

## A New Species of *Megalomma* (Annelida: Polychaeta: Sabellidae) from Phuket, Thailand<sup>1</sup>

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**ABSTRACT:** *Megalomma miyukiae* Nishi, n. sp., occurred among dead coral rubble at Phuket, Thailand. This species has two to ten branchial eyes on the tips of radioles, a collar with developed ventral lappets, and free dorsal margins separated by a wide gap. Scanning electron micrographs show the fine structure of chaetae.

POLYCHAETES HAVE PROVED to be a dominant and diverse group in coral reef areas, but there are many systematic problems with polychaete worms collected in the Indo-Pacific Region. Intensive studies like those conducted in Florida and in the Gulf of Mexico (Uebelacker 1984) are needed. Revisions of some genera of Sabellinae are necessary to update and validate systematic studies (e.g., Knight-Jones 1983, 1997, Perkins 1984).

Hartman (1959) included more than 20 species in the genus *Megalomma*, including species formerly described as *Branchiomma*, and 16 are considered valid (Knight-Jones 1997). In the Indo-Pacific Region, five species are known: *Megalomma acrophthalmos* (Grube, 1878 [as *Sabella*]); *M. suspiciens* (Ehlers, 1905 [as *Branchiomma*]); *M. quadrioculatum* (Willey, 1905 [as *Branchiomma*]) from Sri Lanka; *M. trioculatum* Reish, 1968 from Eniwetok; *M. pacificum* (Johansson, 1927 [as *Branchiomma*]) from the Gilbert Islands.

Recently some specimens of polychaetes were collected by T. Komai from the coral reef area of Phuket, Thailand, and all are deposited in the Natural History Museum and Institute, Chiba (catalogue code, CBM-ZW). Among them, I found some sabellid specimens on a dead coral skeleton. I have found no records of *Megalomma* from this

area, other than *Megalomma intermedium* (Beddard, 1889 [as *Branchiomma*]) from Mergui Archipelago, which has now been put in a separate genus (Knight-Jones 1997). According to the worldwide revision of *Megalomma* by Knight-Jones (1997), the new species is distinct from others in the genus.

All the worms were fixed in neutralized formalin and preserved in 70% ethyl alcohol. One worm (CBM-ZW-104) was dissected using forceps to remove representative parapodia from the thoracic and anterior abdominal segments and these were dehydrated through a 80, 90, 95, 99, and 100% alcohol series, 10 to 20 min in each, coated with palladium with Hitach E-1030 Ion Sputter, and viewed on a scanning electron microscope (SEM) (Hitachi S-800) to display the structure of chaetae. Thoracic and abdominal segments of the worm were prepared as a glass slide mount to view uncini with the light microscope. Drawings of the morphology of uncini were made to compare with SEM photographs.

### *Genus Megalomma* Johansson, 1927

*Megalomma miyukiae* Nishi, n. sp.  
Figures 1–4

**MATERIAL EXAMINED:** Holotype: CBM-ZW-106 (1 specimen), Ao Tang Khen, Phuket, Thailand, collected from dead coral rubble, subtidal, 22 October 1995, by hand, by T. Komai. Paratypes: CBM-ZW-104 (1 specimen), CBM-ZW-105 (1 specimen), same data as holotype.

