

DISCOVERY OF A BOGIDIPELLID AMPHIPOD CRUSTACEAN IN
INLAND WATERS OF THE EAST INDIAN ARCHIPELAGO:
BOGIDIELLA (MEDIGIDIELLA) SARAWACENSIS N. SP.

BY

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During the Royal Geographical Society's Mulu expedition (1977-78) a number of caves in the Batu Niah and Gunung Mulu National Parks (Sarawak, Borneo) were surveyed. In two caves, Mr. Philip Chapman discovered blind, stygobiont amphipod crustaceans, which proved to be an undescribed species of the subgenus *Medigidiella* Stock, 1981 of the genus *Bogidiella* Hertzog, 1933, described below as *B. (M.) sarawacensis* n. sp.

This is the first Bogidiellid that becomes known from the East Indian archipelago. The subgenus *Medigidiella* to which it belongs, is predominantly distributed around the Mediterranean basin, with one species (*B. (M.) arganoi* Ruffo & Vigna, 1973) in Mexico. The discovery of a new species in hypogean waters of Borneo supports my opinion (Stock, 1978, 1981) that certain members of the Bogidiellidae are very old inhabitants of inland waters, having reached a world-wide distribution before the break-up of Pangaea.

***Bogidiella (Medigidiella) sarawacensis* n. sp.**

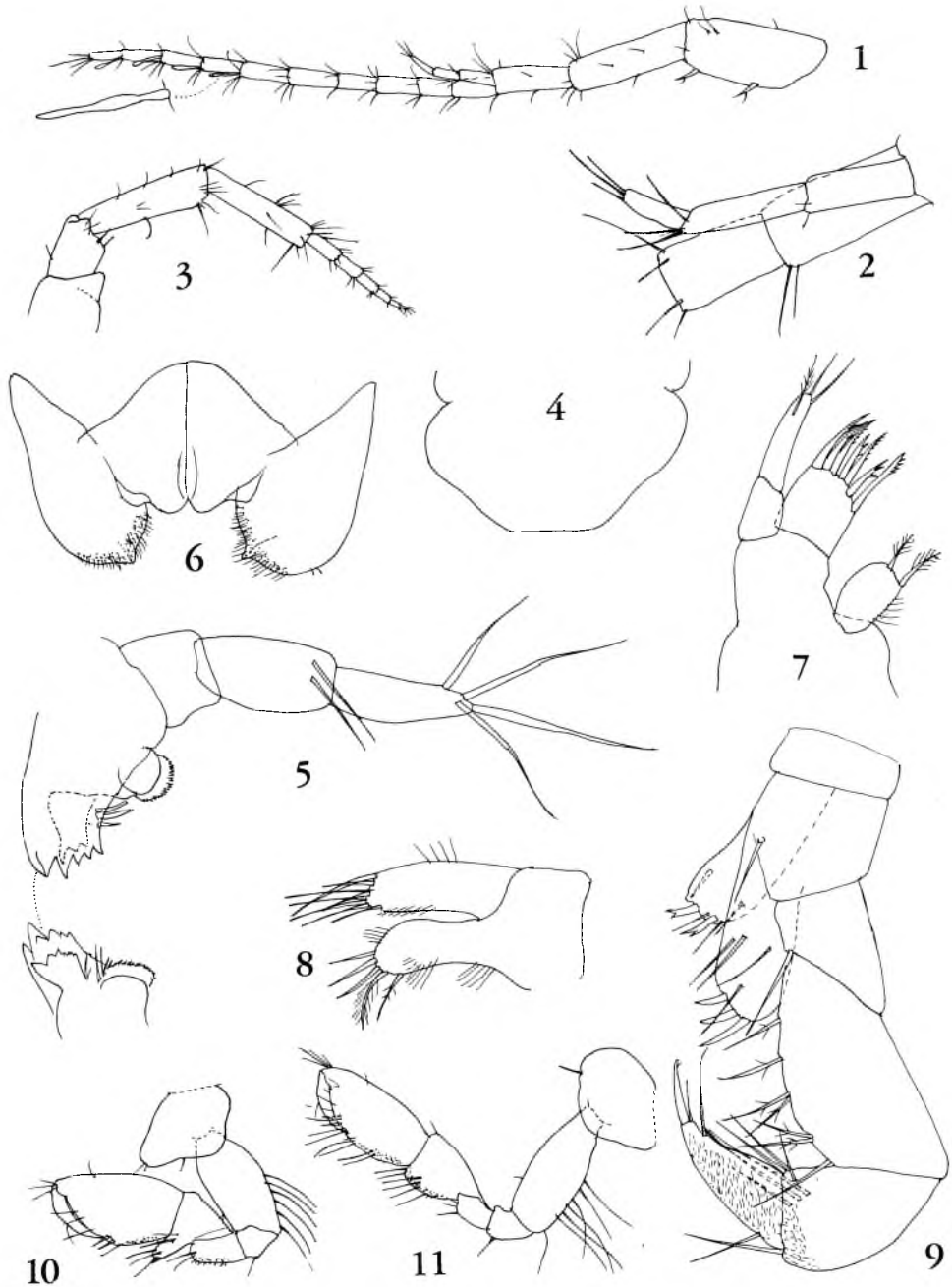
Material. — 1♂ (holotype), 1♀ (allotype), 4♂♂ and 3♀♀ (paratypes). Sarawak (Borneo), Niah Great Cave in Batu Niah National Park, shallow pools in small side passage, May 1978. (ZMA Amph. 107.468 a-c).

