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MICRONESIAN ORIBATEI
II. A new species of *Javacarus* from Ponape (Acari: Oribatei: Lohmanniidae)[1]

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Abstract. *Javacarus reticulatus* is described as a new species of oribatid mite (Acari: Oribatei: Lohmanniidae) collected on the island of Ponape in Micronesia.

The genus *Javacarus* was erected by Balogh (1961), with the type-species *J. kuehnelti* from Java. Mahunka (1977) subsequently noted it from west Java and Malaysia (Kuala Lumpur). Hammer (1971) collected it on Viti Levu in Fiji, but later (1972) placed these specimens together with material from Tahiti in a new variety, *J. kuehnelti* var. *foliatus*. However, according to the International Code of Zoological Nomenclature, a name published as a variety after 1960 is considered of infraspecific rank and, therefore, not available. Not wishing to ignore the differences mentioned and figured by Hammer (1971, 1972) and in order to make the taxon *foliatus* available, it seems prudent at this time to elevate her taxon, which represents specimens from Fiji and Tahiti, to subspecific status: *J. kuehnelti foliatus*.

Csiszár (1961) described a 2nd species, *J. granulatus*, from the island of Pulau Peutjang in western Java. The following year (1962) Balogh diagnosed a 3rd species, *J. inexpectatus*, from the rain forests of Peru, but gave only a very brief description and no figures. Hammer (1979) found a 4th species, *J. porosus*, in 6 areas of eastern and western Java. This report concerns a 5th species, *J. reticulatus*, collected on the island of Ponape in Micronesia.

Javacarus reticulatus Sengbusch, **new species** Fig. 1–2

Length. 646 × 362 μm. *Color.* Medium brown.

Diagnosis. *Javacarus reticulatus* is differentiated from the other 4 species on the basis of larger, embossed microsculpture with more pronounced reticulation; long, foliate (with midrib) biciliated dorsal setae; and the number of pectens (10–12) on sensillus (Table 1).

Description. Prodorsum ornamented with irregular rounded grayish papules much larger than on previously described species. Surrounding depressions form interconnecting reticulum, hence specific name. Microsculpture much less evident on other portions of body, with

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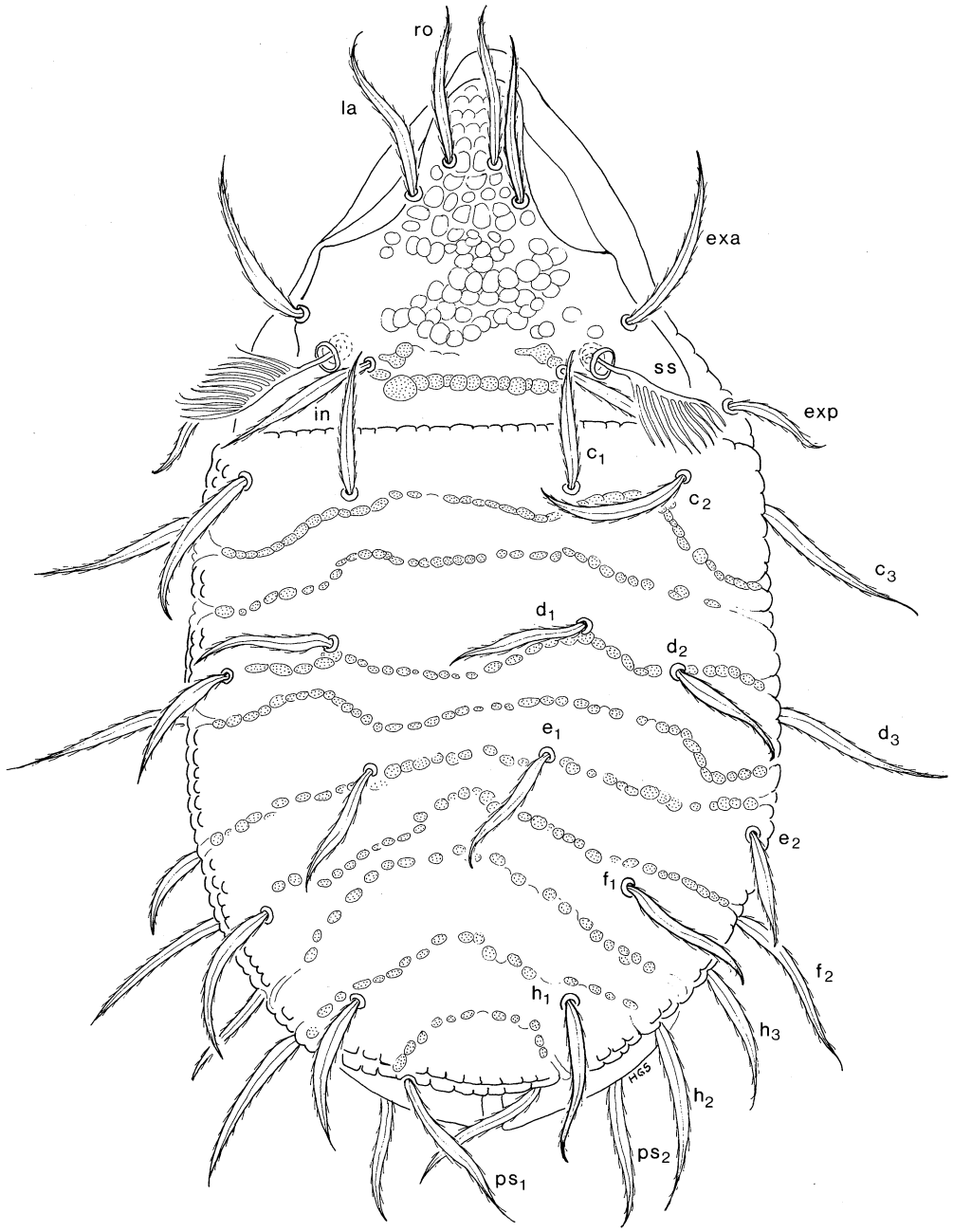