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DESCRIPTION: Tube moderately thick, relatively rigid, almost smooth, buried deeply within dead coral. Body (with crown) up to 5 mm long, 45 mm in holotype (Figure 1), 25 mm in CBM-ZW-105, 15 mm in CBM-ZW-104, 1.5 to 3 mm wide, 3 mm in holotype, 2 mm in CBM-ZW-105, 1.5 mm in CBM-ZW-104; 8 thoracic and 40 to 60 abdominal segments (Figure 1); crown maximally 4 mm long, with up to 10 pairs of radioles (larger specimen, holotype), cross-banded with yellow-orange pigment extending onto pinnules; number of subterminal eyes variable, two large composite eyes, one on each most dorsal radiole on holotype, on 3 dorsal pairs of radioles on specimen CBM-ZW-105, and on 5 dorsal pairs of radioles on specimen CBM-ZW-104 (Figures 1, 2). Eyes always larger on most dorsal radioles (Figure 2E,F,G), much smaller and about 1/2 to 1/4 as large on other dorsal radioles (Figure 2H-L). All eyes subspherical, with distinct ommatidia. Width of dorsalmost radiole enlarged just below eyes, the tip extending vestigially beyond eye; other radioles not enlarged subdistally, with slender, short tips extending beyond eye for distance about equal to eye diameter (Figure 2H-L). Crown with short fused region; dorsal lips long and wide, tapered, with midrib and outer lamella fused to part of adjacent buccal pinnule (Figure 2A,B); ventral lips short, rounded. Collar with well-developed ventral lappets not overlapping medially, dorsal margins free, separated by wide gap, without ridges or lappets flanking, small bulge present (Figure 2C,D). Ventral shield of collar segment entire, twice length of rectangular shields of other thoracic segments, but about as wide, anterior margin with rounded anterolateral corners and slight anteromedial indentation (Figure 2D). Notopodia of setigers 2-9 with upper arc of about 8 slender, narrow chaetae (Figures 3B,C, 4D,F) anterior to two transverse rows of short, lanceolate chaetae (Figures 3C-G, 4D-F), about 10 chaetae in each row; thoracic tori separated from ventral shields, gradually shorter posteriorly but a similar distance from shields, with about 30 pairs of avicular hooks (Figures 3I, 4G) and companion chaetae (Figures 3H, 4H) anteriorly

(Figure 4A-C); avicular uncini with moderately long, slender shafts (Figures 3I-K, 4G), and shaft longer than distance between breast and crest (Figure 3J,K); abdominal chaetae geniculate and broad at knee (Figure 3), abdominal uncini avicular in short tori and similar to those of thorax but slightly smaller (Figures 3L, 4I). No pigmental spots on external body; pygidium without eyespots.

ETYMOLOGY: The new species is named for Miyuki Ishibashi, a museum guide at the Natural History Museum and Institute, Chiba, who kindly helped in collecting and sorting the polychaetes for my research.

REMARKS: Knight-Jones (1997) separated the species of the genus *Megalomma* into five groups (Table 1), but *Megalomma miyukiae* does not fit perfectly into any of them. Groups 2A, 2B, and 2C seem to be the closest. Group 2A contains *Megalomma heterops* Perkins, 1984, in which the gap between the dorsolateral collar margins has ridges flanking the fecal groove and, in some growth stages, vestigial pockets joining ridges and dorsolateral margins. *Megalomma heterops* differs from *M. miyukiae* in having eyes on most radioles. Group 2B contains two species, *M. bioculatum* (Ehlers, 1887) and *M. pigmentum* Reish, 1963, but both have eyes only on the most dorsal pair of radioles. Perkins (1984) studied many specimens of both species from numerous localities and he recorded only a single pair of eyes. Furthermore, the lateral collar margins are low in both of these species and are thus very different from the margins in *M. miyukiae*. Group 2C contains only *M. mushaense* (Gravier, 1906 [as *Branchiomma*]), but that species has freestanding dorsal lappets (unconnected to either the main part of the collar or the sides of the fecal groove) and eyes on most radioles.

Most *Megalomma* species have eyes on most radioles. The only species with few eyes (but more than one pair) of which the dorsalmost are bulbous rather than spiral, as in *M. miyukiae*, are *M. suspiciens* (Ehlers, 1905) from New Zealand and *M. quadrioculatum* (Wiley, 1905) from Sri Lanka (P. Knight-

