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PARONELLID COLLEMBOLA COLLECTED BY THE KRAKATAU EXPEDITION, 1984

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Abstract

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Nine species of paronellid Collembola have been identified from collections made on the Krakatau expedition in 1984. All species but one have been described previously. A new subgenus and a species of *Callyntrura*, *C.* (*Javaphysa*) *javana* are described and a previously insufficiently described species of *Salina*, *S.* (*Salina*) *obscura* (Handschin), is redescribed. A key to subgenera of *Callyntrura* is presented.

Introduction

Until now, only one species of Collembola had been recorded from the Krakatau Islands. This was *Lepidosira calolepsis* (Börner) recorded as *Mesira calolepsis* by Womersley (1932). At the time it was said to be abundant "on the small island produced in 1929 . . . some 3 miles from Krakatau itself". This island is now known as Anak Krakatau.

A collection of Collembola was made from Java, Sumatra and the Krakatau Islands during the 1984 Krakatau expedition. A full report of the expedition was given by Thornton and Rosengren (1988). In the collection of paronellid specimens sent to me by Ms Penelope Greenslade were nine species, six newly recorded from the Krakatau Islands. Eight of the species were already described but one new species of *Calyntrura* belonging to a new subgenus was present in samples from west Java. It is described together with another insufficiently described by Handschin (1925). The other seven species are also listed. Full synonomies for all previously described species were given by Suhardjono (1989) and the system of setal nomenclature followed is that given by Yoshii (1981, 1982 and 1983).

Most material is deposited in the South Australian Museum, Adelaide (SAMA) and representative specimens lodged in the Bogor Museum, Bogor, Java, Indonesia (BM).

Salina (Salina) celebensis (Schäffer)

Cremastocephalus celebensis Schäffer, 1898: 407. — Handschin, 1928: 250.

Salina celebensis. — Yoshii, 1981: 46. — 1983: 17.

Material examined. Sumatra, Liwa, SAMA (3 specimens). Krakatau, SAMA (12), BM (2). West Java, Ujing Kulon, SAMA (6), BM (2). Bogor, SAMA (1).

Distribution. The species has an almost circumtropical distribution (Pacific Islands, Australia and Africa) as well as occurring in Japan and Formosa.

Salina (Salina) obscura (Handschin)

Figure 1

Cremastocephalus obscurus Handschin, 1925: 249.

Material examined. Sumatra, Liwa, SAMA (1), BM (1).

Description. Body length *c.* 1.8 mm. Ground colour whitish, beautifully adorned with purplish bands and spots (Fig. 1A). Head with longitudinal patch along sides, continuing along trunk on lateral margin up to abd. III. Short transverse branch marginally on th. II, III and abd. I, II, while abd. III has 3+3 patches of which 2+2 are on posterior part and elongated into broad bands. Abd. IV with large patch anterolaterally and another posteriorly near end of segment, with another patch medially. Abd. V deeply edged with pigment posteriorly and at sides. Abd. VI only with lateral patch. Antennae with longitudinal streak laterally. Legs irregularly patched on coxa and trochanter, femur and tibiotarsus each with 2 deep bands at middle. Ventral tube and furca pale. Ratio ant. : head, 15:10. Eyes 8+8 (Fig. 1C), poorly pigmented, G, H much smaller than other 6. Frontal spine present. Labral setae (Fig. 1B) 4/5, 5, 4, prelabrals barbed. Outer max. lobe with setae 2/II+3. proximal 2 barbed, basal seta of papilla straight, thick, but almost pointed apically. Setae of labial basis as M–E/LL, R absent. Legs elongate,

