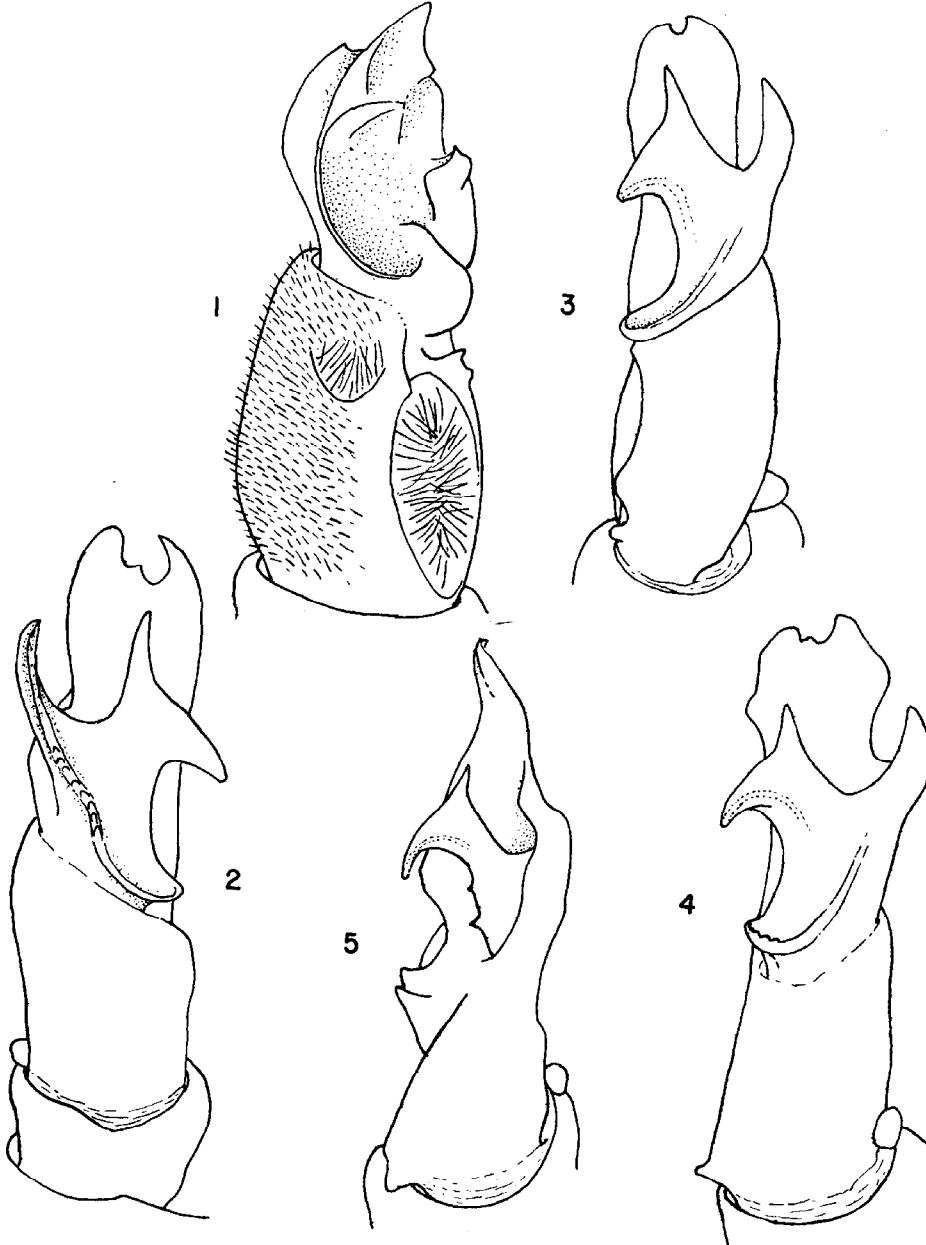


Fig. 1-5. Mexican millipeds; setae omitted from Fig. 2-5. 1) *Ceuthauxus mediator* Chamberlin, right gonopod of holotype, slightly mesad of ventrad. 2) *Chromodesmus woodruffi* n. sp., right gonopod, ventral view. 3) *C. planus* n. sp., left gonopod, ventral view. 4) *C. viridis* n. sp., left gonopod, ventral view. 5) *Mexidesmus harrisoni* (Causey), left gonopod, ventral view.

*Ceuthauxus mediator* Chamberlin

*Strongyloidesmus mediator* Loomis 1968b: 41, new synonymy.

The following characters, noted in the holotype, are in addition to those in the original description.

