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*Zoological Results of the British Speleological
Expedition to Papua New Guinea, 1975
Malayothrix papuana, n. sp., the first chordeumid milliped
from New Guinea (Chordeumida, Metopidiotrichidae).*

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ABSTRACT

Malayothrix papuana, n. sp. (Diplopoda, Chordeumida, Metopidiotrichidae), is described from Papua New Guinea, and is the first chordeumid milliped known from the main island of New Guinea. The placement of the family Metopidiotrichidae in the Superfamily Heterochordeumatoidea is reaffirmed. The superfamily has a circum-Pacific distribution, with its most primitive members in the Indo-Australian Archipelago.

INTRODUCTION

This paper is the second in a series on the chordeumid milliped fauna of Asia and the Pacific. The first (Shear, 1979) described new taxa from Nepal, and summarized the present state of knowledge of that fauna, while the present work characterizes a new species of *Malayothrix* from Papua New Guinea, the first chordeumid milliped to be recorded from New Guinea.

I recently reviewed the higher classification of the chordeumid millipeds of east Asia (Shear, 1979), basing a good deal of my discussion on the work of Golovatch (1977). I have not found occasion to alter significantly the outline of that classification, despite the rather different one recently presented by Mauriès (1978a), but some alterations in the content of a few of the families seems advisable, particularly as the classification extends to the lands of the southern Pacific. I do not wish at this time to comment extensively on Mauriès classification, if for no other reason than because rehashing the previously published literature is

not likely to lead to any further clarification. Instead, I will await further studies like my own (Shear, 1979) and those of Mauriès (1978a, 1978b), based on specimens newly collected or types re-examined.

It might be useful, however, to reiterate some of the outstanding problems in the east Asian and circum-Pacific chordeumid fauna. First among these problems is the position in relation to the Metopidiotrichidae and Conotylidae of the Chilean genera *Apodigona* and *Eudigona* (they have been placed variously in either of these families). Despite Mauriès' confidence in placing *Apodigona* in the Conotylidae and *Eudigona* in the Metopidiotrichidae, I do not think the status of these genera can be solved without the examination of specimens; I prefer not to include them in my system at the present time.

Mauriès (1978a) is probably correct in making *Schedotrigona*, from New Zealand, the type of a new family; and he is certainly correct in allying it to the Diplomaragnidae, rather than to the Metopidiotrichidae, as has been previously suggested (Shear, 1972). Golovatch, however, recognized three families (Diplomaragnidae, Ancestreumatidae and Syntelopodeumatidae¹) where Mauriès sees only one.

In the superfamily Heterochordeumatoidea, I have included Japanosomatinae as a subfamily under Conotylidae. Mauriès (1978a) elevates the group (with one known species) to full family status and places it in a superfamily Acrochordoidea. I cannot agree with this interpretation; the small process on the gonopod of *Japanosoma scabrum* which he calls a flagellum seems to me to have nothing to do with the flagellum of *Acrochordum*.

Golovatch and Mikhailjova (1978) have described *Megalotyia brevichaeta*, and a new family Megalotyilidae. Dr. Golovatch was kind enough to send me paratype specimens of this form (they have been deposited in the American Museum of Natural History). I find it to be very close to my conotylid subfamily Nepalellinae (Shear, 1979), but distinct from *Nepalella* at the generic level. In *Nepalella* species from the Himalayas, the anterior gonopods retain a small spike extending from the coxosternum, representing the reduced telopodite. In *Megalotyia*, only the coxosternum remains. I do not think the group deserves family rank; the name must now be considered as Megalotyilinae (by priority) and the subfamily should be placed under Conotylidae.

In the family Metopidiotrichidae, two genera have been recognized. *Metopidiotrix* was described by Attems in 1907 for two species, *rhopalophora* and *lacertosa*, from Java. Later, Chamberlin (1945) added *M. javana*, but as Hoffman (1963) has indicated, the type locality of *javana* is the same as that of *lacertosa*, and there is nothing in Chamberlin's brief description or crude drawings to separate the two named species. Chamberlin's *javana* is best considered a synonym of *lacertosa*. Verhoeff (1929) based his genus *Malayothrix* on *lacertosa*, justifying the new name on the details of the gonopods and on the modifications of the head (see Mauriès, 1978b, fig. 2), as well as the presence in males of *lacertosa* of a much-enlarged third legpair not found in *rhopalophora*. Mauriès (1978b) has named a second species of *Malayothrix*, *M. enghoffi*, from the Bismarck

¹If this family contains *Tokyosoma*, as Golovatch (1976) assumes, then the name must be Tokyosomatidae, a family-level name proposed by Verhoeff in 1929. I thank R.L. Hoffman (in litt.) for pointing this out.