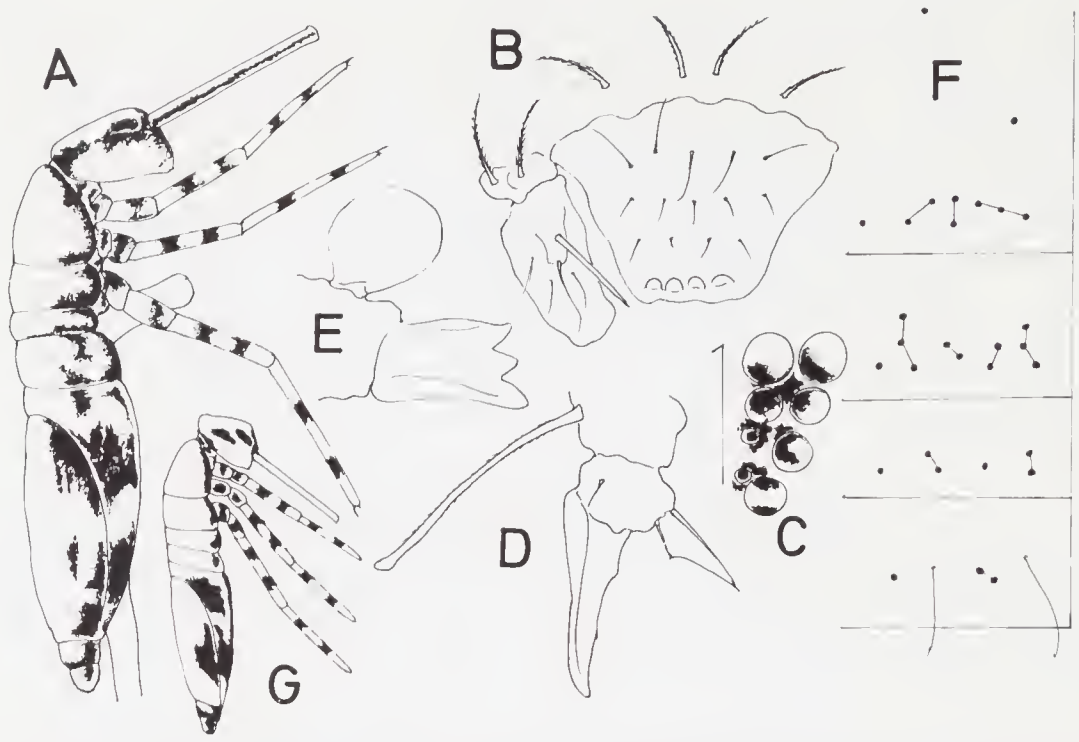

Figure 1. *Salina obscura* (Handschin). A, habitus. B, labrum and outer max. lobe. C, eyes. D, hind claw. E, mucro. F, macrochaetal pattern. G, colour pattern reconstructed from the description of Handschin (1925).

unguis (Fig. 1D) with 1 inner tooth near distal end, unguiculus truncate. Tenent hair very long, spathulate distally and finely ciliated. Trochanteral organ with *c.* 25 spinules in triangular area. Ventral tube not well investigated, but lateral flap with *c.* 10 longer, smooth and *c.* 5 smaller, ciliated setae. Furca with manubrium : dens ratio, 10:14, both without modification. Dental vesicle (Fig. 1E) conspicuously large. Mucro small, tridentate as normal for genus. Macrochaetotaxy of trunk as in Fig. 1F, with chaetotactie formula of s/2/s/1 only for abd. II (juvenile pattern not known).

Remarks. These examples were found near the type locality "Wai Lima", Sumatra. There is no figure of this species in Handschin's (1928) monograph but the examples coincide well with the description. I have reconstructed the habitus (Fig. 1G) which the specimens in the expedition's collections match.

Distribution. Sumatra.

Salina pallens Yoshii

Salina pallens Yoshii, 1981: 48. — Yoshii and Suhardjono, 1989: 67.

Material examined. Krakatau, SAMA (5 specimens). Ujung Kulon, SAMA (10), BM (2).

Remarks. This species is easily distinguished from *Salina celebensis* by the number of prelabral setae, reduced to 2 instead of the usual 4.

