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A NEW SPECIES OF THE FAMILY PLATYRHACIDAE FROM GUADELOUPE, WEST INDIES

(DIPLOPODA, POLYDESMIDA)

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## ABSTRACT

Description of *Proaspis sahlii* nov. spec. from Guadeloupe. The new species, which is the third platyrhacid recorded from the West Indies, is compared with its congener *Proaspis aitia* Loomis, 1941, from Hispaniola, and *Nanorrhacus luciae* (Pocock, 1894) from St. Lucia.

Among material of millipeds from Guadeloupe, received for identification from Dr. F. Sahli, Dijon, France, a small member of the family Platyrrhacidae was found. The species proved to be undescribed and is referred to the genus *Proaspis* Loomis, 1941.

*Proaspis sahlii* nov. spec.

### Material.-

♂ holotype, ♀ allotype and 2 ♂ and 4 ♀ paratypes. Dr. Sahli, who personally collected this

material, writes on the occurrence of the specimens on Guadeloupe: "Au cours de deux missions individuelles aux Antilles françaises, l'espèce a été observée uniquement dans le "Parc naturel de Guadeloupe" (Basse-Terre), grosso modo entre 500 m et 600 m d'altitude, à savoir aux alentours de: Morne Léger, Morne à Louis, Mamelle de Pigeon, Mamelle de Petit-Bourg. L'espèce semble absente dans le "Parc tropical de Bras David"."

Specimens have been collected in January 1976 and September 1977. No immatures were seen.

On the ecology of the species Dr. Sahli writes: "Sous d'épaisses couches de feuilles mortes et

sous des troncs de bois pourri, en "fôret de pluie" en bordure des sentiers ou hors-sentiers. Cette espèce présente sensiblement le même biotope que *Rhinoericus* cfr. *guadeloupensis* Chamberlin. Les adultes semblent vivre d'une façon isolée. La fréquence de ce Platyrhacide est, en comparaison de celle de *Rhinoericus* cfr. *guadeloupensis*, considérablement plus faible."

The heads of most specimens including all males had been removed by Dr. Sahli for the purpose of his own studies. Therefore, the characters of the head in the following description have been taken from the females, but this is of little importance since usually there is no important sexual dimorphy in the head of Platyrhacidae.

#### Description.-

Colour.- Head and antennae brownish yellow. Collum dark brown along the anterior margin, fading gradually into the brownish yellow colour of the caudal margin. Prosomites very dark brown in their exposed part, except the ventral side in front of the sternites which is pale brownish. Covered part pale brownish. Metatergites dark brown, their caudal half, excluding the upper surface of the paranota, brownish yellow. Upper surface of paranota brown, the lateral border brownish yellow. Lower side of paranota, sides and sterna pale brownish to brownish yellow. Legs also brownish yellow. Anal somite dorsally dark brown, the epiproct brownish yellow. Hypoproct brown, paraprocts and under surface of epiproct pale brown.

Width.- ♂♂: 4.9 - 5.2 mm; ♀♀: 6.3 - 6.5 mm.

Head and antennae.- Labrum weakly and widely emarginate, tridentate, smooth and shining. Clypeus weakly convex, somewhat impressed near the labrum, the lateral margins faintly rounded. Headplate densely and finely granulate. Antennal sockets separated by  $1 \frac{1}{3}$  times the diameter of a socket or by the length of the 2nd antennomere. Postantennal groove shallow, the subantennal swelling slight. Vertigial sulcus rather deeply and widely impressed, running downward to just beneath the upper level of the antennal sockets and then dividing into two branches running to the oral border of the antennal sockets. Vertex rather convex. Antennae short and of moderate width, the antennomeres somewhat obconical, of

subequal width and length, the 6th antennomere slightly longer and slenderer, its width about  $\frac{4}{7}$ ths of its length. Pubescence sparse to moderate.