Archipelago north of New Guinea. The new species described below is obviously close to *M. enghoffi*, but differs in the form of the gonopods, and also seems to be somewhat larger.

Biogeographically, New Guinea is traditionally considered with Australia, as a part of the same continental mass, and though there seems to be a relatively distinct "Papuan" fauna, its affinities are mixed. Vertebrates and fresh-water molluscs in the region (New Guinea and a few adjacent islands) are primarily Australian, while the terrestrial invertebrate fauna and the flora speak of a Malaysian origin (Thorne, 1963; Raven and Axelrod, 1972). Like many other invertebrates, *Malayothrix* is no respecter of Wallace's Line, and if the genus sprang from heterochordeumatid-like ancestry, it must have entered New Guinea in the late Oligocene with other Malaysian elements. In the case of *Schedotrigona*, it would be illuminating to compare members of this genus with the Chilean forms. There is no evidence at all that chordeumid millipeds inhabited the Gondwanan super-continent, either in fossil forms or in the present distributions. Except for the genera mentioned, there are no chordeumids in the southern continents. Given this kind of evidence, we can only guess at the origins of *Schedotrigona*, *Apodigona* and *Eudigona*.

TAXONOMY

Superfamily Heterochordeumatidae Pocock

Family Metopidiotrichidae Attems

Malayothrix

Malayothrix Verhoeff, 1929, in H. G. Bronn's *Klassen und Ordnungen des Tierreichs* 5:1479; Hoffman, 1963, *Ann. Mag. Nat. Hist.*, Ser. 13, 6:134; Mauriès, 1978, *Steenstrupia* 5:42.

Type species: *Metopidiotrix lacertosa* Attems 1907, Java, by original designation.

Description: 32 segments, mentum divided. Segments nearly cylindrical, segmental shoulders moderately well-developed. Segmental setae in nearly a straight line across each metazonite, but median seta of each side widely separated from its counterpart. Male third legs enlarged. Anterior gonopods separate from each other but fused to sternite of each side, passing lateral to and clasping the coxites of the posterior gonopods. Posterior gonopods three-segmented, coxae with prominent colpocoxites of simple form first telopodite segment cylindrical, terminal segment much swollen, lacking a claw. Tenth legs of male consisting of a transversely fused coxosternum with prominent glands and telopodites of one or two small segments. Distributed in Java, New Guinea, and the Bismarck Archipelago.

Key to Species

- 1a. Tenth leg telopodites of male with two segments; Java *lacertosa* Attems.
- 1b. Tenth leg telopodites of males with one segment 2.
- 2a. Eleventh leg coxa of males with a process about half as long as the coxa; Bismarck Archipelago *enghoffi* Mauriès.
- 2b. Eleventh leg coxa of males with a process fully as long as the coxa; Star Mountains of New Guinea *papuana* new species.

Malayothrix papuana, new species. — Figures 1-5.

Type: Male holotype from Mt. Fugilil, elevation 2980 m, about 32 km WSW of Telefomin, Western Province, Papua New Guinea, collected 29 September 1975 by Petar Beron. Type deposited in Bulgarian National Museum, Sofia.