FIG. 1. *Javacarus reticulatus,* dorsal aspect.

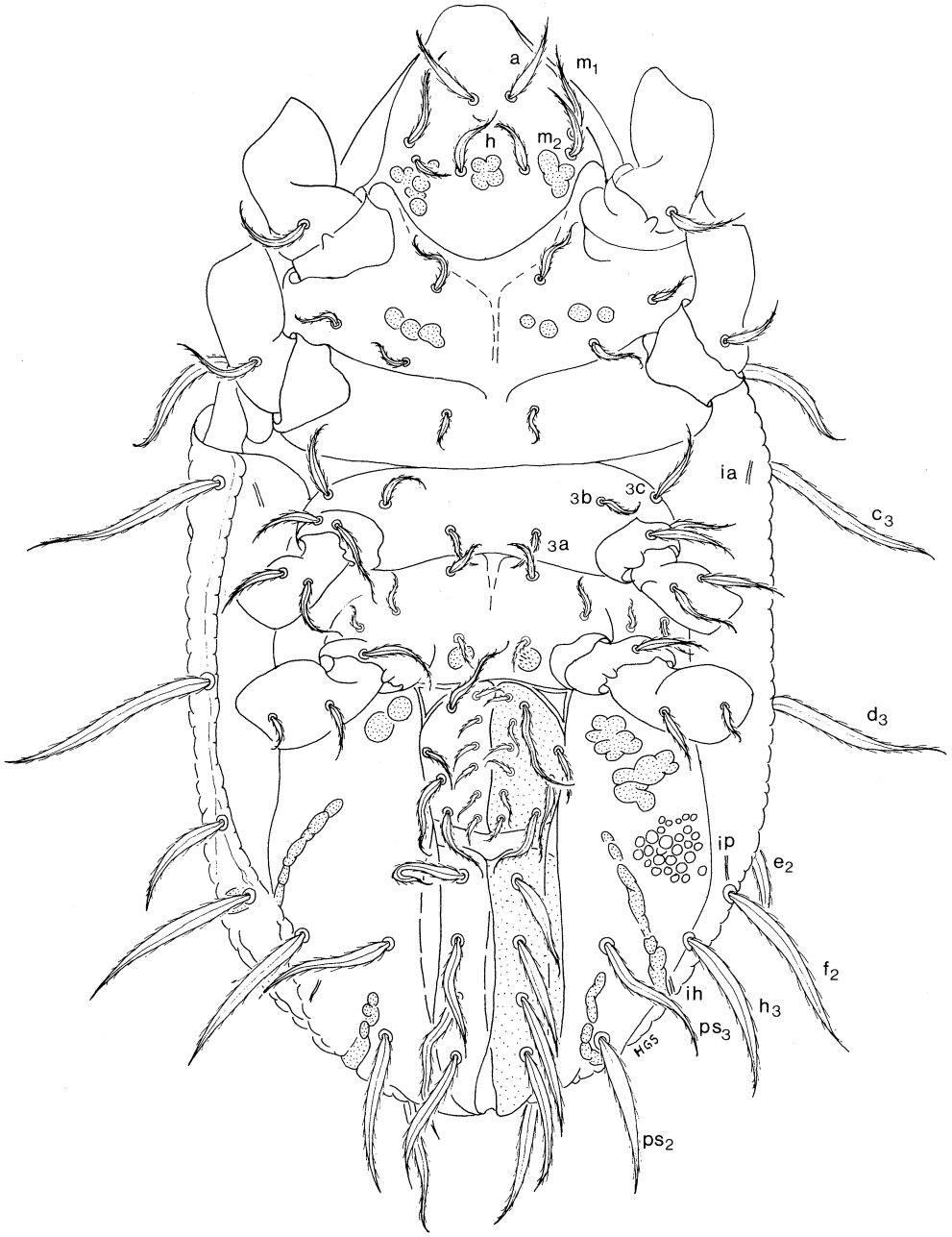

FIG. 2. *Javacarus reticulatus,* ventral aspect.

