

Pleuroporodesmus, an aberrant new genus of the family Paradoxosomatidae from Borneo (Diplopoda, Polydesmida)

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ABSTRACT. — Description of *Pleuroporodesmus serralatus* nov. gen., nov. spec., from eastern Borneo. The new genus is compared with *Centrodesmus* Pocock, 1894, from Sumatra, and for the two the new tribe Centrodesmini is erected. Both genera are known only in the female sex.

INTRODUCTION

Already many years ago the author published a paper on the Paradoxosomatidae of Borneo (Jeekel, 1963). Since then, no new information on the paradoxosomatid fauna of the island has become available. Recently some samples from various localities in Borneo were received for identification from Dr. B. G. Osella, Verona, Italy, and this material will be treated in a forthcoming paper.

In the collections which served as a basis for the 1963 paper there were some samples of a taxonomically quite aberrant paradoxosomatid. These samples, however, did not contain male specimens and for that reason no further attention was given to them. As a general rule the description and naming of species of Paradoxosomatidae is to be discouraged in the case of absence of male specimens, since it is almost impossible to properly characterize a paradoxosomatid on the basis of external non-sexual characters alone and altogether impossible to establish its taxonomic position.

In the present case, however, the material is characterized by some quite peculiar features, and since it became obvious that the species is related to the little-known and taxonomically enigmatic genus *Centrodesmus* Pocock, 1894, from Sumatra, a further delay of its description does not seem justified. Obviously we are dealing here with a group of species in which males are quite rare. *Centrodesmus typicus* Pocock, 1894, was based on a single female specimen, and a second species of the same genus *C. discrepans* Silvestri, 1895, also from Sumatra, is likewise known only in the female sex. The material of the species under report consists of two samples from East Borneo obtained by two different collectors. Since four different expeditions to Sumatra and Borneo did not succeed in collecting any male specimen, one may doubt the discovery of males in the near future, if ever. In the interest of completing our knowledge of the Indonesian paradoxosomatid fauna to the possible extent the Borneo material is described here and given a tentative place in the taxonomic system of the Paradoxosomatidae.

Pleuroporodesmus nov. gen.

Generic diagnosis. — Rather large sized Paradoxosomatidae with 20 somites. Head without particulars. Antennae rather long and slender, the antennomeres subcylindrical, not much differing in length.

Collum with large paranota which at their base are anteriorly expanded. Surface granular, with a transverse row of granules along the anterior margin.

Somites weakly constricted; the waist narrow and without sculpture. Metatergites granular, with a transverse row of tubercles along the caudal margin. Transverse furrow present from the 2nd to the 18th somite. Typical pleural keels absent; a few anterior somites have a distinct crenulate ridge along the anterior margin of the sides.

Paranota strongly developed, wing-like, as wide at their base as the length of the metatergites. Their margins laterally denticulate and anteriorly and posteriorly serrulate, without marginal callus. Caudal edges acutely angular. Paranota mostly horizontal, but in some of the ante-

rior somites they are directed a little upward and are raised above the middorsal level. Pore formula normal. Pores conspicuous, situated on the lower surface of the paranota near their base, quite remote from the margin.

Sternites longer than wide. Cross impressions weakly impressed, furrow-like. No sternal cones. Legs rather long.

Anal somite with short epiproct, bearing a number of relatively strong conical tubercles. Hypoproct with setiferous cones.

Female without particular epigynal structure. Male characters unknown.

Type-species. — *Pleuropodesmus serralatus* nov. spec.

Distribution. — East Borneo.

Pleuropodesmus serralatus nov. spec.

Material. — East Borneo: Blu-u, Mahakkam River, November 1898 (Borneo Exped., Coll. Dr. A. W. Nieuwenhuis), ♀ holotype (Museum Leiden). East Borneo: without nearer location (Coll. Dr. E. Mjöberg), 4 ♀, 1 juv. ♀ (19 somites) (Mus. Stockholm).

