

Chelodesmid Studies. XI.

A new genus and species from Venezuela, referable to the new tribe Chondrodesmini¹

by

Richard L. HOFFMAN

With 14 text figures

ABSTRACT

Eumastostethus cuisinieri is described from a single male taken in eastern Venezuela. This genus is manifestly related to *Leptherpum* which is endemic to the Guianas and northern Brasil, and the two in turn may be regarded as belonging to a tribe Chondrodesmini along with *Chondrodesmus*, *Iphyria*, and *Raima*, a new genus based on *Odontopeltis macconnelli* Pocock. A key is provided to these genera and some remarks made on the status of each.

During a visit to the Museum d'Histoire Naturelle de Genève in 1975, I noticed an interesting undescribed chelodesmoid collected in Venezuela many years ago by the Swiss biologist L. Cuisinier. This specimen had been examined by Dr. J. Carl and labeled as a new species of *Leptherpum*, but a preliminary inspection convinced me that a different generic type was involved. Subsequently loaned to me for study by Dr. Bernd Hauser, the specimen not only confirmed my initial judgement about its status, but also was instrumental in helping formulate a decision on the affinities of several related genera of northern South America. It is therefore appropriate that publication of the new generic and specific names for Cuisinier's specimen provides the occasion for definition of a new tribal group and a new generic name for a related taxon.

Chondrodesmini, trib. nov.

Components: *Chondrodesmus* Silvestri, 1897; *Leptherpum* Attems, 1931; *Iphyria* Chamberlin, 1941; *Raima* gen. nov.; *Eumastostethus* gen. nov.

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Diagnosis: Small to relatively large chelodesmoids in which the gonopod aperture is small (contained entirely in the prozonum) and transversely oval; gonopods very small relative to body size, with rudimentary sternal remnant; coxae variable in form, typically produced distad laterally to base of telopodite, and with modest to large dorsal apophysis; telopodite with large prefemoral process and reduced, simple, falcate acropodite, set off by a basal cingulum on lateral side.

Metaterga usually granular; ozopores frequently set off on isolated ovoid peritremata; legs long and slender, prefemora often spined, tibial pads never present; anterior legs of males unmodified. Sterna broad, usually spined at bases of legs. Epiproct of normal chelodesmoid form, not notably prolonged. Hypoproct without acute median projection.

Distribution: Northern South America (Peru to Guyana); Middle America north as far as Guerrero.

Remarks: Although the internal homogeneity of this tribe seems relatively evident, much less can be said vis-a-vis its relationships with other groups of chelodesmoids. The prominent lateral prolongation of the gonopod coxa is apparently a specialized feature that recurs randomly amongst a number of other lineages, and even the dorsal coxal apophysis is not necessarily indicative of relationships with other genera so endowed. As none of the chondrodesmid genera reflect all of the tribal characteristics, allocation of genera to the group must be made on the basis of characters taken in an aggregate, including especially overall body form. The small size of the gonopods, and the aperture that contains them, is the only feature that is near to being diagnostic in itself. Judged from illustrations only, one might justifiably think that *Incodesmus* (CHAMBERLIN, 1955), a Peruvian genus, might be referred here, but examination of the type of *I. urubambae* shows that the gonopods are of a size normal for the family and the aperture is large and extends well into the metazonum. For the present at any rate I must hold *Incodesmus* in a status of suspended judgement rather than refer it to any of the established tribes.

In an earlier paper (1966) I rather overconfidently postulated affinity of *Leptherpum* with the Brazilian genera *Macrocoxodesmus* and *Eucampesmella*, largely on the basis of presumed similarities in gonopod structure. It is necessary to make a retraction on this point; I now place more emphasis on the size and shape of the gonopod aperture and coxae, and overall segmental structure and texture, and must conclude that JEEKEl's surmise (1963) of affinity between *Leptherpum* and *Chondrodesmus* was more correct. Still it is difficult to associate either of these genera with the nuclear fauna of southeastern Brasil, and perhaps their origin was among the Andean components of the family. That *Chondrodesmus* is a fairly recent genus still in an expanding phase is suggested by the large number of weakly differentiated species and the fact that it is the only Andean genus to have invaded Middle America (extending north as far as Guerrero).