exposed tegument tending to be finely punctate. Tip of rostrum broadly rounded without incision. Prodorsal setae long, narrow foliate with prominent midrib tapering to attenuated point. Setal margins coarsely biciliate, with fine hairs flattened to surface almost scalelike. *Prodorsum.* Rostral setae *ro* directed forward, somewhat shorter (47–66 μm) than lamellar *la* (99–108 μm). Anterior exopseudostigmatic *exa* curves forward about same length as *la.* Posterior exopseudostigmatic *exp* shorter (67–84 μm) than *ro,* falcate, arched backward over margin of notogaster. Interlamellar *in* about same length (108–120 μm) as *la,* extending backward past insertion of c_1. Sensillus *ss* long, filiform with 10–12 long, wavy, pectinate branches. Rounded areae porosae prominent near insertion of *in.* Prodorsum bears transverse band of areae porosae posterior to level of pseudostigmata. *Notogaster.* Notogastral setae represent holotrichous condition; 32 in 6 rows (*c, d, e, f, h, ps*) with basic structure similar to prodorsal setae. Setae c_1, d_1, e_1 similar in length (84–86 μm), with h_1 a bit heavier and longer (96 μm). Marginal bristles c_3, d_3, f_2, h_2 much longer (120–127 μm), extending outward almost 45° from body. Seta c_1 directed forward, d_1 and f_1 almost erect, with posterior setae all tending to conform to contours of body. Nine complete transverse rows of rounded areae porosae, probably vestiges of sillons rubannés transversaux *s* or notogastral bands (Wallwork 1963). Body surface ornamented with papulose microsculpture mentioned above, but not as evident as on prodorsum except along margins (lateral and posterior) of notogaster. *Venter.* Infracapitulum with 4 pairs of foliate, ciliate setae: *a* and m_1 approximately same length, with m_2 and *h* a bit shorter. Areae porosae prominent between *h* and *h* (4 leaf clover) and near insertions of m_2. Coxisternal formula agrees with type: 3-1-3-4. Setae short, foliate, ciliate with 3c longer than others and projecting forward. Aggenital plates triangular, located anterolateral to genital plates, with bases approximately equal in length. Genital plates undivided, each with 6 short (17–22 μm) thin paraxial setae and 4 much longer (36–53 μm) antiaxials, similar to *ro,* except the 2nd, which is about ½ the size. Preanal plate as broad as anal with midventral convex posterior. Adanal and anal plates fused into single paraproctal plate (Wallwork 1962), bearing 4 adanal setae with both anals lacking. Adanal setae long, wavy, foliate, biciliate, progressively longer anterior to posterior. Plates finely punctate, lacking papules. Fissures *ia, ip,* and *ih* clearly seen in ventral view due to curvature of notogaster, which also shows continuation of dorsal transverse bands.

Holotype, MICRONESIA: eastern Caroline Is: Ponape I: Colonia, Agric. Exper. Stn., 8.I.1953, leaf mold, J.L. Gressitt PSB 449 (BPBM 12,377). Holotype in Bishop Museum.

Remarks. Grandjean (1950) in his studies of the family Lohmanniidae discussed at length the superficial microsculpture of the cuticle. He stated that 2 types are particularly common: a fine reticulation with alveoli (pétite réticulation) and a large network with knobs (grande réticulation). Although the small reticulum is probably the fundamental microsculpture of the lohmanniids, Grandjean did not cite it as a general character because it is not always observable. The large meshwork, consisting of raised projections with interconnecting valleys forming the reticulum, is not generally seen except on the prodorsum and notogaster, where it is more evident along the margins. It is deficient in many species or at least not seen as distinctly. Recognizing the difficulty in observing this feature, Grandjean gave details which would aid in microscopy. Although he outlined the large reticulum on the dorsum of *Torpacarus, Annectacarus* and *Cryptacarus,* he did not figure the embossed ornamentation mentioned in the text.

In the case of *Javacarus,* the microsculpture apparently is a useful character to distinguish species. Unfortunately, the prior authors did not provide sufficient detail.