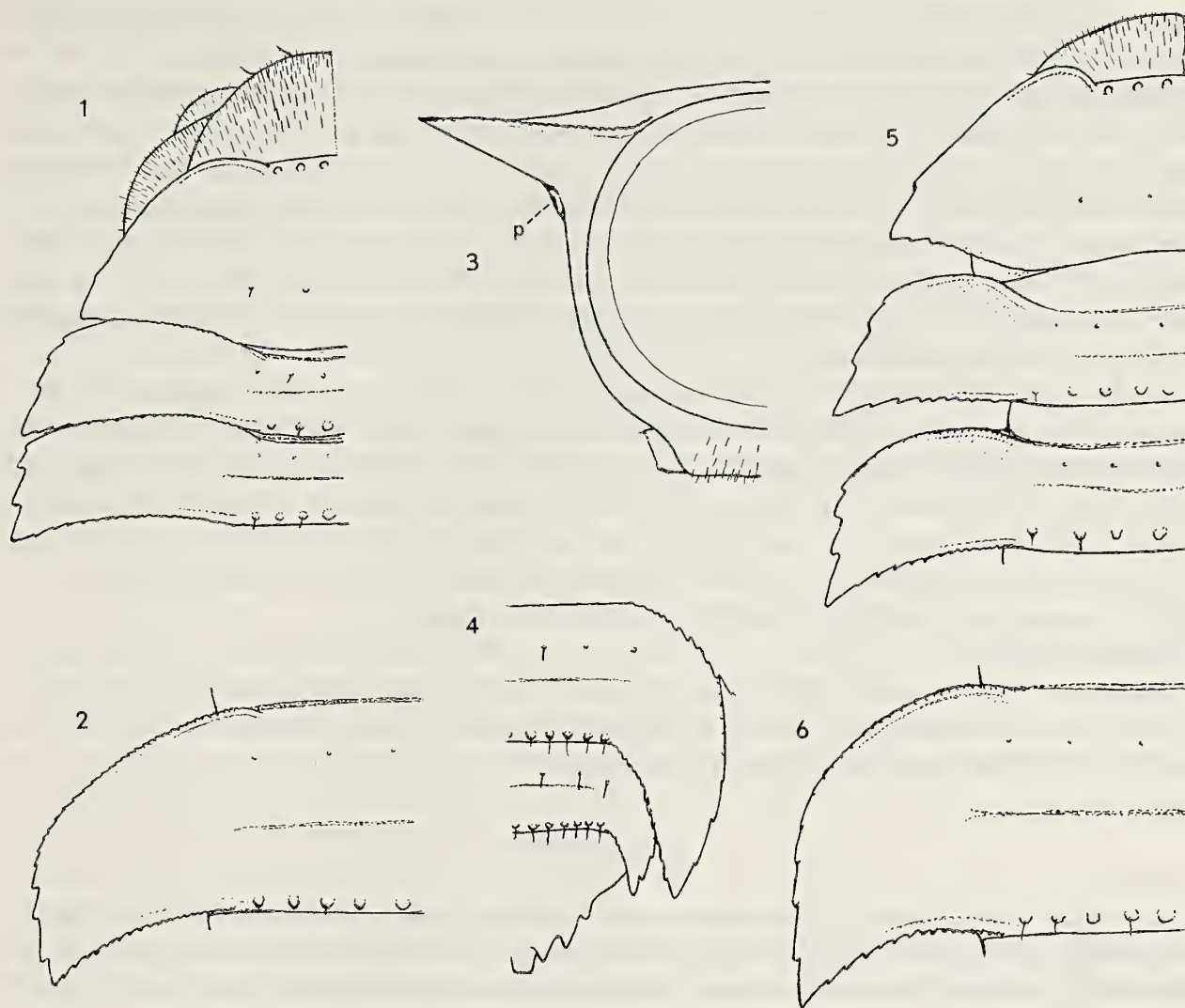
Description. — Colour: Dull brown; venter, sternites and the paraprocts and hypoproct yellowish brown. Labrum and lower part of clypeus, antennae, legs and a narrow marginal zone of the paranota brownish yellow. Juvenile pale brownish.

Width: Holotype 5.9 mm; other adult ♀ specimens 5.8-6.2 mm; juvenile ♀ 4.1 mm.

Head and antennae: Labral emargination rather deep and rather narrow. Clypeus rather weakly impressed towards the labrum, its surface weakly convex, roughened by minute setiferous granules. Pubescence of headplate and lateral sclerites rather dense; the hairs rather short. Lateral border of clypeus faintly concave, without notch near the labrum. Frons not demarcated from clypeus or vertex, a little swollen. Antennal sockets separated by 1.1 times the diameter of a socket or by 0.45 times the length of the 2nd antennomere. Postantennal groove rather wide, moderately deep, the wall in front moderately prominent. No postantennal bean-shaped area. Vertex transversely widely and evenly convex; longitudinally rather strongly convex in the upper part, less convex in the lower part. Vertigial sulcus well impressed, running downward to between the antennal sockets and dividing there into two branches which run towards the antennal sockets. Vertex finely subgranulose. Antennae rather long and slender, slightly clavate with the 6th antennomere a little thicker than the others. Antennomeres 2 to 5 subcylindrical, with their apices slightly incrassate; the 6th subcylindrical, gradually widening distad, but not inflated. Pubescence moderate in the basal antennomeres, becoming rather dense in the distal ones. Relative length of antennomeres 2 to 6: 1.00, 0.90, 1.00, 0.90, 0.80.