Collum.- Somewhat wider than the head. Its anterior margin weakly convex, posterior margin faintly convex in the middle, a little more so laterally, and straight at the lateral lappet. The lateral lappet small and slightly flaring, but not horizontal, its lateral angle rather widely rounded. Surface of collum flattened in the middle, a little convex more laterally. At one quarter of the median distance between the anterior and posterior margins a transverse impression paralleling the anterior margin. Granulation rather dense, the granules of unequal size and flattened. Larger granules irregularly arranged in three, generally indistinct transverse rows: one along the anterior margin, one at two thirds of the distance between the anterior and posterior margins and one along the posterior margin.

Body somites.- Constriction moderate. Waist of moderate width, smooth and somewhat polished, occasionally with some widely separated, very faint longitudinal striae. Prosomites smooth but dull, their ventral side densely minutely granular, their covered part with a dense structure of longitudinal, somewhat undulate riddles. Metatergites moderately convex. Their surface densely granular, the granules of very unequal size and strongly flattened becoming more convex towards the paranota. In most somites there is no distinct arrangement of the larger granules, only in a few caudal tergites there is an arrangement of three transverse rows. Also at the caudal border near the base of the paranota there is a row of a few larger granules along the margin. Sides finely and densely granular as the head. No pleural keels. Stigmata conspicuously large.

Paranota.- Second somite distinctly wider than the collum (fig. 1); 3rd somite a little narrower than the 2nd, the 4th a little narrower than the 3rd; 5th somite wider than the 4th. Paranota of 2nd somite constricted at base, with the anterior margin shouldered and widely rounded. Latero-anterior edge rather narrowly rounded, not angular. Lateral border widely rounded, faintly scalloped. Latero-posterior edge widely angular.

Posterior border widely emarginate. Paranota of 2nd somite strongly declined, and thrust forward a little. Paranota of 3rd somite also directed a little forward and downward. The latero-posterior edge a little more angular than in the 2nd somite. Paranota of 4th somite similar to those of the 3rd, but less declined and the lateral margin not sloping downward in the anterior direction. Paranota of 5th and subsequent somites (fig. 2) shouldered at base anteriorly, with the anterior border faintly convex, somewhat serrate. Latero-anterior edge narrowly rounded. Lateral border almost straight, with three to five, or sometimes even up to seven irregular but mostly indistinct lobes. Latero-posterior edge bluntly angular. Caudal border widely emarginate, faintly serrulate. Pores situated laterally and slightly dorsally, about half the diameter of the peritreme distant from the margin. Marginal calluses are indicated by a slight swelling of the dorsal surface of the paranota, the mesal limit indicated by a faint irregular furrow or impression, in poriferous paranota situated mesad about two and a half times the diameter of a peritreme.

Sternites and legs.- Sternites of middle somites one and a half times broader than long. Pubescence moderately dense, consisting of setae of variable length: from rather long to short. Surface of sternites subgranulose, transversely rather weakly concave. A transverse furrow is present only between the coxal sockets of the two successive legs. No sternal cones. Sternite of 5th somite deeply concave, but the medial part raised above the ventral level of the metasomal ring. Sternite of 6th somite more deeply concave and the middle not raised above the ventral level of the metasomal ring. Sternite of 7th somite with a transversely elliptical gonopod aperture. The caudal part of the sternite steeply sloping towards the posterior margin, and rather densely setiferous. Legs rather long and stout; the four proximal podomeres distinctly thicker than tibiae and tarsi. Pubescence moderate on all sides, but the tibiae and especially the tarsi dorsally rather densely setiferous. Relative length of podomeres: 3rd > 6th > 2nd > 4th = 5th. The 4th podomere as wide as three quarters of its length;

the 6th podomere twice as long as the 5th and as long as two thirds of the length of the 3rd. The two caudal pairs of legs distinctly shorter and thinner than the preceding legs.

Anal somite.- Epiproct semicircular in dorsal outline, almost twice as broad as long. The margin with seven to eight faint scallops; in between the lobes sometimes a hair. Under-side faintly concave. Upper surface dispersedly granulose and somewhat rugulose, with two paramedian larger granules not far from the margin. Paraprocts weakly convex, with the marginal rims rather low and moderately wide. Surface rugulose. The two pairs of tubercles weak, represented by faint swellings, bearing each a tuft of setae. Hypoproct trapezoidal in outline, with the sides almost straight or faintly concave, the posterior margin straight. Surface weakly granulose-rugulose. The hypoproct is not or very faintly produced anteriorly over the ventro-posterior margin of anal ring. On the edges of the hypoproct on each side a coarse tuft of setae.