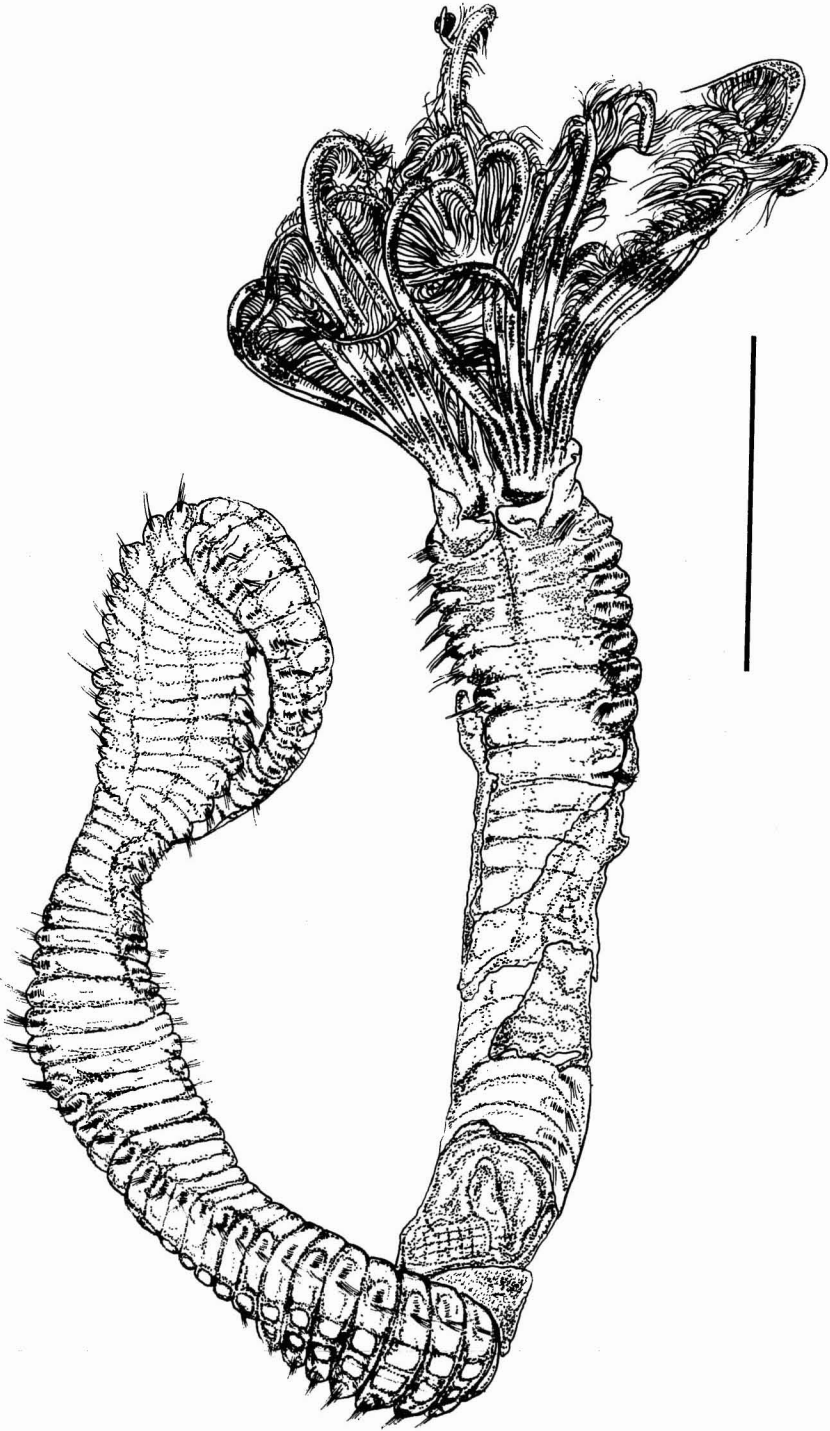


FIGURE 1. Body of *Megalomma miyukiae*, n. sp. (CBM-ZW-106), mostly dorsal view (scale bar = 5 mm).