4♀♀. Sarawak (Borneo), Deer Cave (Gua Payan), at the southwestern end of Gunung Mulu National Park (some 90 km to the N.E. of the type-locality), guano-floored pool in crab streamway, May 1978. (ZMA Amph. 107.475).

Both samples were collected during the Royal Geographical Society Mulu Expedition by Philip Chapman.

Description. — Total length (front cephalic somite to tip of telson) 2-2¹/₂ mm. In preserved state unpigmented and without visible eyes.

Female: First antenna (fig. 1) slightly less than half the body length. First peduncle segment with 2 ventral spines; second peduncle segment subequal to the first; third segment about 2/3 of the second. Accessory flagellum (fig. 2) 3-segmented, longer than the third peduncle segment. Flagellum 10-segmented, aesthetascs about 3/4 as long as the corresponding segment,



Figs. 1-11. *Bogidiella (Medigidiella) sarawacensis* n. sp., ♀ paratype. 1, first antenna (scale a), with aesthetask more strongly enlarged; 2, accessory flagellum (b); 3, second antenna (a); 4, labrum (b); 5, mandibles (b); 6, labium (b); 7, first maxilla (b); 8, second maxilla (b); 9, maxilliped (b); 10, first gnathopod (a); 11, second gnathopod (a).

present on segments 6 through 9 (in some specimens, the flagellum is 9-segmented, with aesthetascs on segments 5 through 8).

Second antenna (fig. 3) somewhat more than half as long as the first. Gland cone short, robust, triangular in outline. Peduncle segments 4 and 5 poorly setose. Flagellum short (hardly longer than the fifth peduncle segment), 6-segmented.

Labrum (fig. 4) of the usual shape.

Mandibles (fig. 5) asymmetrical: the lacinia mobilis bears 4 coarse teeth on the one side, 2 larger and 4 smaller teeth on the other. Palp segments 1 and 2 robust; segment 1 unarmed, segment 2 with 2 distal setae; segment 3 as long as, but narrower than, segment 2, armed with 4 distal and subdistal setae.

Labium (fig. 6) with prominent inner lobes.

First maxillae (fig. 7) symmetrical; palp 2-segmented, distal segment with 3 short setae; outer lobe with 7 distal spines, 4 of which bearing 1 or 2 medial denticles, the 3 others bearing 4 to 6 medial denticles; inner lobe more or less ovate, with 2 short, plumose distal setae.

Second maxilla (fig. 8) consisting of two lobes, with 5 and 8 distal setae, respectively.

Maxilliped (fig. 9): inner lobe with 2 strong, bifid spines and 2 or 3 setae; outer lobe with 3 unadorned distal spines; both lobes rather short.

Coxal plates wider than long, but less small than in several other members of *Bogidiella*.