Collum: (fig. 1) Much wider than the head, trapezoidal in dorsal outline. Anterior margin weakly and evenly convex in the middle, a strong notch at the base of the paranota, then strongly convex becoming gradually less convex laterally. Posterior border widely and evenly concave, widely convex more laterally, the posterior border of the paranota widely concave again. Margin of paranota thin, a fine marginal rim present only along the convex anterior border. The lateral margin a little undulate, on account of some abortive lateral teeth, and with one distinct tooth a little in front of the acuminate latero-posterior edge. Posterior margin of paranota finely and irregularly serrulate. Surface finely and densely granular; along the anterior margin a transverse row of six tubercles, sometimes bearing a short hair, and about four setae on the surface arising from minute tubercles. Surface longitudinally faintly convex anteriorly and posteriorly, weakly concave in the middle; transversely flat in the middle, then weakly convex, and finally strongly concave, with the paranota strongly raised above the middorsal level. Sometimes a fine median furrow not reaching the anterior and posterior margins.

Somites: Constriction rather weak, waist quite narrow, smooth, not sharply demarcated from the pro and metasomites. Prosomites minutely densely granular. Metatergites densely granular. Along the posterior margin a transverse row of four plus four, or more generally five plus five, tubercles sometimes bearing a short hair. Generally the middle tubercle is flattened. The 19th somite has a row of six plus six tubercles along the posterior margin, and in addition a



Figs. 1-6. *Pleuroporodesmus serralatus* nov. gen., nov. spec. — 1: collum and somites 2 and 3, left side, dorsal aspect, ♀ holotype. 2: left side of 12th somite, dorsal aspect, ♀ holotype. 3: anterior aspect of right side of 5th somite, ♀ holotype (p = pore). 4: right side of 18th to 20th somites, dorsal aspect, ♀ holotype. 5: collum and somites 2 and 3, left side, dorsal aspect, ♀ (coll. Mjöberg). 6: left side of 12th somite, dorsal aspect, ♀ (coll. Mjöberg).

transverse row of three plus three hairs in front of the transverse furrow. The latter row may be visible on other somites, but mostly the hairs are rubbed off. Transverse furrow present from the 2nd to the 18th (vaguely also on the 19th) somite, well impressed on most tergites and disappearing laterally at the base of the paranota. Sides subgranulose. No pleural keels, but the 3rd and 4th somites have a transverse low granular ridge along the anterior margin of the pleurae, which is particularly well developed in the 3rd somite and curves a little caudad towards the ventral side.

Paranota (figs. 1-4): 2nd somite distinctly wider than the collum, the 3rd and 4th each a little wider than the preceding. Paranota strongly developed, subsimilar in most somites. Paranota up to about the 7th somite raised and projecting dorsad of the middorsal level. Anterior margin shouldered at base, widely convex. Latero-anterior edge indistinct and mostly not defined, the anterior margin passing over gradually into the lateral margin, which is more or less widely rounded. Latero-posterior edge acuminate. Posterior margin widely concave. Lateral margin with three larger teeth, which in some cases may bear a short seta. The anterior margin finely rimmed, and in most somites bearing a series of about twenty fine teeth, the proximal close to each other and the distance laterally becoming gradually a little wider up to the first larger lateral tooth. Posterior margin similarly serrulate, with the teeth growing a little larger laterad. No marginal calluses. The pores (fig. 3, p) situated on the lower surface of the paranota near

their base, about halfway the metasomite. Pores surrounded by a low crater-like peritreme. Paranota of 19th somite small, but basically similar to those of the preceding somite.

Sternites and legs: Sternites of middle somites with distinct cross impressions which are not wide, but furrowlike. Pubescence rather dense to moderate. Sternite of 4th somite as wide as that of the next, medially impressed. Sternites a little longer than wide (ratio 1.1 : 1.0). Legs rather long and slender. Femora straight, the tarsi faintly arched. Pubescence moderate on all podomeres. Relative length of podomeres 2 to 6: 0.40, 1.00, 0.35, 0.35, 0.80. Epigynal structure not developed. Each side of the anterior margin of the 3rd somite with a wide emargination, embracing the coxae of the 2nd pair of legs, separated medially by a low subtriangular prominence pointing cephalad.