An interesting point about the Chondrodesmini is that in both of its larger genera the gonopod structure remains fairly uniform, while specific differences show up chiefly in details of external form, size, and color. Because of this notable tendency (strikingly analogous to that of the xystodesmid tribe Rhysodesmini), I think it is justified to remove the Guyanian species *Odontopeltis macconnelli* from its present place in *Iphyria* into its own genus, even though two monotypic genera are the immediate result. As heretofore constituted, *Iphyria* was far more heterogeneous with its two species than was *Chondrodesmus* with its 40 or more.

KEY TO THE GENERA OF CHONDRODESMINI

1. Prefemoral process of gonopod broadly expanded into a large, laminate shield with a basal branch on the median side; telopodite strongly reduced to a short, simple, falcate remnant; limbus fringed and/or setose 2
 Prefemoral process not in the form of a broad concave shield; telopodite relatively larger; limbus broad, but neither fringed nor setose 3
2. Anterior sterna of males with large, bilobed paramedian processes (Fig. 8); prefemoral process of gonopod with a small laminate secondary lobe adjacent to telopodite (Fig. 14, B); side margin of face with labrogenal offset (Fig. 5) *Eumastostethus*
 Anterior sterna of males unmodified; prefemoral process of gonopod lacking laminate secondary process; side margin of face without offset . . . *Leptherpum*
3. Coxae of gonopods not notably prolonged distad beyond base of telopodite on lateral side; dorsal side of coxa with numerous long setae (Fig. 1) . . . *Chondrodesmus*
 Coxae of gonopods slightly to considerably prolonged laterally (Figs. 2-4); dorsal surface of coxa with one to 3 or 4 setae 4
4. Coxa of gonopod with small indistinct dorsal apophysis, produced into a prominent lobe subtending and mesad to base of cannula (Fig. 3, X) . . . *Iphyria*
 Coxa with long slender apophysis extending nearly to apex, no mesal lobe at base of cannula (Fig. 4) *Raima*

Chondrodesmus

Chondrodesmus Silvestri, 1897, *Boll. Musei Zool. Anat. comp. R. Univ. Torino* 12 (305): 13. Type species, *C. armatus* Silvestri, by monotypy.

Dirhabdophallus Pocock, 1909, *Chilopoda & Diplopoda* (in: *Biol. Centr.-Amer.*), p. 161. Type species, *D. montanus* Pocock, by original designation.

Chondrodesmus: ATTEMS 1938, *Tierreich* 69: 74.

ATTEMS (op. cit.) has published the only attempt to survey this large and diverse Neotropical genus, accounting "24 sichere und 11 unsichere Arten". Since 1938 the number of species has been increased considerably and no less than 40 names are now referable to *Chondrodesmus*; unfortunately the percentage of "unsichere Arten" has outpaced the well-described forms, and the genus cries out for revision. The number of undescribed species in my collection alone suggests that when the generic range (Peru to central Mexico) has been thoroughly collected, we may account at least a hundred valid forms of *Chondrodesmus*.

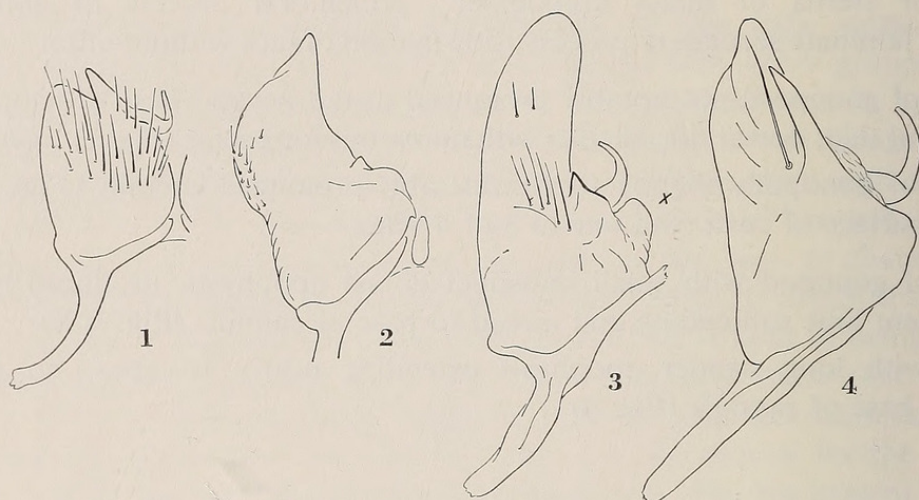
Leptodesmus carminatus Brolemann, included by Attems in this genus, must be excluded on both anatomical and geographic grounds (it occurs in eastern Brasil), as must also two species based by CHAMBERLIN (1957) on female specimens from Chile.