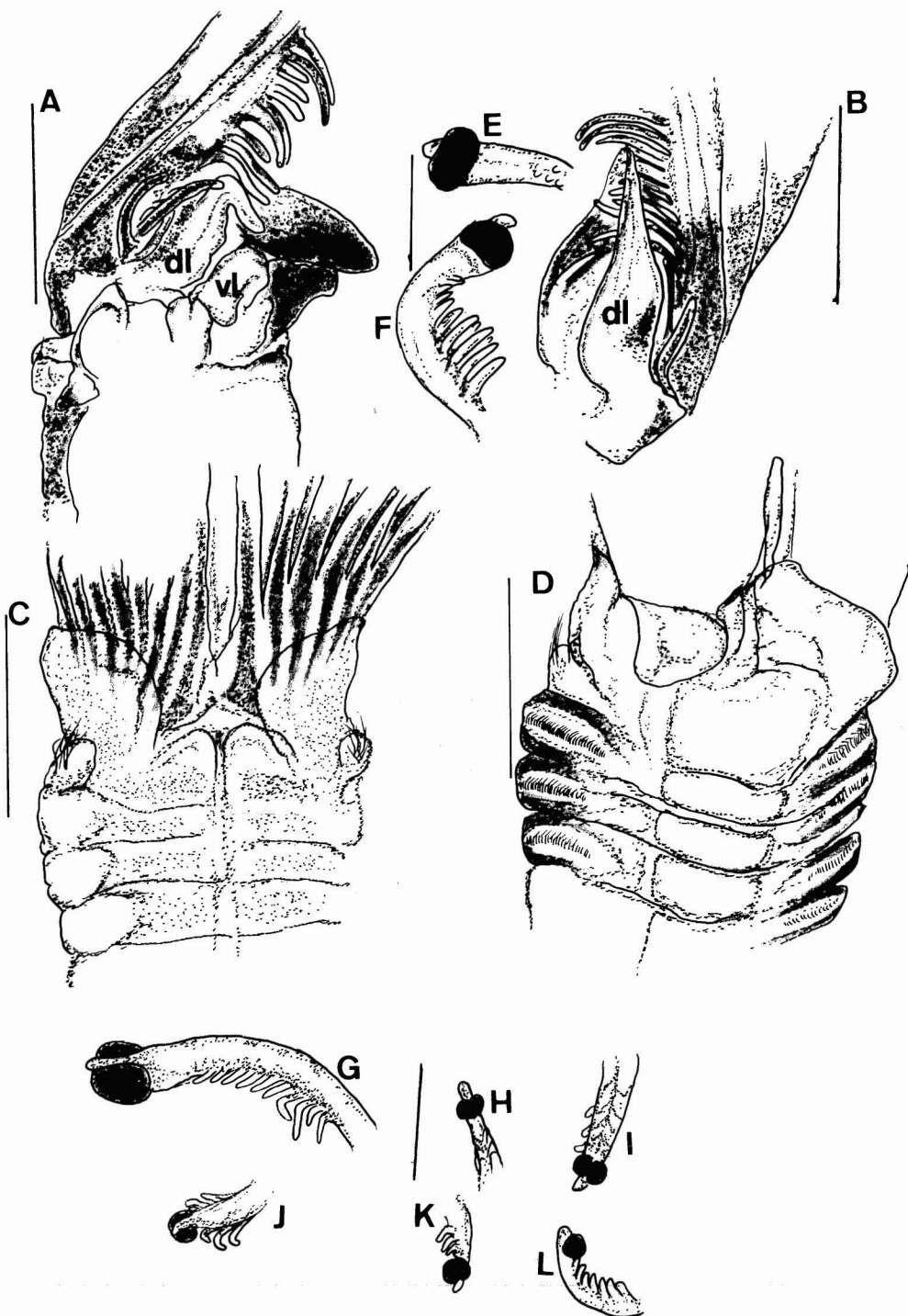


FIGURE 2. *Megalomma miyukiae*, n. sp. (A, B) Sagittal section of anterior thoracic base of crown (CBM-ZW-104), dl, dorsal lip; vl, ventral lip; (C) dorsal thorax and basal crown; (D) same, but ventral view; (E, F) branchial eyes, CBM-ZW-104; (G-L) branchial eyes, CBM-ZW-105 (scale bar = 1 mm [A-D] or 0.5 mm [E-L]).