Distribution. Borneo, Java, Lombok, Sulawesi, Ivory Coast (West Africa).

Salina sp.

Material examined. Sumatra, SAMA (7). Krakatau, SAMA (6). Ujung Kulon, SAMA (4).

Remarks. The examples are juveniles and could not be identified.

Callyntrura (Murphysa) vestita (Handschin)

Paronella vestita Handschin, 1925: 257.
Callyntrura vestita. — Yoshii, 1982: 19.

Material examined. Krakatau, SAMA (1).

Remarks. The species was only known from western Java until now.

Distribution. West Java, Krakatau Is.

Callyntrura (Murphysa) tarsata (Börner)

Paronella tarsata Börner, 1906: 177.
Callyntrura tarsata. — Yoshii, 1982: 20.

Material examined. Sumatra, Liwa, SAMA (10). Krakatau, SAMA (10). West Java, Ujung Kulon, SAMA (3), BM (1).

Remarks. The species seems to be common in the region. As the colour pattern and the chaetal arrangement are very constant, it is easily identified.

Callyntrura (Javaphysa) subgen. nov.

Diagnosis. Differing from *Murphysa* Yoshii in being without a real dental vesicle and with well developed macrochaetotaxy. Differing from *Istanaphysa* Yoshii in presence of distal swelling of dens.

Type species. Callyntrura (Javaphysa) javana sp. nov.

Key to subgenera of *Callyntrura*

1.	Prelabral setae barbed	2
—	Prelabral setae smooth	9
2.	First row of labral setae modified	3
—	Three median setae of the first row modified	4
—	No labral setae modified	*Japonphysa*
3.	Distal vesicle of dens present	*Gunungphysa*
—	Distal vesicle of dens absent	*Borneaphysa*
4.	Distal vesicle of dens absent	5
—	Distal vesicle of dens present	6
5.	Terminal tubules of ventral tube with single row of papillae or warts	*Javaphysa*
—	Terminal tubules of ventral tube smooth	*Istanaphysa*
6.	Antennae long, without scales	*Callyntrura*
—	Antennae short, with scales	7
7.	Dental spines present	*Murphysa*
—	Dental spines absent	8
8.	Terminal tubules of ventral tube with many papilllae or warts	*Batikphysa*
—	Terminal tubules of ventral tube with smooth walls	*Kudatphysa*
9.	Antennna IV long, basal seta of outer maxillary lobe blunt	10
—	Antennae IV short, basal seta setaceous, pointed	*Dicraocentroides*
10.	Frontal area with 3 + 3 spinules, dens without small vesicle	*Sultanaphysa*
—	Frontal area with 4 + 4 spinules, dens with a small vesicle	*Pterikrypta*

Callyntrura (Javaphysa) javana sp. nov.

Figure 2

Material examined. Holotype: Java, Gunung Payung, Ujung Kulon, 21 Sep ?1985, SAMA (I.22607).

Paratypes: Same locality and collecting data as holotype, SAMA (1), BM (1 juvenile).

Description. Body length *c.* 2.5 mm, ground colour brownish white, with light spots on frontal area and clypeus. Transverse band present on abd. III not extending posteriorly. Trunk laterally lightly shaded, including antennae and dens. Legs with conspicuous black patch on femur near distal end. Tibiotarsi also with 2 light bands. Ratio ant.I : head, 23:10. Ant. I and II densely beset with setae and those of dorsal side flattened (Fig. 2A), narrowly fusiform and almost scaly in appearance. Eyes 8+8, equally large and black. Frontal spines 2+2, distinctly brownish. Labrum (Fig. 2B) with setae 4/5,5,4, prelabrals barbed, from first row of setae; median 3 straight and blunt ending, lateral pair curving, slender and pointed. Labral margin without structure. Outer max. lobe with setae 2/II+3, basal seta of papilla blunt ending. Labial basis (Fig. 2C) with setae MRe/lL. Legs elongate, unscaled. Unguis with 2 faint inner teeth, paired lateral teeth well developed, larger than dorsal tooth. Unguiculus obliquely truncate. Tenent hair shorter than unguis, distally spathulate. Trochanteral organ well developed, composed of *c.* 50 spinules, thicker on anterior side. Ventral tube elongate, unscaled. Anterior side with some ciliated setae, distal ones larger and