In terms of the gonopod coxa, this genus is less specialized than the others referred to the Chondrodesmini. The gonopods themselves are remarkably reduced in size, as shown by the drawings (Figs. 1-4) all of which were made at the same magnification. The species of *Chondrodesmus* from which Fig. 1 was drawn was appreciably larger in body size than any of the other three generic representatives.

Eumastostethus gen. nov.

Type species: *E. cuisinieri*, sp. nov.

Diagnosis: A chondrodesmine genus in which the peritremata are small, ovoid, sharply set off from lateral edge of paranota, of which they comprise the posterior corner on segments 16-19; anterior corners of paranota produced into acute lateral tooth; metaterga nearly flat, surface finely granular, with three transverse rows of small polished tubercles, a poorly defined transverse depression between rows 1 and 2. Podosterna moderately elevated, glabrous, granulorugose, produced into acute spines posterior to coxal condyles. Legs long and slender, prefemora with small blunt apical spine, tarsus as long as tibia and postfemur combined; anterior legs of male unmodified.



Gonopod coxae of chondrodesmine genera

Fig. 1. *Chondrodesmus* sp. (Ecuador). Fig. 2. *Eumastostethus cuisinieri*, n. sp. Fig. 3. *Iphyria claralata* Chamberlin, holotype. Fig. 4. *Raima macconnelli* (Pocock), topotype. All drawings made to same scale, showing left gonopod coxa in anterior aspect. X, median coxal lobe characteristic of *Iphyria*

Limbus broad and hyaline, ventrally with prominent setae. Side of head with small but distinct labrogenal offset. Antennae moderately long and slender, articles subequal in size and shape.

Sternum of segments 5 and 6 of male with four large bilobed paramedian processes; a pair of similar but smaller processes between legs of segment 4. Gonopod aperture small, transversely oval, its edge flared, highest at lateral ends. Gonopods small, a small median sternal remant present between coxae, latter conically prolonged on lateral side, dorsally with two macrosetae and a rudimentary apophysis laterad to base of cannula. Telopodite larger than coxa, major axis of prefemur more or less in line with that of coxa; prefemoral process large, laminate, with two processes on ventral side, one slender and falcate, the other broad and short, with serrate edges. Acropodite simple, slender, evenly acuminate, set off by a basal cingulum on lateral side.

Etymology: From the Greek *eu-* (well, thorough) + *mastos* (breast, nipple) + *stethos* (chest, sternum), in allusion to the unique sternal modification of the anterior segments in the male. Gender masculine.

***Eumastostethus cuisinieri* sp. nov.**

Figures 5-14

Diagnosis: With the characters of the genus. Specific characters will be found in size, ornamentation, and details of gonopod structure when additional species are found.

Material: Male holotype (Mus. Genève) labeled "Botanamo (forêt), Venezuela, L. Cuisinier". Presumably this refers to the Rio Botanamo (ca. 7°N, 61°W), about 50 km east of Tumerero, Edo. Bolivar, Venezuela.

Holotype: Adult male, 52 mm in length, with the following width values:

Segment 1-8.5 mm	Segment 10-8.0 mm
2-9.2	12-7.8
4-8.5	14-7.7
6-8.4	16-7.5
8-8.2	18-5.5

Body distinctly widest at segment 2, narrowing very abruptly to segment 4, thence very gradually to posterior end; W/L ratio at midbody about 15.4%.