Gonopods.- Coxa rather short and thick, without setation. Prefemur elongate, but relatively short in comparison to the total length of the telopodite. Setation moderate, the setae mostly rather short and acuminate; only on the distal and lateral surface short truncate setae. The telopodite distad of the prefemur consists of a single element, which probably must be considered almost entirely as the solenomerite. It curves in a wide spiral first slightly mesad and caudad, then cephalad and finally laterad and somewhat caudad again. Over most of its length the solenomerite keeps the same width, tapering only near its apex. Spermial channel running along the medial side of the prefemur, passing over to the anterior and lateral sides of the solenomerite just distad of the prefemoral apex.

Female.- Not conspicuously differing from the male, except in the larger size and the slightly less laterally expanded paranota, which results in a less transversely convex dorsum. Sternites of somites of the middle part of the body 1.6 times longer than wide. The anterior production of the hypoproct more distinctly developed.

## Remarks.-

In the Neotropical region Platyrhacidae have been recorded from the Andine region from Nicaragua in the north to Peru in the south. Eastward they occur in the west of Brazil, in Venezuela and Guiana. In the Antilles species have been described from Hispaniola and St. Lucia. A concise survey of the genera and species, and a key to the genera has been given by Jeekel (1963: 85-97). Although some slight changes are necessary, this outline is essentially still valid.

According to our present knowledge species of this family are quite numerous in the Andine region of the range; they are apparently rare in Venezuela, Guiana and the West Indies. Pocock (1894: 511) described *Platyrhacus luciae* from St. Lucia, which was subsequently made the type-species of the monotypical genus *Nanorrhacus* Cook, 1896. Loomis (1934: 35) reported this species from the same island and gave a photographic illustration of the whole animal.

More recently Loomis (1941: 193) described the new genus and species *Proaspis aitia* from Haiti, and this is only known from the type-material, which included no male specimens.

From Venezuela "*Platyrhacus*" *venezuelanus* Brölemann, 1898, is known, a species based on a female specimen and of uncertain taxonomical status. In Guiana *Rhyphodesmus drurii* (Gray, 1832) appears to be fairly common (Jeekel, 1963: 93).

Although the type-species of the genus *Proaspis* is known only in the female sex, it seems that the new species from Guadeloupe belongs to the same genus. This conclusion is based on the overall similarity of the two in general morphology. Actually, the only difference between *P. aitia* and *P. sahlili* seems to concern the sculpture of the metatergites, which in *P. aitia* is characterized by the presence of three transverse series of large granules on each tergite, a condition found in *P. sahlili* only in a few of the caudalmost somites. Moreover, the granulation in *P. aitia* appears to be finer and the granules more convex than in *P. sahlili*, in particular on the upper surface and along the margins of the paranota, leading to a finer serrulation of the margins.

*Nanorrhacus luciae*, on the other hand, is quite distinct from *Proaspis* as can be concluded from the illustration given by Loomis (1934) and the sketch of a paranotum (fig. 4). The paranota in this species lack the marginal serrulation or lobation, the posterior angle of the paranota is more rounded, and the sculpture, instead of being granular approaches an areolate structure. Moreover, the gonopods of *N. luciae* are of a quite different type (fig. 5).

Actually, the gonopods of *Proaspis* as represented by *P. sahlili* are of a type quite different from any of the other Neotropical platyrhacid genera. In this respect it must be emphasized that the absence of a tibiotarsus is probably not as important as it superficially appears. The loss of this process has occurred at several taxonomically widely separated places of the platyrhacid system, and probably deserves hardly more than purely specific importance.

Of more importance seems the almost complete reduction of the femorite of the gonopods, as indicated by the course of the spermal channel. Usually the channel curves towards the lateral side of the telopodite near the base of the solenomerite, or better perhaps near the distal end of the femorite (compare fig. 5). The fact that in *P. sahlili* it curves towards the lateral side just distad of the prefemur, seems to indicate that the femorite in this species has almost completely disappeared.