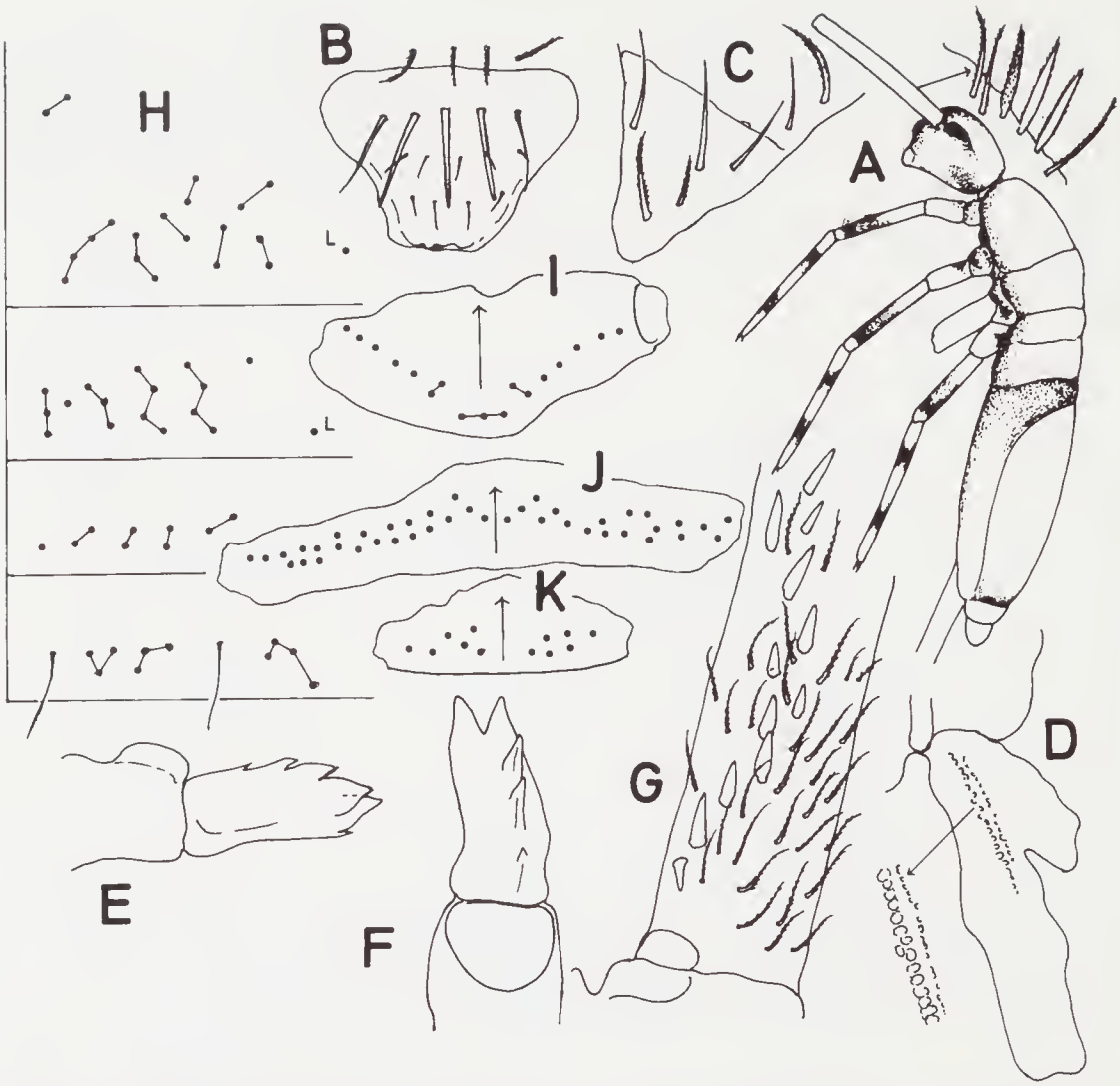

Figure 2. *Callyntrura* (*Javaphysa*) *javana* sp. nov. A, habitus. B, labrum. C, labial basis. D, terminal tubule. E, F, distal end of dens and mucro (lateral and dorsal view). G, dental spines. H, macrochaetotaxy of trunk. I, ditto of vertex. J, K, ditto of abd. IV (median and posterior group).

brownish. Posterior side densely covered with short, ciliated setae, distal 1+1 smooth and with 1 median seta almost like s. s. proximally. Lateral flap with some larger smooth and shorter ciliated setae. Terminal tubule (Fig. 2D) with row of minute granules or papillae in basal half, not easily distinguished. Manubrium : dens, 10:18. Manubrium scaled only ventrally, dorsally equally setose except glabrous median streak. Dens (Fig. 2G) with up to 18 distinctly short spines proximally on inner dorsal side, arranged in 1 irregular row. Distal setae not modified. Dental distal vesicle absent, but in lateral view (Fig. 2E), small swelling of terminal portion of dens visible (dental vesicle should therefore be searched for in dorsal view) (Fig. 2F). Mucro typically with 6 teeth, including 1 inner and 4 dorsal teeth. Head with complete setae of vertical group (Fig. 2I); those of trunk as in Fig. 2H, where abd. I has *c.* 9+9 setae in 2 rows

and abd. II has setae s/6/s/4; median group of abd. IV (Fig. 2J) almost at single level and distal group (Fig. 2K) few in number.

Remarks. The species is similar to *C. tarsata* Börner in the appearance of the patched legs, the transverse band of abd. II being sometimes obsolete. However, it is readily distinguished from it by the fully developed macrosetae of the head and trunk. The absence of the dental vesicle is also characteristic. In one juvenile example (1.5 mm) the macrosetae are well represented, the dental spines are absent but the distal swelling (not the vesicle) of the dens is distinguishable.