Head normal in appearance, width across genae 4.4 mm, relatively flattened; surface of epicranium finely granulate, sides of genal rugulose, face otherwise microscopically coriaceous; vertex with broad shallow median groove down to level of antennae; genae moderately convex, without lateral margin but with shallow longitudinal depression, lateral edge with a small but distinct labrogenal offset (Fig. 5, 0). Interantennal space moderately wide (1.1 mm), about one-fourth of head width. Antennal sockets with elevated and polished rim. Epicranial setae 2-2, interantennal 1-1, frontal 2-2, clypeal setae in two irregularly arranged rows, the lower of which has about 6-6, labral 16-16; marginal genal setae 3-3. Labrum set off from clypeus by a fine transverse ridge.

Antennae (Fig. 6) long and slender, reaching back to 3rd segment, without special modifications, 2nd article slightly longer than others, relative lengths of articles: $2 > 6 > 5 = 4 = 3 > 1$. Small sensory areas present on outer ends of articles 5 and 6.

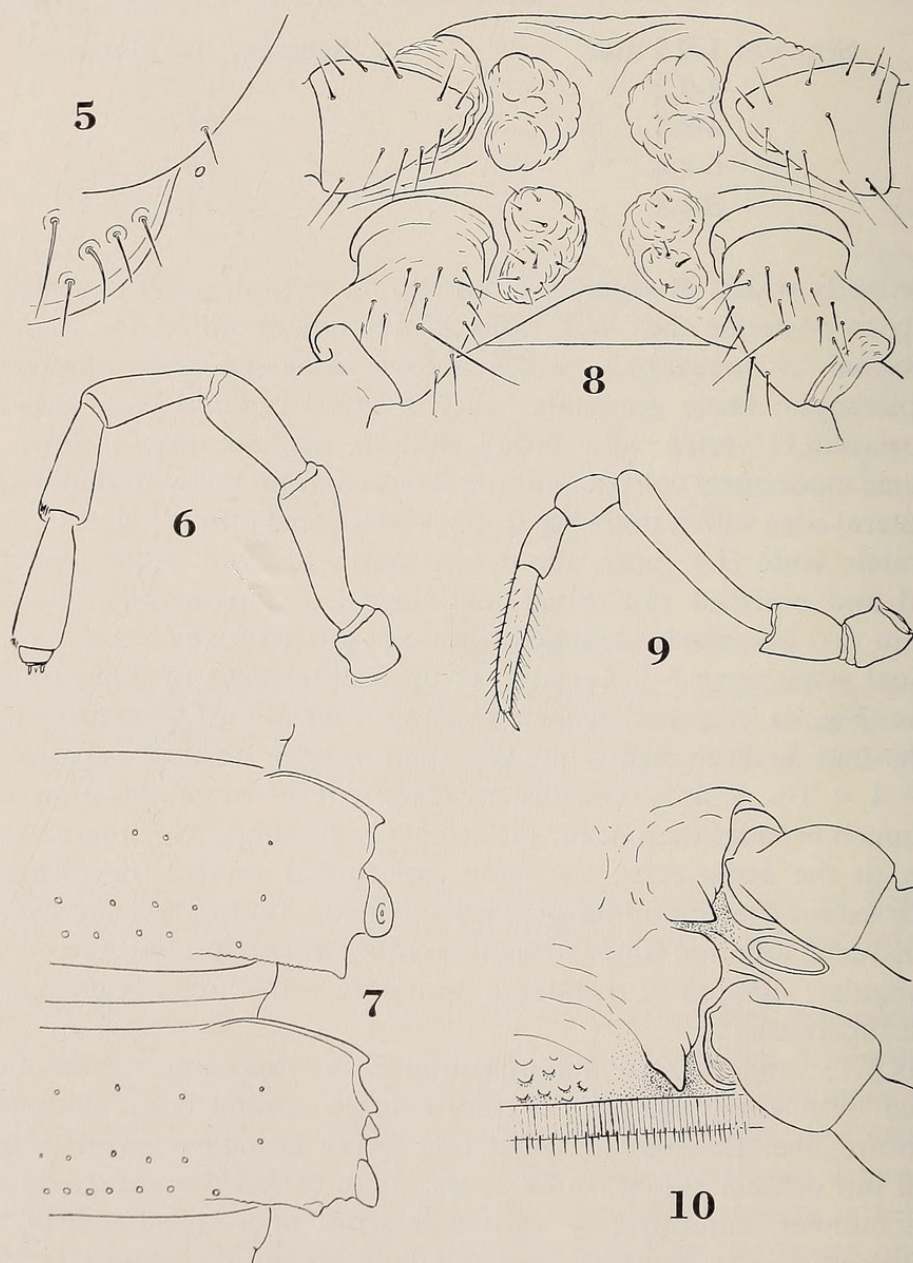
Collum much broader than head, surface finely granular, its paranota evenly acuminate laterally to the acute ends, the latter not turned caudad. Segments 2-4 similar in appearance except that paranota of 4 are distinctly longer than the two preceeding; paranota transverse, anterior edges straight, anterior corner produced acutely, posterior corners rectangular; dorsum of metaterga granulose with three irregular and indistinct rows of small tubercles.