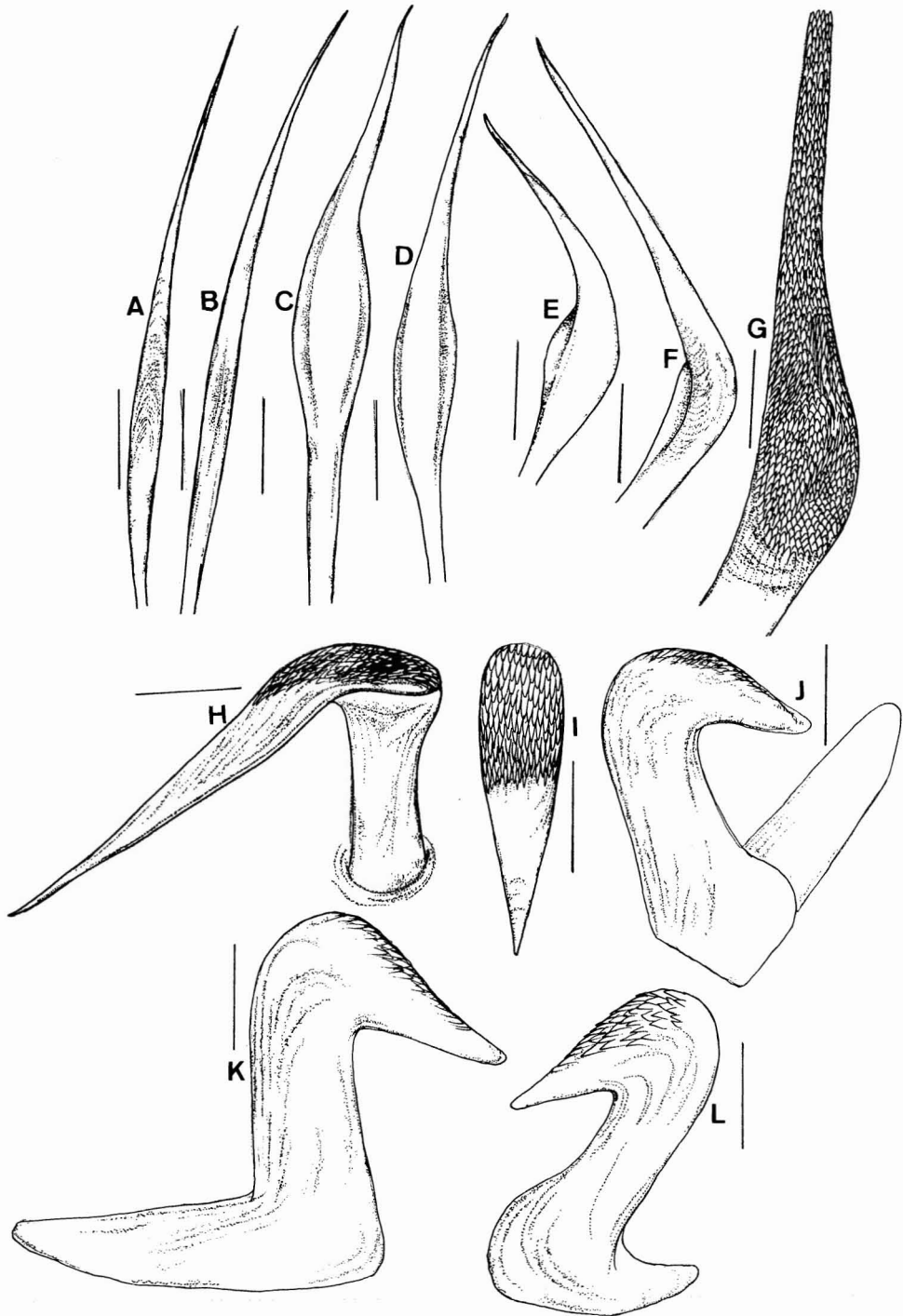


FIGURE 3. Chaetae of *Megalomma miyukiae*, n. sp. (A) Collar chaeta; (B) slender superior notochaeta; (C–D) lanceolate widely hooded notochaetae; (E, F, G) chaetae from thoracic fascicles; (H) companion chaeta; (I, J, K) thoracic avicular hooks; (L) abdominal avicular hook. A–I are drawn from scanning electron micrographs, J–L from light microscope observation (scale bar: A–D, 30  $\mu\text{m}$ ; E–F, 20  $\mu\text{m}$ ; G–L, 10  $\mu\text{m}$ ).