Distribution. West Java.

Callyntrura (Batikphysa) quadrimaculata Yoshii and Suhardjono

Callyntrura quadrimaculata Yoshii and Suhardjono, 1989: 80.

Material examined. West Java, Pulau Peucang, Ujung Kulon, 31 Aug 1985. SAMA (3), BM (2). Krakatau, BM (1).

Remarks. The examples coincide well with the description of the species from Central Java in both colour pattern and morphological details. In one darker specimen the two patches on abd. IV are nearly united dorsally.

Distribution. Java, Krakatau Is.

Bromacanthus setigerus (Börner)

Paronella setigera Börner, 1906: 178.
Pseudoparonella setigera. — Handschin, 1925: 254.
Bromacanthus setigerus. — Yoshii, 1981: 41.

Material examined. Sumatra, Liwa, SAMA (4).

Distribution. This is a widely distributed species in tropical Asia, already known from Singapore, Borneo, Sulawesi, Java, Moluccas Is. and other places.

Discussion

Of the nine species of paronellid Collembola recorded in this paper six were found on the Krakatau Islands, five on Sumatra and six in west Java. None were found only in the Krakataus. This collection certainly represents only a small proportion of the paronellids actually present in the three regions since only one method, beating and sweeping vegetation, was used and collections were made in the course of general insect collecting without any particular effort being made to comprehensively sample Collembola. Suhardjono's (1989) check list of Collembola from Indonesia and adjacent regions recorded 77 species of paronellid. It is to be expected therefore, that more species will be found, even in the Krakatau Islands, when collecting effort is concentrated on this group alone.

Acknowledgements

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