*Description*: Segment 1 with anterior angles broadly rounded; posterior ones more broadly rounded than in other species seen here. On succeeding segments keels high on sides of dorsum with outer margins raised as high or higher than convex middorsum; all anterior angles of keels rounded, posterior angles produced backward only after segment 16, those of segment 19 acute at tip. Pores more dorsal than lateral, opening almost upward from large, flattened marginal rim. Margins of anal valves unusually thick and strongly raised. Gonopods (Fig. 1), in microvial with holotype, unaccountably do not in the least resemble the illustration accompanying Chamberlin's description; mesal cavity very large, its long setae not projecting; setae on basal half of outer joint unusually short. Gonopodial opening of segment 7 trapezoidal, as long as broad, anterior margin almost straight across, posterior margin considerably longer and slightly concave, oblique lateral margins almost straight, no margins raised.

*Chromodesmus* Loomis, new genus

*Type species*: *Chromodesmus woodruffi* Loomis, new species.

*Diagnosis*: Like *Strongyloidesmus* Saussure in having the peculiar, nearly continuous, pore formula, but each gonopod has a large, strongly chitinized, translucent, 2-3 pronged process projecting from ventral face of outer joint.

*Description*: Large-bodied species of some shade of green. Segment 1 decidedly more rectangular than in *Strongyloidesmus*; other segments, except caudal ones, subrectangular, with rounded anterior corners and more or less squarely angled posterior ones. Segment 19 with apex of keels broadened, not coming to a sharp point. Pores in segments 5 and 7-19 in specially thickened part of rim which occupies almost all of outer margin of keels, except on several caudal ones. Gonopods large, lower portion of each outer joint with numerous long setae which also extend somewhat up dorsal face of spatulate upper portion. Gonopodial opening in segment 7 oval, its margin raised in part. Coxal processes on 2nd legs only. Some anterior legs with pad of dense setae beneath outer part of last joint.

*Chromodesmus woodruffi* Loomis, new species

*Description*: Body in alcohol only faintly green; keels almost colorless. Largest male (holotype) 50 mm long, 6.2 mm wide. Segment 1 subrectangular, anterior corners quite abruptly rounded, posterior ones almost squarely angled. Segments 2-16 subrectangular with dorsum considerably wider than keels each side, these nearly horizontal, but slightly raised on caudal segments; anterior angles rounded, bearing a tiny tooth from segments 2-16 or 17; posterior angles more or less abruptly rounded through segment 16, strongly produced thereafter; posterior apex of keels of segment 19 squarely short-truncate; outer margin of keels of segments 2-4 and 6 thick, others almost completely occupied by the thicker poriferous margin except on last few segments.

Surface of keels finely granular, intervening dorsum shining-coriaceous. Margin of anal valves thick but not greatly raised. Gonopod (Fig. 2) with upper, outer prong of process turned sidewise; outer face convex, inner face concave, ventral margin thickened throughout, with nodules along proximal part. Gonopodial opening of segment 7 broadly oval, posterior midmargin scarcely raised but increasingly raised around each back angle. Outer joint of legs 2 and 3 with pad of short setae beneath outer end. Seminal processes of 2nd legs curving caudo-ventrad with tips held over 3rd sternum.

Holotype and male paratype, MEXICO, State of Hidalgo, Durango, about 29 km S Jacala, hwy. 85, 18-VI-1963, R. E. Woodruff, in mountains along road.

*Chromodesmus planus* Loomis, new species

*Diagnosis*: Closely related to *C. woodruffi* but greener; keels more horizontal; and gonopods with basal half of each outer joint longer and more slender; spatulate dorsal half narrower and scarcely excised at tip; outer prong of process not turned edgeon.

*Description*: Holotype badly broken, 6.5 mm wide; female 49 mm long, 7 mm wide; color in alcohol light green, outer portion of keels yellowish. Dorsal surface of body quite flat; keels not appreciably raised, their surface less distinctly granular than in *woodruffi*, outer margins seldom as high as middorsum, thickened outer edge less sharply raised than in *woodruffi*; dorsum little wider than keels. Segment 1 transversely trapezoidal, front and back angles more rounded than *woodruffi*. Segments 2-10 or 11 with tiny tooth on anterior angles, at most a faint hump thereafter. Segment 10 with produced angles obliquely rounded, rather than truncate or acute. Gonopods (Fig. 3) with outer prong of each process not turned with edge down, only its lower extension thickened along edge; spatulate distal half of joint little excised at tip. Gonopodial opening of segment 7 suboval, anterior margin much more concave than posterior one which is slightly and evenly raised. Coxal processes of 2nd legs much as in *woodruffi* but more slender at apex; legs 2 and 3 with pad of short setae below outer portion of last joint. Female with coxae of 2nd legs quite squarely elevated and with a small knob at distomesal corner almost touching opposite one; margin of segment behind sex organs elevated into a triangular median lobe.

