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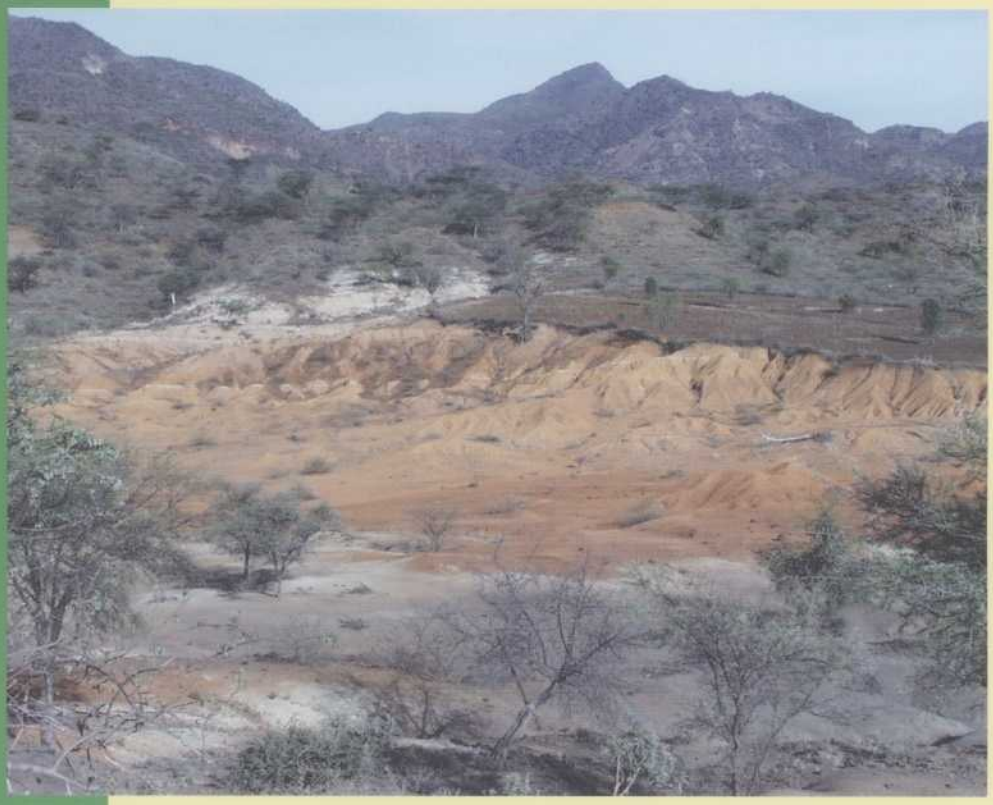

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A new species of the genus *Stenasellus* (Crustacea, Isopoda, Asellota, Stenasellidae)

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STENASELLUS JAVANICUS SP. NOV.

Material examined. Java Island, West Java Province (Bogor Regency, Kelapa Nunggal District, Leuwi Karet Village), Cikaray Cave, GPS Coord. S. 06° 30.900' E.106° 55.248', alt. 227 m ASL, C. Rahmadi Coll., 08-IV-2004 (2 specimens) : 1 adult male (6.1 mm, holotype, fig. 6-9 and 11-14) and 1 subadult female (without oostegites), (7 mm, allotype, fig. 1-5 and 10). Material in the collections of Museum Zoologicum Bogoriense, Bogor, Java, Indonesia. *Derivatio nominis* from the name of the island. Abbreviations in text and figures captions : l = length, w = width ; all bar scales in micrometers (µm).

Diagnosis. A moderate sized species (7 mm), with bifidous exopodite of IVth pleopods, endopodites of pleopods III, IV and V entirely bilobate, distal joint of endopodite of male second pleopods elongate, falciform, with a row of denticles ; closely related to two species of central Sumatra Island caves : *S. strinatii* Magniez, 1991 and *S. monodi* Magniez, 2000.

Description. Body slender, reddish in live specimens and whitish when preserved in alcohol. Chaetotaxy reduced. Cephalon wide (l/w = 0.73), anterior margin hardly, but regularly concave; lateral and posterior ones regularly convex. Otolith of Bellonci's organs slightly pigmented. Pereon: lateral margins subparallel, but very slightly convex in female ; outer margin of coxopodites (epimeres) slightly visible from above (fig. 1), last pereonite conspicuously longer than the others. Pleon: pleonites I and II free and fairly developed. Pleotelson elongate (l/w = 1.48), with posterior margin regularly convex. Epizoic suctorians with very short peduncle fixed on diverse parts of body and appendages.

Cephalic appendages. Antennulae: peduncle of 4 joints and flagellum with 7/8 ones, the three distal bearing a pair of aesthetascs. Antennae: peduncle with 6 joints, the 3rd one with a minute squama (reduced exopodite) bearing 3 short stout setae of different lengths (fig. 2); flagellum short with only 30-31 joints. Mouthparts (mandibles with

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3-segmented palp, maxillules bilobate and maxillae trilobate) very similar to those of *Stenasellus strinatii* (cf. MAGNIEZ, 2001, fig. 11-14). Maxillipeds without epipodite, 5-jointed palp normally developed; masticatory lobe of basipodite with only 2 coupling hooks.