Segments 5-15 similar in size and appearance, the two subsegments of nearly equal size, separated by a broad shallow stricture entirely around body, its anterior edge a fine sharp suture line. Dorsum of metaterga evenly granulose, with three transverse rows of small but distinct polished tubercles, those of 3rd row nearly on caudal edge, about 4-4 in number, anterior row located in front of a broad indistinct transverse depression. Paranota set high, nearly horizontal, nearly transverse back to 15th segment, anterior and posterior corners mostly rectangular to acute, the anterior with a projecting tooth; segments 5, 7, 9, 10, 12, 13, 15, 16-19 with prominent oviform peritreme set off from edge by anterior and posterior emarginations, often with a marginal dentation between peritreme and anterior corner (Fig. 7); aporiferous segments with usually two lateral teeth between the corners. Segments 16-19 becoming abruptly narrower,

with paranota increasingly turned caudad, and with dorsal tuberculation progressively less distinct.

Epiproct relatively short, sides of basal half strongly convergent, apical half set off by basal whorl of setiferous tubercles, surface smooth and polished. Apex of epiproct not declivent, slightly convex dorsally. Paraprocts without peculiarities; hypoproct subtriangular, median projection fairly distinct, paramedian tubercles small, set on edge of sclerite.

Sterna elevated, anterior surface slightly, posterior considerably excavated; surface granular, glabrous, produced into acute spines posterior to coxal condyles (Fig. 10), these spines longer and sharper on posteriormost segments. Sides of metazona uniformly