On this account it is very difficult to establish the relationship of the genus *Proaspis*. It seems to stand quite isolated in the American fauna, and may have its nearest relatives among the Indo-Australian platyrhacids. But as long as the taxonomy of these genera has not been worked out, any attempt to relate *Proaspis* to the Indo-Australian genera seems useless.

In the key to the Neotropical platyrhacid genera (Jeekel, 1963: 87), which was based exclusively on the characters of the male gonopods, *Proaspis* as represented by *P. sahlili* can be inserted by adding the following couplet:

a. Telopodite of gonopods consisting of a strongly elongate solenomerite; the femorite almost vestigial. Tibiotarsus absent.....

..... *Proaspis* Loomis  
 b. Telopodite of gonopods consisting of a solenomerite and a tibiotarsus; the femorite usually distinctly developed..... 1  
 (remaining genera)

It is interesting to note that, in spite of the fact that two unrelated genera are involved, the Antillean platyrhacids are considerably smaller in size than the continental forms. *Nanorrhacus luciae* has a width of 6.5 mm (♂) to 7.5 mm (♀), *Proaspis aitia* measures 6.0 mm (♀), and *P. sahlii* ranges from 4.9 mm (♂) to 6.5 mm (♀) wide. The majority of the mainland species, and in fact most of the Indo-Australian platyrhacids too, have a width of over 10 mm.

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The author wishes to express his cordial

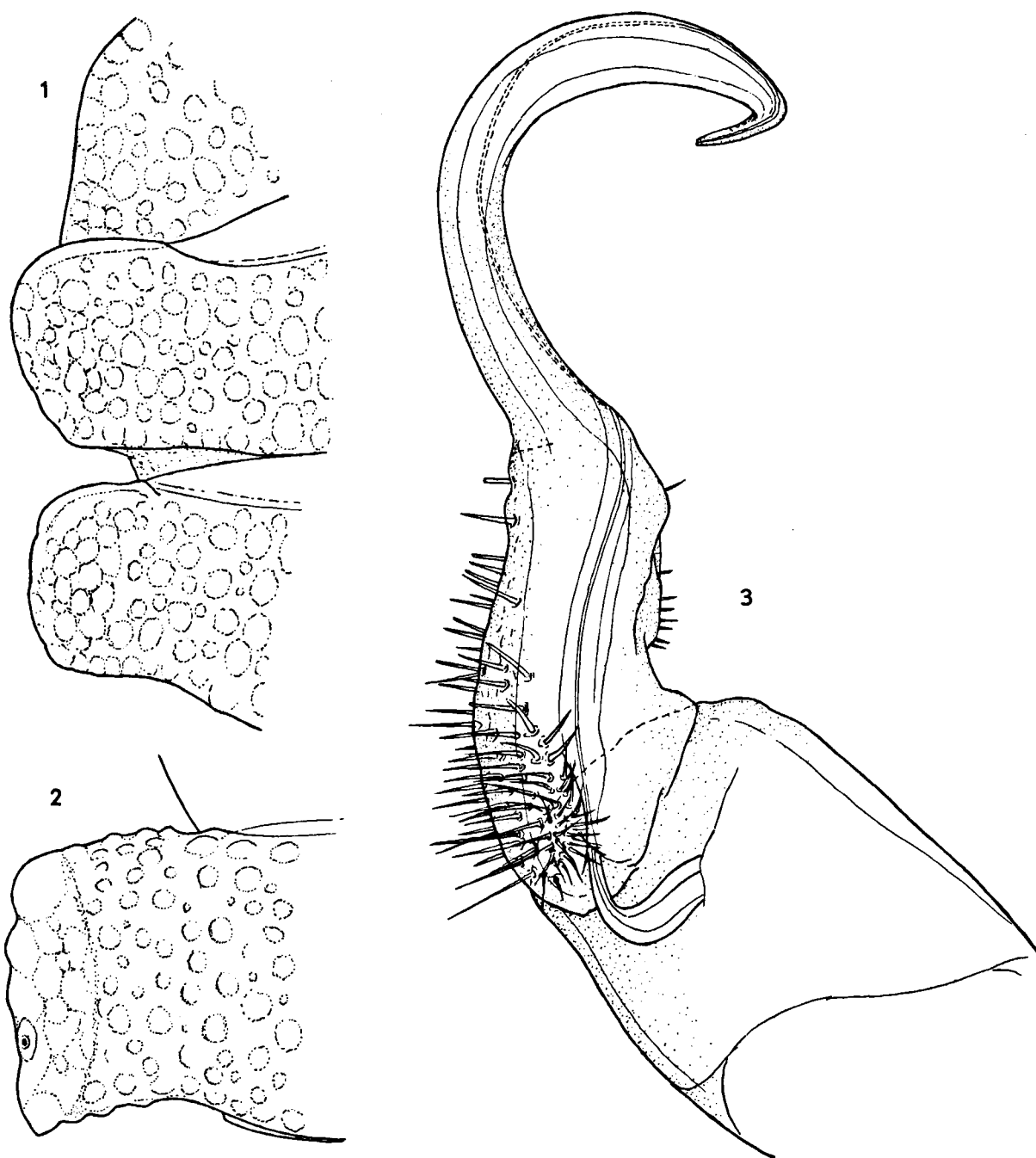
thanks to Dr. Sahli for providing the material of the new species, which is now preserved in the Zoological Museum, Amsterdam, and to Dr. R.L. Hoffman, Radford (Va.), U.S.A. for sending the drawings of *Nanorrhacus luciae*.