First gnathopod (fig. 10) with 5 or 6 long setae on the posterior margin of the basis. Carpus (fig. 12) with a pointed posterodistal prolongation armed with 3 setae. Propodus ovate (fig. 12); palmar margin rather long, armed with 2 palmar angle spines; palmar index (sensu Ruffo, 1973) 0.44.

Second gnathopod (fig. 11) with 6 to 7 long setae on the posterior margin of the basis. Carpus trapezoidal, without projection. Propodus (fig. 14) elongate, rounded rectangular; palmar index 0.34; 2 palmar angle spines.

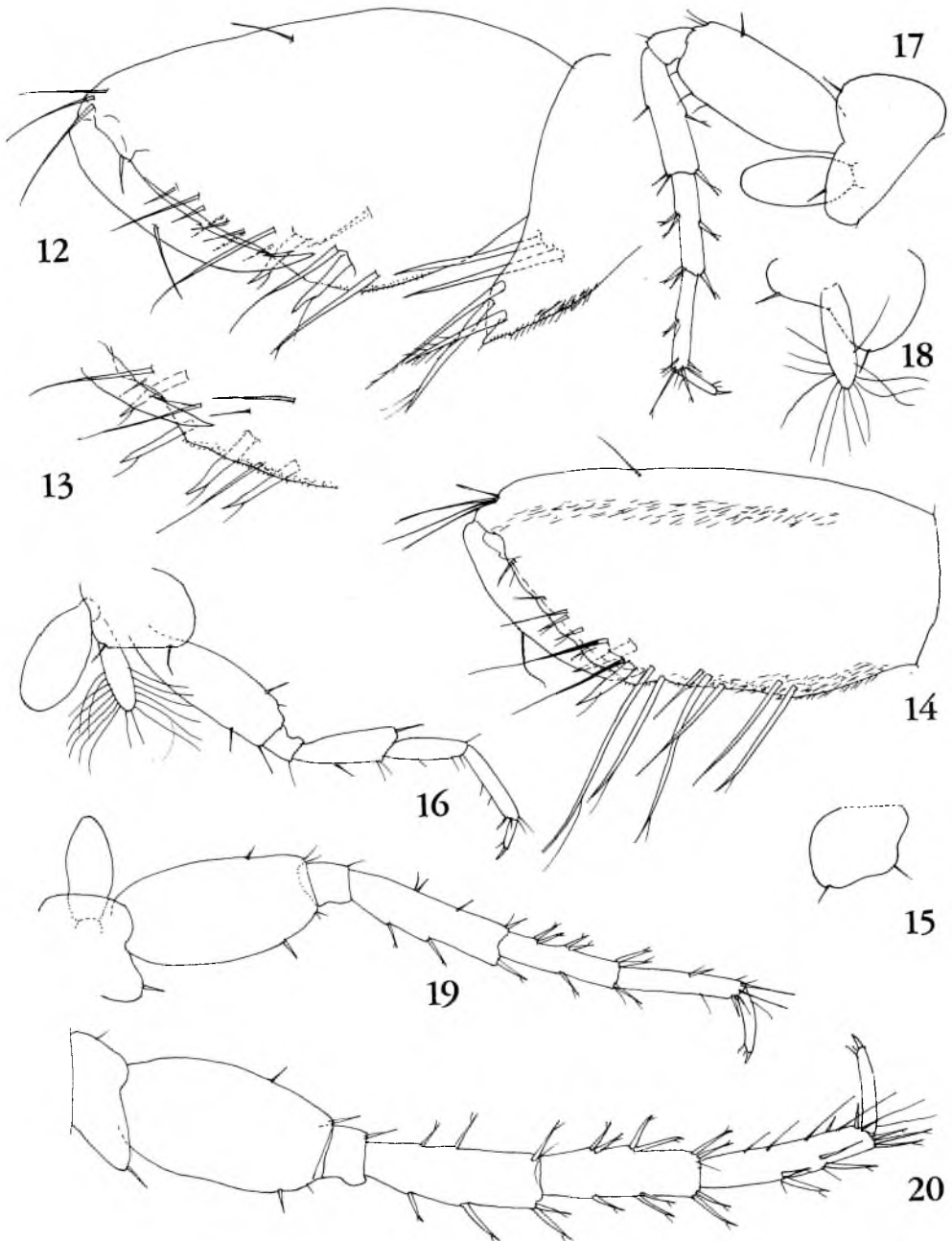
Oostegites on P2 through P5, linear, armed with many (12-17) setae (fig. 18). Coxal gills ovate, on P4 through P6.