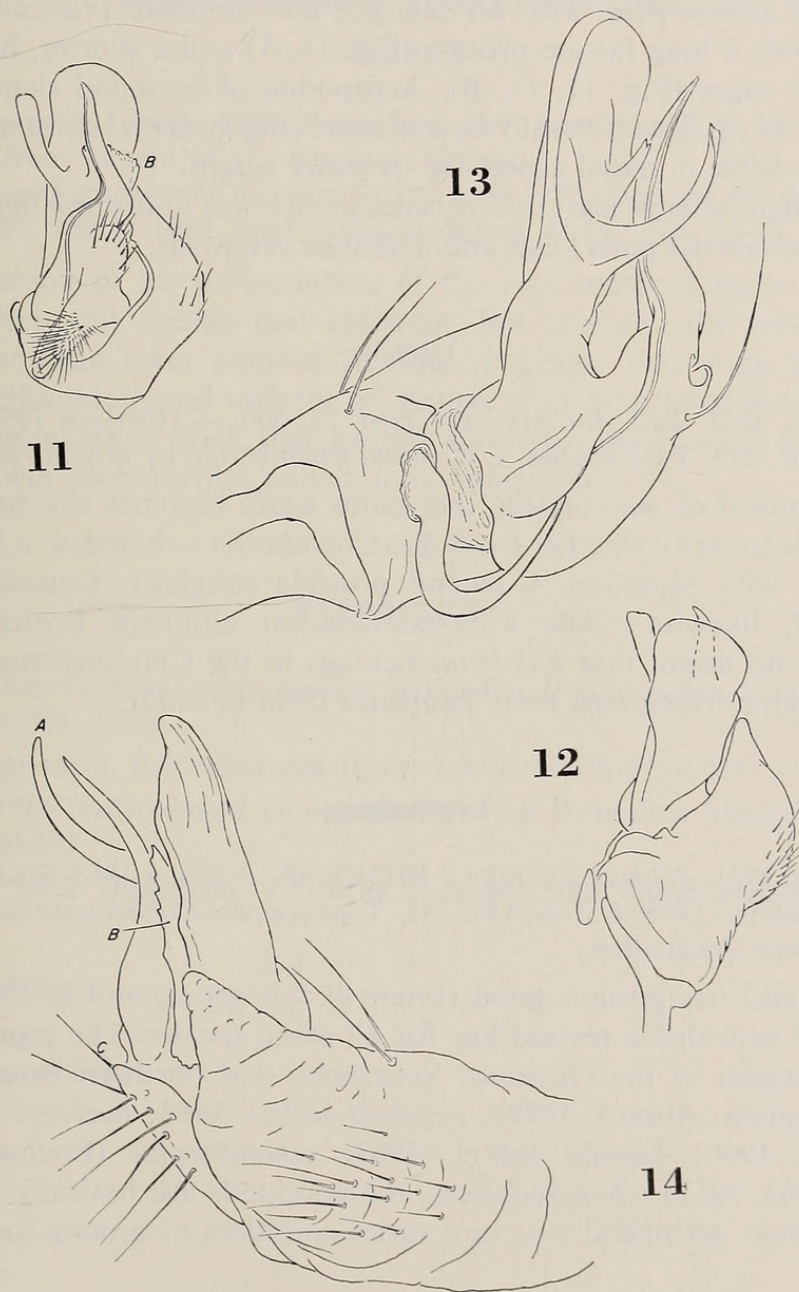


Eumastostethus cuisinieri, n. sp.

Fig. 5. Left side of face, showing marginal offset between labrum (below) and gena (above notch). Fig. 6. Antenna. Fig. 7. Segments 10 and 11, right side of body, dorsal aspect. Fig. 8. Sternum and coxae of 6th segment, ventral aspect. Fig. 9. Leg from midbody segment. Fig. 10. Sternum of midbody segment, left side, showing sternal spines, ventral aspect

granular with scattered larger acute tubercles, supracoxal ridges present only on segments 3-7, lacking prominent acute tubercles. Limbus broad and distinct around body, ventrally and partly up sides with a dense fringe of fine long hairs much as in *Leptherpum carinovatum* (Fig. 10). Stigmata similar in size and shape, elongate vertical slits with very slightly raised edges, anterior stigma set in front of dorsal coxal condyle but not touching it, posterior stigma located about equidistant between the two condyles.

Legs (Fig. 9) long and slender, relative length values of podomeres $3 > 6 > 5 = 4 = 2 = 1$, all except coxa and prefemur uniformly setose on all surfaces; tarsal claw moderate, straight. Anterior legs unmodified.



Eumastostethus cuisinieri, n. sp.

Fig. 11. Left gonopod, ventral aspect showing transverse lamella of prefemoral process (B). Fig. 12. Right gonopod, dorsal (anterior) aspect. Fig. 13. Left gonopod, mesal aspect. Fig. 14. Left gonopod, lateral aspect, showing prefemoral processes (A and B) and cingulum at base of acropodite (C). Figs. 11 and 12 drawn X45, Figs. 13 and 14 drawn X90

Sterna of segments 4-6 of the form shown in Figure 8; 5 and 6 with two pairs of large prominent bilobed sternal processes, one adjacent to each coxa, segment 4 with two smaller but similar processes virtually in contact between the 3rd pair of legs. Similar processes in greatly reduced form are present also on segments 7 and 8, posterior to which they are replaced by subcoxal spines.

Gonopod aperture small, transversely oval, confined entirely to the metazonum, anterior edge elevated above level of stricture; lateral ends forming high subtriangular areas; posterior edge compressed and elevated.