Anal somite: Dorsal profile rather strongly concave. Surface granulose-rugulose. Epiproct short, very broad at base, with sides concavely converging. Dorsoventrally of moderate width, the underside a little concave. Apex narrowly truncate, straight. Laterad of apex on each side three rather strong cones. Lateral setae of anal ring on small tubercles. Paraprocts with rims of moderate width and moderate height. Setae on low, almost abortive granules. Surface granulose. Hypoproct parabolically rounded, with two rather large setiferous cones projecting outside the margin and equalling the middle of the posterior margin.

Male: unknown.

Remarks. — The material collected by Mjöberg differs in the outline of the paranota (figs. 5-6) and on that account may belong to a different taxon, either species or subspecies. This material is for that reason not regarded as paratypical.

DISCUSSION

In its general morphology *Pleuroporodesmus* combines a number of characters which are not exceptional in the Paradoxosomatidae. The only unique characters found in this genus are the pleural ridges in the 3rd and 4th somites, which as far as I am aware have never been noticed in any paradoxosomatid genus, but which may not be of primary taxonomic significance, and the structure of the margins of the paranota and the position of the repugnatorial pores.

As in other polydesmid families, the development of the paranota in the Paradoxosomatidae is quite variable. Certain genera, for instance in the tribes Orthomorphini and Sulciferini, but also in the Eustrongylosomatini, Tectoporini, etc., may have quite large lateral expansions of the metatergites, often suggesting what is seen in *Pleuroporodesmus*.

In other genera, such as for instance in the tribes Eviulisomatini, Antichiropodini, etc. paranota may be entirely absent. This condition is almost certainly a secondary one. Evidence for this is found in the presence in most cases of longitudinal furrows on the lateral side above the pores, which are obviously homologous with the premarginal furrows of the normally developed paranota.

When paranota are present the pores are almost always situated in the lateral surface of the margin, the marginal callus. One exception to this rule is found in the Indian genus *Harpagomorpha* Jeekel (1980b: 169), in which the pores are located on the upper surface of the paranota, quite near the margin, but mesad of a narrow marginal callus. The other exception is found in *Pleuroporodesmus* and in *Centrodesmus* Pocock (1894: 369), where the pores are situated on the lower surface of the paranota not far from the margin. The extreme dislocation of the pores as found in *Pleuroporodesmus* is quite unique, but basically not different from the condition described for *Centrodesmus*.

There are several more indications that *Pleuroporodesmus* is related to *Centrodesmus*. In *Centrodesmus* the shape of the collum appears to be similar to that in *Pleuroporodesmus*, having likewise the peculiar expansion of the anterior margin. The paranota of the subsequent somites in the two genera are quite different in shape. Whereas in *Pleuroporodesmus* the paranota have a broad base, emanating from the entire length of the metasomite, they are narrow in *Centrodesmus*, their longitudinal diameter being much smaller than the length of the metasomite. *Centrodesmus* and *Pleuroporodesmus* share the thin margins of the paranota, lacking en-

tirely a marginal callus. The marginal teeth are found in both genera, but the fine serration of the anterior and posterior margins of the paranota appear to be absent in *Centrodesmus*. In *Pleuroporodesmus* a number of anterior somites have the paranota raised above the middorsal level and this tendency has been carried to an extreme in *Centrodesmus*, where all the paranota are directed laterad and upward.

It may be remembered that the latter condition misled Attems (1937, 1938, 1953) and Loksa (1960) to refer some Indochinese and Chinese species to *Centrodesmus* which are actually belonging to the tribe Hylomini (Jeekel, 1964, 1968, 1980a). The superficial similarity in the structure of the paranota of *Centrodesmus* and of certain Hylomini is an obvious example of evolutionary convergence: the pores in the Hylomini are located in the margins of the paranota, and the tribe is clearly related to the Orthomorphini and the Sulciferini.

In order to emphasize the relationship between *Pleuroporodesmus* and *Centrodesmus* on the one hand, and the isolated position of the two genera in the family on the other, it seems quite legitimate to refer them to a separate tribe.

Centrodesmini nov. trib.

Diagnosis. — Paradoxosomatidae with twenty somites and a normal poreformula, characterized mainly by the structure of paranota. These are strongly developed, and are lacking marginal calluses such as found in all other paradoxosomatid genera. The pores are located on the inferior surface of the paranota. Other characters may be derived from the diagnoses of the two pertaining genera, and in combination with the yet unknown features of the male may serve eventually to define the group more accurately.