Third and fourth pereopods (fig. 16) similar, scantily armed with spines or short setae. Fifth pereopod (fig. 17) shorter than the sixth (fig. 19), armed with spines. Seventh pereopod the longest (fig. 20); propodus armed with several long setae. No elliptical organs.

Epimeral plates rectangular; posteroinferior corners drawn into a small point (fig. 21).

Pleopods 1 to 3 similar with long pedunculus, provided with 2 disto-interior retinacula. Exopodite 3-segmented, each segment with 2 plumose setae; endopodite 1-segmented, small, armed with a long, plumose seta (fig. 22).

First uropod (fig. 23) with strong basofacial spine on the long pedunculus. Exopodite slightly shorter than endopodite, the former with 3 short and 1 long spines, the latter with 2 short and 2 long spines.



Figs. 12-20. *Bogidiella (Medigidiella) sarawacensis* n. sp., ♂ paratype (13), and ♀ paratype (remaining figures). 12, propodus of first gnathopod (scale b); 13, palmar angle of propodus of first gnathopod (b); 14, propodus of second gnathopod (b); 15, coxal plate of third pereiopod (a); 16, fourth pereiopod (a); 17, fifth pereiopod (a); 18, oostegite of fifth pereiopod (a); 19, sixth pereiopod (a); 20, seventh pereiopod (a).

Second uropod (fig. 24) with a short pedunculus. Exopodite slightly shorter than endopodite, both rami with 4 distal spines.

Third uropod (fig. 25) with 2 equal rami, armed with long spines only.

Telson (fig. 26) wider than long; distal corners with 2 long spines; distal margin slightly concave.

Male: Very similar to the female. Propodus of first gnathopod with 4 palmar angle spines (fig. 13). Endopodite of first uropod has the longest spine transformed (distally crenulated, with a gutter-like medial channel, fig. 23). Endopodite of second uropod with one of the long spines transformed in a similar way (fig. 24).

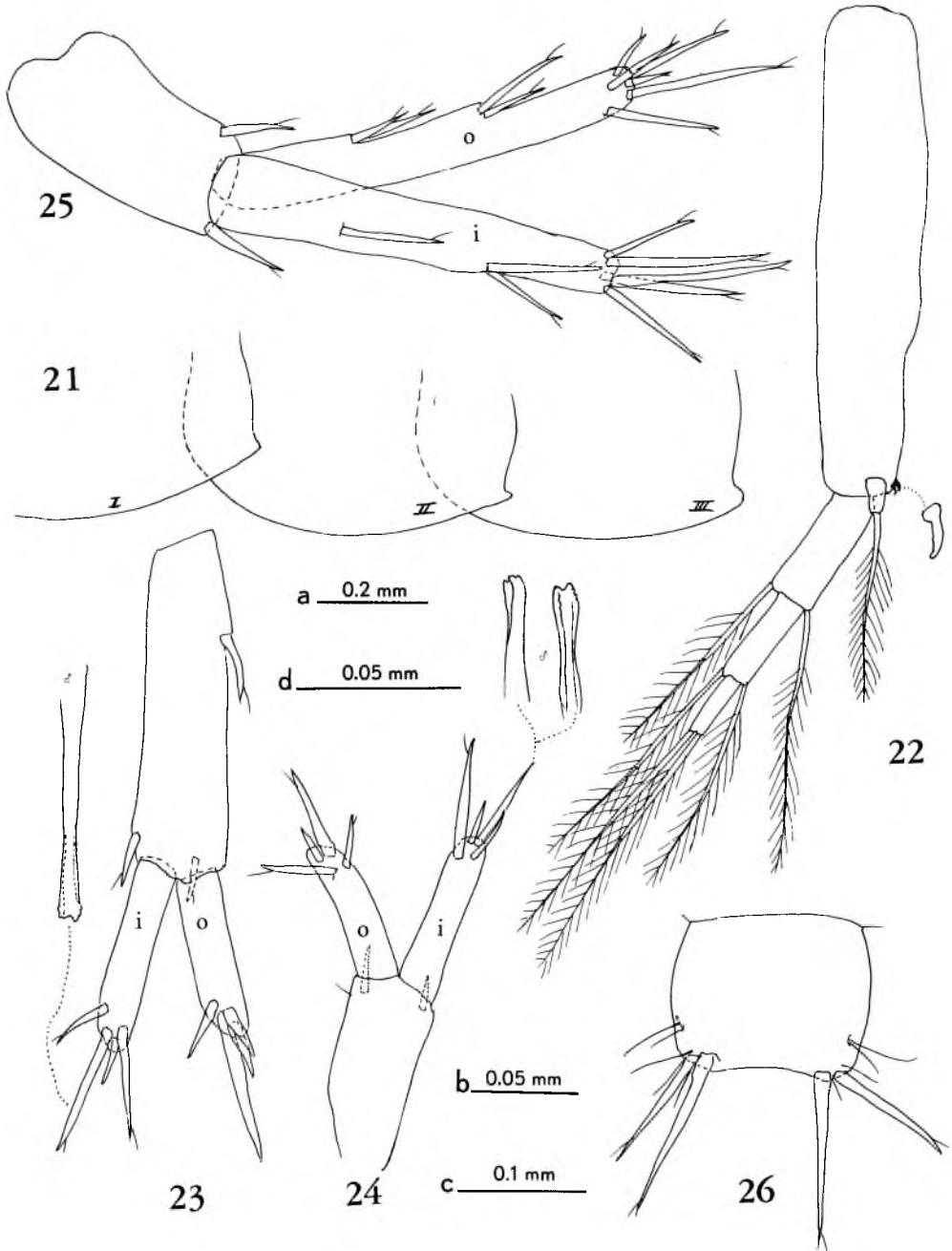
No sexual dimorphism in the pleopods or in any of the other appendages.