It is not mentioned by Balogh for either *J. kuehnelti* (1961) or *J. inexpectatus* (1962). Csiszár (1961) states, "prodorsum with dense minute tubercles" for *J. granulatus,* and Hammer (1979) lists, "integument covered with greyish tubercles" on *J. porosus.* The only other citation is by Hammer (1972) for *J. kuehnelti foliatus,* "rostrum is hyaline without any sculpture and the sculpture of the propodosoma consists of much larger spots than in type." There is no mention anywhere of a network or reticulum. However, a comparison of the drawings shows raised areas on all species illustrated. The use of a Zeiss Nomarski Differential Interference Contrast microscope at 1500× shows a papulated microsculpture (grande réticulation) on *J. reticulatus,* with elevations much broader than in other species and the interconnecting intaglios forming a network. The tops of the protuberances are definitely grayish in contrast to the amber brown body color with the thinner reticulum appearing much lighter. The underlying tegument revealed on areas not embossed appears as an irregular punctate meshwork (pétite réticulation).

A total of 11 notogastral somites are present as a primitive condition in the family Lohmanniidae and the segmental sutures *s,* when present, are represented by 10 ribbonlike transverse bands (sillons rubannés transversaux or fossulae vittiformes). In *Javacarus,* as in *Torpacarus,* transverse rows of rounded areae porosae occupy intersegmental positions and are interpreted as fragmentary vestiges of transverse bands (Wallwork 1963). This has led to confusion in the descriptions of this feature within the genus. Balogh (1961) described the type with "fossulae vittiformes" composed of rounded areas, and further that these bands and the true areae porosae in between are somewhat alike. Csiszár (1961) for *J. granulatus* lists 9 sillons rubannés transversaux, 2nd and 3rd interrupted in the middle, with areae porosae entirely absent. Hammer (1972) found little difference between *J. kuehnelti foliatus* and the main form and noted that the pattern of bands was not fully symmetric. In 1979 she observed 9 fossulae vittiformes on *J. porosus* and listed a few areae porosae, viz., between d_2 and e_2. *J. reticulatus* definitely has 9 transverse notogastral rows of rounded areas, and I agree with Wallwork that they represent areae porosae and not the classic sillons rubannés transversaux of Grandjean (1934, 1950).

Since descriptions of setae, as well as other anatomical features, depend to a large extent upon the current state of the art of microscopy, it follows that the lack of specific detail in prior reports and inclusion of finer and more minute structures in more recent publications might represent only a change in the level of observation rather than differences in inherent morphology. Therefore, it is difficult to say without examining the type material how much actual difference exists between the smooth lanceolate (without midrib) notogastral setae of *J. kuehnelti* and *J. inexpectatus,* the narrow willow-leaf setae with hardly discernible cilia of *J. granulatus,* the lanceolate, dentate bristles of *J. porosus,* and the long, foliate (with midrib) ciliate notogastral setae of *J. reticulatus.* However, a comparison of the published material clearly shows specific differences.

Recognizing the above, plus the fact that only a few specimens have been examined

TABLE 1. Differential characters for *Javacarus* spp.

	J. kuehnelti BALOGH 1961	*J. kuehnelti foliatus* (HAMMER 1972)	*J. granulatus* CSISZÁR 1961	*J. inexpectatus* BALOGH 1962	*J. porosus* HAMMER 1979	*J. reticulatus*, N. SP.
Distribution	Java, Malaysia	Fiji, Tahiti	Indonesia, Java	Peru	Java	Micronesia
Dimensions	628–48 × 304–11 μm	ca. 650 μm	640 × 340 μm	607 × 290 μm	ca. 640 μm	646 × 362 μm
Prodorsum						
Setae	Lanceolate, some smooth	Lanceolate, some smooth	Foliate, cilia hard to see	Lanceolate, some smooth	Lanceolate, slightly dentate	Foliate, all biciliate
Microsculpture	With sharp foveolae	With larger spots	With dense minute tubercles	With indistinct foveolae	With grayish tubercles	With large bosses and reticulum
Sensillus	7 branches	8–11 br.	8 br.	7 br. (?)	ca. 10 br.	10–12 br.
Notogaster						
Setae	Lanceolate (no midrib), subequal	Foliate (with midrib)	Foliate, some with cilia, marginal longer	Like *kuehnelti*, but marginal longer	Lanceolate, dentate, marginal longer	Foliate, biciliate, longer than *kuehnelti*, esp. marginal
Bands	9 rows round areas + areae porosae	Probably like *kuehnelti*	9 rows, but $s_2 + s_3$ incomplete, no areae porosae	Like *kuehnelti*	9 rows complete, but irregular, a few areae porosae	9 rows areae porosae

within this genus, a key to the species of *Javacarus* has not been constructed. Instead, Table 1 is presented to facilitate identification and to encourage further work within this interesting group.

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