Pereopods I. strongly subcheliform (fig. 3), functioning as gnathopods, underlying the maxillipeds in rest-position; palmar margin of the propodite with 2 enormous smooth setae bent outwards, followed by a row of 6 distally denticulate ones (tooth-brush-like setae) bent inwards (fig. 4). Sternal margin of the dactylopodite with a row of contiguous mucronated blades (hyaline flattened setae). Pereopods II-VII relatively short, but V, VI and VIIth slightly longer; dactylopodites with a very long, curved and slender hyaline nail and a single spiniform seta on palmar edge (fig. 5). Tergal crest of basipodites with several long otostyles. A long cylindrical penis lobe is borne on the medial angle of each coxopodial area of the last pereonal sternite of the male.

Male I pleopods. Protopodite subsquadrate (l/w = 0.9), with a single retinacular hook; exopodite extremely elongate (l/w = ca. 2.7) ; inner margin slightly convex, with a row of 13-14 setae, their length growing from the proximal to the distal one; outer margin concave and glabrous, distal margin convex, with 14 shorter smooth setae (fig. 6). Male II pleopods. Protopodite elongate (l/w = 1.3). Exopodite glandiform, short, 1st joint with a single external seta, 2nd joint with about 7 marginal setae, several cuticular scales on internal-distal margin and a small tergal lobe. Endopodite geniculate, extremely long and slender (fig. 7). Proximal joint (manubrium) (l = 0.89 protopodite) rather rectilinear, distal one (copulatory organ) extremely elongate (l = 1.45 protopodite), falcate, distally acute, with a long afferent opening on proximal half of inner margin, a short curved spur near the distal margin of this infundibulum ; distal part slightly twisted (fig. 8), with a helicoidal row of 12-13 hyaline denticles developing mainly on tergal side. Internal duct ending in a subterminal slender efferent opening on tergal side (fig. 9). Female II pleopods free, subtriangular (l/w = 1.15), (fig. 10), with one exopodial and two distal smooth setae.

Pleopods III, IV, V. Exopodites III (opercules) sclerotized, hyaline, elongate (l/w = 2.12), with reduced chaetotaxy (fig. 11). Exopodites IV hyaline, very large (l/w = 2.4), distally bifid, with a wide external lobe bearing 8-9 marginal setae and a narrow glabrous internal lobe (fig. 12); this character recalls *S. strinatii* and *S. monodi* from central Sumatra and this aspect is shown only in these 3 species. Exopodites V slender, club-like, muscular first joint very narrow, second one elongate, distal one triangular; inner margins of 2nd and 3rd ones bearing cuticular scales covering a grey glandular zone (fig. 14). Endopodites III, IV, V (fleshy gills with thin and soft cuticle) entirely bilobate, their two plates lying side by side, inner plates slender, outer ones wider; the two plates have same length in pairs III (fig. 11) and IV (fig. 13), inner plate slightly longer in pair V (fig. 14) ; inner plates III and V curved, inner plates IV rectilinear.

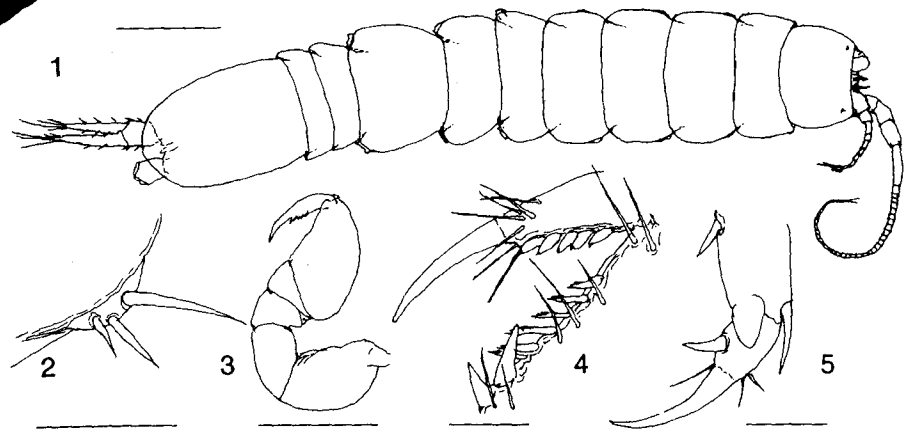
Uropods biramous, very short (l urop./l pleotelson = 0.54), but exopodite almost as long as endopodite (fig. 1).