Remarks. — The new species is a typical member of the subgenus *Medigidiella* of the genus *Bogidiella*, by the presence of modified spines on the endopodites of uropods 1 and 2 in the male, and the absence of sexual dimorphism in the pleopods. It differs from all other species referred, or provisionally referred, to *Medigidiella* (see Stock, 1981) by the presence of many (5 to 7) setae on the posterior margin of the basis of gnathopods 1 and 2 (♀, ♂); in all others only 2 or 3 setae are present.

The presence of a 1-segmented pleopodal endopodite in both sexes of the new species, separates it from all other *Medigidiella* species, except *B. (M.) silverii* Pesce, 1981, *B. (M.) hebraea* Ruffo, 1963, and the male sex of *B. (M.) vandeli* Coineau, 1968. Of these, *B. (M.) vandeli* has elliptical organs on the pereopods, whilst the new species has not. *B. (M.) silverii* has unadorned spines on the outer lobe of maxilla 1, whereas the new species has denticulated spines. *B. (M.) hebraea* has pleopodal endopodites on which the setal armature is reduced in length, whereas the distal endopodal seta is of full length in the new species.

The new species has been recorded from two different caves in Sarawak. Deer Cave is some 90 km remote from Niah Great Cave, but these caves are situated in limestone areas that are quite separate (Chapman, in litt.). Nevertheless, the bogidiellids found in both caves appear to be identical. Some restriction must be made, because only female specimens are known from Deer Cave, and in a genus as difficult as *Bogidiella*, material of both sexes is required for an absolutely certain identification.

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Figs. 21-26. *Bogidiella (Medigidiella) sarawacensis* n. sp., ♀ paratype (21, 23, 24, 25) and ♂ paratype (22, 23 detail, 24 detail, 26). 21, epimeral plates I to III (scale c); 22, second pleopod (c), with retinaculum more strongly enlarged; 23, first uropod (c); with modified spine of the male (d); 24, second uropod (c); with modified spine of male (d); 25, third uropod (c); 26, telson (b). (i = inner ramus; o = outer ramus).

RÉSUMÉ

Bogidiella (Medigidiella) sarawacensis n. sp. est décrite d'eaux hypogées de deux grottes en Sarawak (Bornéo). C'est le premier Amphipode Bogidiellide signalé des eaux continentales dans la région des Indes Orientales.

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