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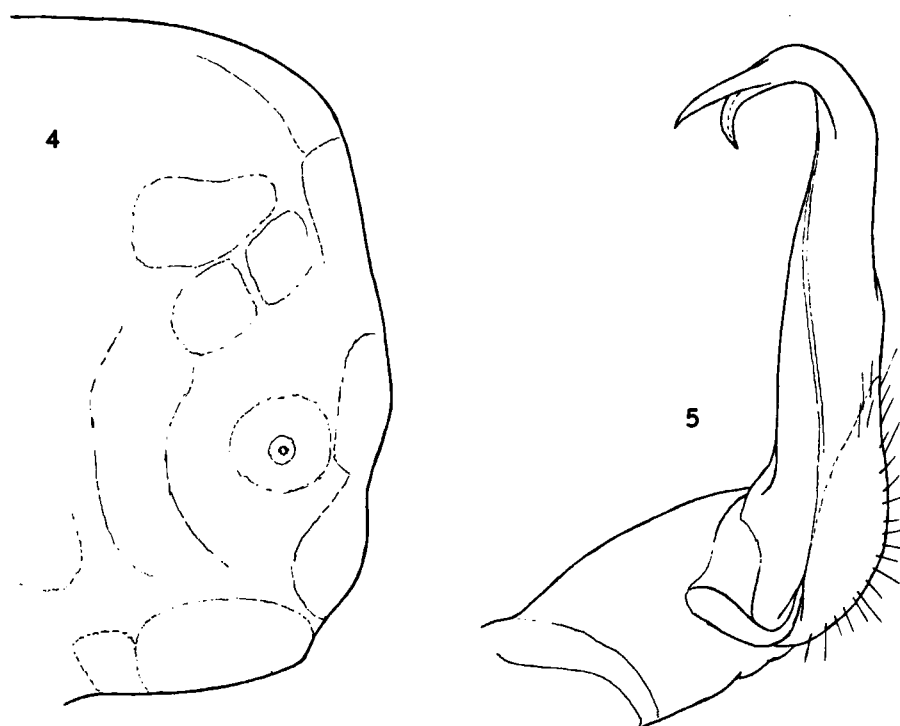
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Figs. 1 - 3. *Proaspis sahliti* nov. spec., ♂ holotype.- 1: left side of collum, 2nd and 3rd somites, latero-dorsal aspect. 2: left side of metatergite of 10th somite, dorsal aspect. 3: right gonopod, medial aspect.



Figs. 4 - 5. *Nanorrhacus luciae* (Pocock), ♂ syntype.- 4: right paranotum of 10th somite, dorsal aspect. 5: left gonopod, medial aspect (Drawings made after sketches received from Dr. R.L. Hoffman).