DISCUSSION

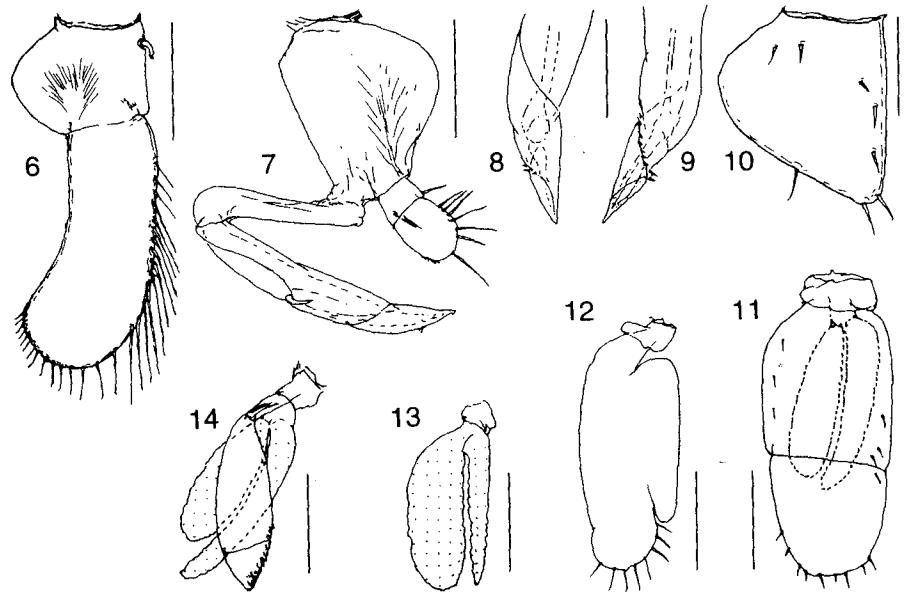
Relationships. In the Far East, stenasellid Isopods had been first discovered from subterranean waters of the continent (the Indochinese Peninsula and Phuket Island), where 8 taxa are known (Cambodia: 2, Thailand: 6, see BOUTIN, 1971, MAGNIEZ, 2003 and MAGNIEZ & PANITVONG, *in press*). Later, insular species were described: *Stenasellus chapmani* Magniez, 1982 from Sarawak (Borneo Island), then *S. covillae* Magniez, 1987 from W. Sumatra Island, and finally four species from central Sumatra : *S. strinatii* Magniez, 1991 (MAGNIEZ, 2001), *S. stocki* Magniez, 2001, *S. monodi* Magniez, 2001 and *S. foresti* Magniez, 2002. The discovery of these stygobionts in Java appeared to be interesting for taxonomy as well as for biogeography and biospeleology. As shown by the structure of its pleopods, *S. javanicus* sp. nov. appears closely related to *S. strinatii* and *S. monodi* from karstic waters of central Sumatra Island. The relationships seem more remote with the other species of Sumatra, Borneo Islands and of the Indochinese Peninsula. This indicates that these three species have a more recent common origin than other far east *Stenasellus* species. Obviously, this speciation occurred step by step during geological times, the last ones being bound to Pleistocene and Holocene geological events.

Biogeography. The present insular isolation of *S. javanicus* sp. nov. is consistent with its strong relationships with two Sumatran species. In fact, Sumatra, Java, Borneo and lesser islands have been bound together and to the Indochinese Peninsula during different low sea-level periods of the Quaternary, all forming a large emerged continental plate with a common hydrographic drainage: different tributaries from Indochina, Sumatra, Java and W. Borneo lands falling into a wide paleo-river flowing down northwards, to the reduced China Sea. So, these stenasellids were able to scatter in the underground aquifers of different parts of this drainage (MAGNIEZ, 1993). Later, during thalassocratic periods, the populations of the high parts of hydrographic drainages remaining emerged have evolved independently from each other. So, they can be (or have been) present in any land belonging to the drainage of the main paleo-river of the Sunda Continent. The Java karst comprises several different karst regions, from west to east. The presence of stenasellids in small karst in West Java and their apparent absence in Central and East Java is interesting for Javanese cave fauna biogeography. Further investigation of cave and interstitial fauna of Java is needed to find the real biogeographical limit of stenasellids in Java. So far, stenasellids have never been found in eastern Indonesia, from Sulawesi island to Papua.

Ecology. The new species was collected in a small puddle with mud substrate, in a small passage of Cikaray Cave ; they crawled on the bottom of the puddle and were found only in this single puddle. All stenasellids living in subterranean waters and being strongly adapted to this biome, their general features are very uniform. Nevertheless, these living in burrows dug in cave or alluvial clay, or in the net of interstices of coarse alluvial deposits show minor adaptations (body more slender, antennae, legs and uropods rather short) and the new species shows these characteristics already known in most European species.



Figures 1-5. 1. Female allotype, tergal side, b (bar scale) = 1000. 2. Squama (exopodite of antenna), b = 100. 3. Pereopod I, without setae, b = 300. 4. Palmar margins of propodite and dactylopodite of the previous, b = 100. 5. Tip of pereopod 2 of female, b = 100.



Figures 6-14. 6. One pleopod I of male holotype, b = 300. 7. One pleopod II of holotype, b = 300. 8. Tip of copulatory organ of the previous, sternal side, b = 150. 9. Tergal side of the previous, b = 150. 10. One pleopod II of allotype female, b = 300. 11. One pleopod III of male, sternal side, b = 500. 12. Exopodite of one pleopod IV of male, b = 500. 13. Endopodite of the previous, b = 500. 14. One pleopod V of male, b = 500. Respiratory surfaces are dotted in stippled.

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