Gonopods relatively small, scarcely extending onto 6th segment, ends of coxae projecting laterally into view beside base of telopodites. A small median sternal remnant present, isolated from coxal section of sternum (Fig. 12). Telopodite (Figs. 11-14) similar to that of *Leptherpum*, with an enlarged and laminate prefemoral process, its ventral surface with a long falcate process (Fig. 14, A) and a shorter, broader laminate lobe with serrate edges (Fig. 11, 14, B). Acropodite of gonopod slender and simple, evenly acuminate to tip, set off basally by a distinct cingulum on lateral side (Fig. 14, C), prostatic groove visible in mesal aspect for its entire length.

Color at present (after at least four decades in alcohol) uniformly light grayish-black dorsally, sterna somewhat paler; legs and antennae yellowish.

Iphyria

Iphyria Chamberlin, 1941, *Bull. Am. Mus. nat. Hist.* 78: 500. — HOFFMAN 1954, *Proc. ent. Soc. Washington* 56: 219. Type species, *I. claralata* Chamberlin, by original designation.

With the removal of *macconnelli*, this genus again becomes effectually monotypic, as it is not possible to verify whether *I. rubripes* Chamberlin — based on a female specimen — is congeneric with *claralata*. A second possible congener, *Leptodesmus kalobatus* Brolemann 1919, likewise needs a re-examination although Brolemann's original description leave no doubt that *kalobatus* belongs in the Chondrodesmini. *I. claralata* was described from northeastern Peru, *kalobatus* from Ecuador.

Leptherpum

Leptherpum Attems, 1931, *Zoologica (Stuttg.)* 30 (3/4): 48. — JEEKEL 1963, *Stud. Fauna Suriname* 4: 119. — HOFFMAN 1966, *J. Zool.* 148: 542. Type species: *Leptodesmus carinovatus* Attems, 1898, by original designation.

JEEKEL (op. cit.) has given a good review of this genus, and in 1966 I added two more species and provided a revised key for all seven species. The group is apparently endemic to the region of the Guyanas, Venezuela, and northern Brasil, and includes the taxa; *carinovatum* (Attems, 1898); *geijskesi* Jeekel, 1963; *huebneri* (Attems, 1901); *jeekeli* Hoffman, 1966; *loomisi* Jeekel, 1963; *schomburgkii* (Erichson, 1848); and *staheli* Jeekel, 1963. As in *Chondrodesmus*, the gonopods are basically similar in all of these forms, whereas peripheral structure varies considerably among them.

Raima gen. nov.

Type species: *Odontopeltis macconnelli* Pocock, 1900.

Diagnosis: A monotypic chondrodesmine genus in which the gonopod coxa is greatly prolonged laterad, exceeding base of telopodite, dorsally with a single macro-

seta and an extremely long slender apophysis (Fig. 4). Paranota relatively small, anterior corners not developed, margins entire, ozopores not isolated in oviform peritremata. Limbus broad, unmodified. Prefemora of legs without apical spines. Sterna broad, moderately setose.

Distribution: Coincident with the type locality of the single species, but probably general in the Pacaraima Mountains, Brasil-Guyana-Venezuela.

Etymology: The name is derived from the common element of the two geographic names Pacaraima and Roraima. Gender feminine.

Raima macconnelli (Pocock) comb. nov.

Figure 4

Odontopeltis macconnelli Pocock, 1900, *Trans. Linn. Soc. Lond.*, ser. 2, 8: 64, fig. 1. Holotype ♂ (Brit. Mus.) from summit of Mt. Roraima, Guyana.

Leptodesmus (*Pseudoleptodesmus*) *macconnelli*: ATTEMS 1938, *Tierreich* 69: 44.

Iphyria macconnelli: JEEKEL 1963, *Stud. Fauna Suriname*, 4: 141, figs. 44-46.

On the occasion of his redescription of the type material Jeekel emphasized the differences between this species and *claralata*, but provisionally referred the former to *Iphyria* rather than erect another monotypic genus. Following a somewhat less conservative methodology and with the advantage of an additional decade of experience with the Chelodesmidae, I think that generic status for *macconnelli* is amply justified, and that *Raima* will probably not remain long monotypic.

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Address of the author:

Radford College
Radford, Virginia 24142
USA



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