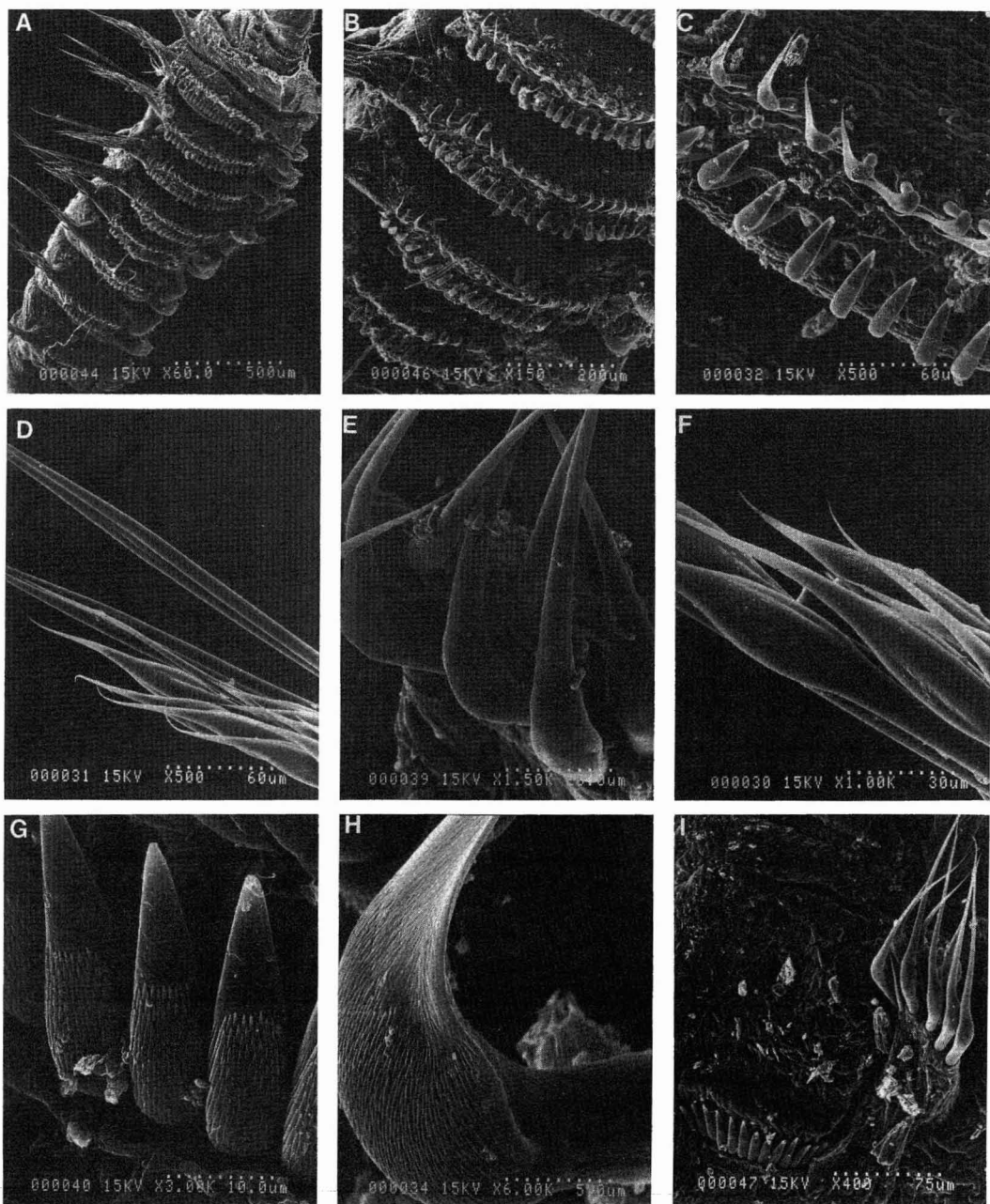


FIGURE 4. Scanning electron micrographs of *Megalomma miyukiae*, n. sp. (A) Thorax region, right side; (B) second to fifth thoracic segments; (C) third thoracic segment; (D) second thoracic superior and lanceolate notochaetae; (E) fifth thoracic notochaetae; (F) seventh thoracic lanceolate notochaetae; (G) thoracic avicular hooks; (H) thoracic companion chaeta; (I) second abdominal segment showing avicular hooks and a fascicle of geniculate chaetae.

TABLE 1  
CHARACTERS OF THE GENUS *Megalomma* (AFTER KNIGHT-JONES 1997)

GROUP	DORSAL COLLAR MARGIN	SUBTERMINAL EYES	SPECIES INCLUDED
1A	Fused to fecal groove, forming pockets	On most radioles	<i>M. vesiculosum</i> <i>M. pacifici</i> <i>M. vigilans</i> <i>M. acrophthalmos</i> <i>M. lobiferum</i> <i>M. suspiciens</i> <i>M. claparedii</i> <i>M. circumspectum</i> <i>M. pacificum</i> <i>M. trioculatum</i>
1B	Fused to fecal groove, forming pockets	Only on 2 or occasionally 4-6 radioles	<i>M. modestum</i> <i>M. quadrioculatum</i> <i>M. splendidum</i> <i>M. roulei</i> <i>M. coloratum</i>
2A	Free, with pockets	On most radioles	<i>M. neapolitana</i> <i>M. heterops</i>
2B	Free, pockets absent	Only on most dorsal pair of radioles	<i>M. bioculatum</i> <i>M. pigmentum</i>
2C	Free, pockets absent	On most radioles	<i>M. mushaense</i>
2?	Free, pockets absent	Only on first to third dorsal pairs of radioles	<i>M. miyukiae</i>