Genera. — *Centrodesmus* Pocock, 1894 (two species in Central Sumatra), *Pleuroporodesmus* nov. gen. (at least one species in eastern Borneo).

In the absence of the characters of the male, and particularly those of the male gonopods, the discussion of the taxonomic status of this tribe in the family is largely speculative. There seems to be no reason, either morphological or geographical, not to refer the tribe to the subfamily Paradoxosomatinae. The importance of the characters used for defining the group seems to suggest an early phylogenetic origin. However, it does not appear justified to oppose the group to the entire remainder of the subfamily. We must consider the possibility that the group emanated at a later stage of paradoxosomatid evolution and branched off from one of the other south-east Asian paradoxosomatine tribes.

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NOGMAALS HET APPENSE BOS BIJ KLARENBEEK (DIPT., SYRPHIDAE). In een beschrijving van enige vliegenvangplaatsen (*Ent. Ber.*, *Amst.* 42: 5-10, 1982) noemde ik het Appense bos als een vermoedelijk vrij belangrijke vindplaats. Dat dat wel juist was illustreerden enige zweefvliegvingsten in 1981, te weten *Parhelophilus frutetorum* (J. C. Fabricius), ♀, 7.VI.1981; *Neocnemodon latitarsis* (Egger), ♂, 19.VII.1981; *Metasyrphus lapponicus* (Zetterstedt), 2 ♂♂, 9.VII.1981; *Melangyna compositarum* (Verrall), ♂, 30.V.1981 en *Ceriana conopsoides* (Linnaeus), ♂, 7.VI.1981. *Neocnemodon latitarsis* komt op de Veluwe soms in aantal voor, maar de vangst in dit meer op zichzelf staande bos in de IJsselvlakte is zeer zeker vermeldenswaard. Dit vliegje werd gevangen op een braamstruik in de bosrand tussen een aantal ♂♂ van *N. vitripennis* (Meigen). Alle andere vangsten werden gedaan langs het fietspad aan de grote weg, die leidt naar het stationnetje Klarenbeek. *Metasyrphus lapponicus* zweefde onder de bomen boven het fietspad. De andere soorten werden alle op schermbloemen gevangen. *Ceriana conopsoides* is in de laatste honderd jaar in het gehele land gevangen, maar is overal zeldzaam. Haar larven leven in uitvloeiend sap van boomwonden. Van *Melangyna compositarum* zijn slechts enkele exemplaren uit Nederland vermeld. *Parhelophilus frutetorum* is buiten Zuid-Limburg overal zeldzaam. Haar larven behoren tot de zogenaamde rotjes, die in wateren leven.

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FRANKENHUYZEN, A. VAN, G. HOUTMAN & W. J. KABOS, 1982. MINEERDERS VAN BOMEN, STRUIKEN EN KRUIDEN. Wetenschappelijke Mededelingen Koninklijke Nederlandse Natuurhistorische Vereniging nr. 150: 1-96, fig. A-Q, 1-161. Gebrocheerd, prijs voor leden van KNNV en NEV f 8,50, voor anderen f 10,—.

De reeds lang uitverkochte WM's 89 (Kabos, Mineervliegjes) en 94 (Van Frankenhuyzen & Houtman, Bladmineerders op bomen en struiken) zijn nu verenigd tot één nieuwe, nr. 150. Waar nodig zijn de teksten herzien of bijgewerkt, zodat nu een handige publicatie ontstaan is waarmee een belangrijk deel van de in Nederland voorkomende mijnen op naam te brengen is.

Slechts enkele opmerkingen. Zoals we van een moderne wetenschappelijke publicatie mogen verwachten staan de auteursnamen waar nodig tussen haakjes. Bij de Nepticulidae is dit slechts ten dele gebeurd. Bij alle in de WM genoemde soorten van deze familie (*Ectoedemia*, *Stigmella*) moet dit echter het geval zijn. De naam van de beroemde Zweedse dipteroloog is niet Fallen, maar Fallén. De spelling *de-meijerei* (p. 58, 61) is niet meer geoorloofd. Het is nu *demeijerei*. Het streepje mag alleen geschreven worden in namen als *c-album*, *l-nigrum*.

Bij de literatuurlijst moet zeker nog genoemd worden: Spencer, K. A., 1976. The Agromyziidae (Diptera) of Fennoscandia and Denmark, *Fauna Entomologica Scandinavica* 5 (1 & 2), 606 pp, 922 fign. Met behulp van deze publicatie zijn zeer waarschijnlijk nog nieuwe soorten voor de Nederlandse fauna te vinden.

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