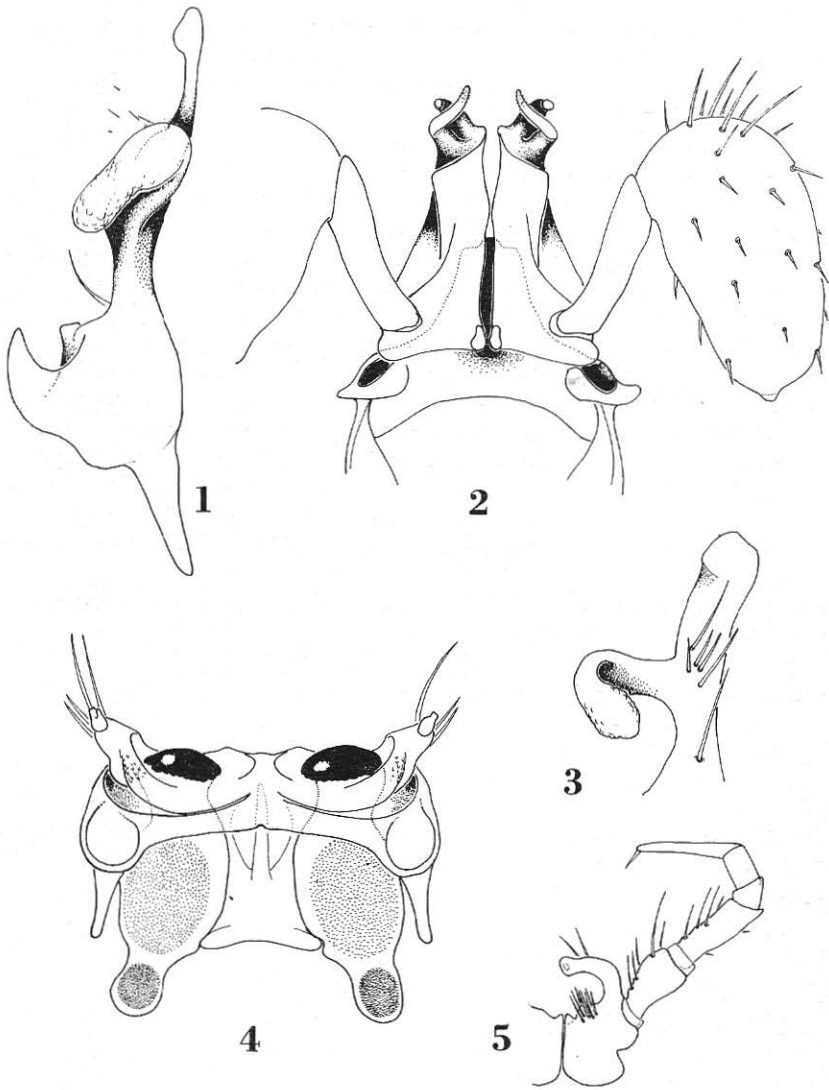
Male: Length, 8.8 mm, width, 0.19 mm. Body form typical for genus. Third legpair greatly enlarged and flexed mesally; other pregonopodal legs of normal dimensions. Anterior gonopods (Figs. 1, 3) consisting of coxites (?) fused to sternites of each side, ending in two branches, one straight, the other sharply curved mesally. Straight branch with a group of setae on the mesal side, the curved branch somewhat tuberculate on its lateral surface. Posterior gonopod (Fig. 2) with sternite extending ventrally between coxae on anterior face (dotted line). Coxite ending in two branches, the anterior curved sharply posteriorly and the posterior branch sinuous, set with tiny setae. First telopodite segment cylindrical, second very much enlarged, setose, without a claw but bearing a small, terminal, nipple-like projection. Tenth legs (Fig. 4) very much reduced, coxae and sternite fused. Sternite with a dorsal projection separating two large sclerotized gland chambers, each with small dorsal and large ventral mass. Gland openings on coxae covered by shiny black plugs of possible glandular secretion. Coxae with a few small setae, telopodites minute, nipple-like, the right one bearing a single seta. Eleventh legs (Fig. 5) with postcoxal segments of normal size and shape, but coxa enlarged, bearing a curved apophysis with a vaguely indicated gland pore at tip. Other legs unmodified. Color typically gray-brown with an indistinct mottled pattern.

Female unknown.

Notes: The type locality is in the central chain of mountains running the length of the island of New Guinea, and is located near the western border of Papua New Guinea with West Irian, also nearly on the border between the Western Province and the West Sepik District. Mt. Fugilil has a maximum elevation of 3050 m and is part of the Star Mountains.

The functional anatomy of the gonopods of *M. papuana* is much as illustrated by Attems and Mauries for the other two species of the genus. The anterior gonopods are somewhat recumbent posteriorly and pass between the coxites of the posterior gonopods of each side and their respective telopodites. In this position, the upright branch of the anterior gonopod parallels and lies against the coxite of the posterior gonopod, on its lateral side. The curved branch of the anterior gonopod passes dorsally, and its outer curved margin lies neatly in the depression in the tenth leg coxae, which in the type specimen are filled with buttons of suspected glandular material. Specimens of *Malayothrix* and *Metopidiothrix* should be dissected carefully to take full notice of the much reduced tenth legs.

I am grateful to Dr. Richard L. Hoffman, Radford, Virginia, USA, who forwarded this exciting specimen to me. Dr. Paul Jagasich provided translations of articles from the Russian. The collection itself was made by the British Speleological Expedition to New Guinea, in 1975. This research was supported in part by a grant from the Faculty Committee of Hampden-Sydney College.



Figures 1-5. *Malayothrix papuana* n. sp. 1, left anterior gonopod, lateral view. 2, posterior gonopods, posterior view. 3, tip of left anterior gonopod, posterior view. 4, legpair 10 of male, anterior view. 5, left leg 11 of male, posterior view. Drawings from holotype.

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