Jones, pers. comm.). The eyes of the large species *M. suspiciens* were recorded on about 9 of the 25 pairs of radioles and those of *M. quadrioculatum* on 4 out of 14 pairs. Day (1951) noted that his material of *M. quadrioculatum* (South Africa to Mozambique) had variable numbers of eyes on the radioles "from 2 eyes in juvenile specimens to 6 in large ones." Day did not give a typical number of radioles, but his illustration (1967: fig. 37.1M) indicates about 10 each side. That material and material from the type country Sri Lanka (figures kindly lent by P. Knight-Jones) has the collar fused dorsally to the sides of the fecal groove. The collar in *M. suspiciens* and in the other Pacific species mentioned earlier is like that of *M. quadrioculatum* and thus different from that of *M. miyukiae*.

The groups of *Megalomma* species recorded by Knight-Jones (1997) are very useful, but the eye and collar characters of *M. miyukiae* have blurred the distinctions between some of the groups. If numbers of subterminal eyes (Day 1951) and the shape of the dorsal collar (Perkins 1984: fig. 42A,D)

can vary with growth within a species, it is desirable to study many specimens within a single locality. Although only a few specimens (3) of the Phuket material have been examined, the shape of the dorsal collar is constant, and the number of subterminal eyes is less than 6 pairs among over 10 pairs of radioles, so it seems reasonable to regard *M. miyukiae* as a new species.

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