Holotype male and female, MEXICO, State of Hidalgo, San Vincente, N of Ixmiquilpan, about 2,435 m, on hwy. 85, 18-VI-1963, R. E. Woodruff.

*Chromodesmus potosianus* (Chamberlin), new combination

*Ceuthauxus potosianus* Chamberlin 1947: 32.

*Strongylodesmus potosianus* Loomis 1968b: 41.

Examination of the holotype definitely places it in this genus on the basis of the pores being on segments 5 and 7-19, shape of 19th keels, and coxal processes on 2nd legs only.

The following structural features also were observed.

Segment 1 subrectangular with anterior corners broadly rounded. Lateral keels raised from sides of body but their outer margins not reaching above middorsum except on caudal segments; dorsum

strongly convex transversely; posterior corners of anterior keels rounded, not squarely or sharply angled until behind midbody; keels of segment 19 obliquely angled at tips. Only right gonopod found with holotype; seminal hook of telopodite as shown in original illustration, but the other prong is a shorter, bluntly rounded projection, and the spatulate dorsal element has been broken off below apex. Gonopodial opening in segment 7 oval, its posterior margin nearly straight across and not raised, but lateral margins slightly elevated behind. Coxal processes of 2nd legs short and raised ventrad but not bent caudad.

*Chromodesmus viridis* Loomis, new species

*Diagnosis:* Body narrower and greener than in other species. Base of outer joint of gonopods more slender and with shorter setae than in other species; spatulate dorsal portion short, thick, and with sides medianly expanded; chitinized process heavy.

*Description:* Body narrow, badly broken but about 50 mm long, 5 mm wide, decidedly green, only outer margins of keels lighter. Segment 1 subrectangular, anterior corners broadly rounded, posterior ones more rounded than in other species. Succeeding keels subrectangular, considerably narrower than dorsum, mostly horizontal, only a little elevated on segments 16-9, those of latter broadly rounded at apex; a very small tooth at anterior corner of keels of segments 2-7 or 8 only. Surface of dorsum essentially coriaceous, that of keels faintly granular. Inner margins of anal valves quite thin and only moderately raised. Gonopods (Fig. 4) with setae on lower half of outer joint shorter than in other species, those on dorsal surface and in mesal cavity long. Gonopod opening in segment 7 a short, broad oval, its margin raised into a high rounded scallop at each posterior corner but scarcely raised between them. Legs 1-3 with dense pad of short setae beneath distal part of last joint. Coxal processes of 2nd legs small, slender, and projecting downward but hardly backward.

Holotype male, MEXICO, Tamaulipas, km 165, hwy. 101, 1,830 m, on rock in moist jungled mts., 25-VI-1970, R. E. Woodruff.

*Mexidesmus* Loomis, new genus

*Type species:* *Strongylodesmus harrisoni* Causey 1971: 31.

*Diagnosis:* Differing from *Chromodesmus* in having normal pore formula, very thin keels, and gonopods with base of last joint shorter, less columnar, its upper half narrower to apex, rather than spatulate.

*Description:* Body long, slender, loose jointed; females nearly as slender as males. Dorsum narrower than keels which are unusually thin and outwardly raised above middorsum from segments 2-19, especially those at ends of body, their surface strongly concave. Segment 1 broadly subrectangular, front angles broadly rounded, posterior ones almost square. Anterior angles of keels of succeeding segments with a small but quite distinct tooth mesad of which are 1 to several minute serrations on anterior segments. Posterior margin of keels broadly convex, more or less dentate, back corner separately produced as a short angulation. Margin of keels thin, except at pore and behind it; on segment 19 this thickening contains a broad, more or less

distinct channel ending at the nearly square truncation at apex of keel. Gonopod (Fig. 5) with long setae on basal half and up dorsal face of upper half, those in mesal cavity longer than elsewhere. Gonopodial opening in segment 7 oval, its sides and back margins thinly but abruptly considerably raised. Processes on coxae of 2nd legs broad-based, short cones. Outer joint of legs 2 and 3 somewhat more setose beneath apex than elsewhere but no obvious pad.

*Mexidesmus harrisoni* (Causey), new combination

*Strongylodesmus harrisoni* Causey, 1971, p. 31.

Four males, 2 females, several young, MEXICO, Tamaulipas, 0.5 km W of Gomez Farias, Resumidero de los Mangos, 14-V-1971, Wm. R. Elliott. These specimens were sent to me by Dr. Causey and were said to be paratypes, although the locality was not listed in her description.

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