

## MICRONESIAN ORIBATEI

I. A new species of *Haplacarus* from Yap  
(Acari: Oribatei: Lohmanniidae)<sup>1</sup>Howard G. Sengbusch<sup>2</sup>

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

The genus *Haplacarus* was first described by Wallwork (1962) on the basis of 2 specimens (adult and tritonymph) of a single species collected in Ghana. Subsequently a tritonymph of the same species, *H. foliatus*, was noted by Pérez-Iñigo (1968) from material obtained on the island of Annobón in the Gulf of Guinea. Aoki (1965) erected a 2nd species, *H. pairathi*, from Thailand, the first from SE Asia. Almost a generation elapsed before Hammer (1979) reported a 3rd species, *H. javensis*, from central Java. This paper concerns a 4th species, *H. pandanus*, collected from the island of Yap in the Caroline Islands of Micronesia.

The identification of another species of this genus from SE Asia further substantiates the continental drift hypothesis of Hammer & Wallwork (1979), which states that the family Lohmanniidae was one of the ancient oribatid groups to originate on the supercontinent Gondwanaland and then radiate eastward. However, the number of distinct but related species that occur within South Pacific island groups indicates that the fauna within the region is a relatively young, evolving one with a high rate of speciation. Moreover, evidence is accumulating that indicates a close relationship between the oribatids of Indonesia and those of the islands of the South Pacific including Micronesia.

***Haplacarus pandanus* Sengbusch, new species**

Fig. 1-2

Length: 682 × 329 μm. Color: medium brown.

As in the previously described species, cerotegument ornamented with microsculpture of knoblike papillae rather regularly arranged over most of body, especially on dorsum. Underlying tegument finely punctate and clearly seen on areas not covered by tubercles. Dorsal setae tending to be long, foliate, terminating to attenuated point, with unequal biciliated edges along most of the length. Petiole extending distally as midrib with flattened blade twisting in

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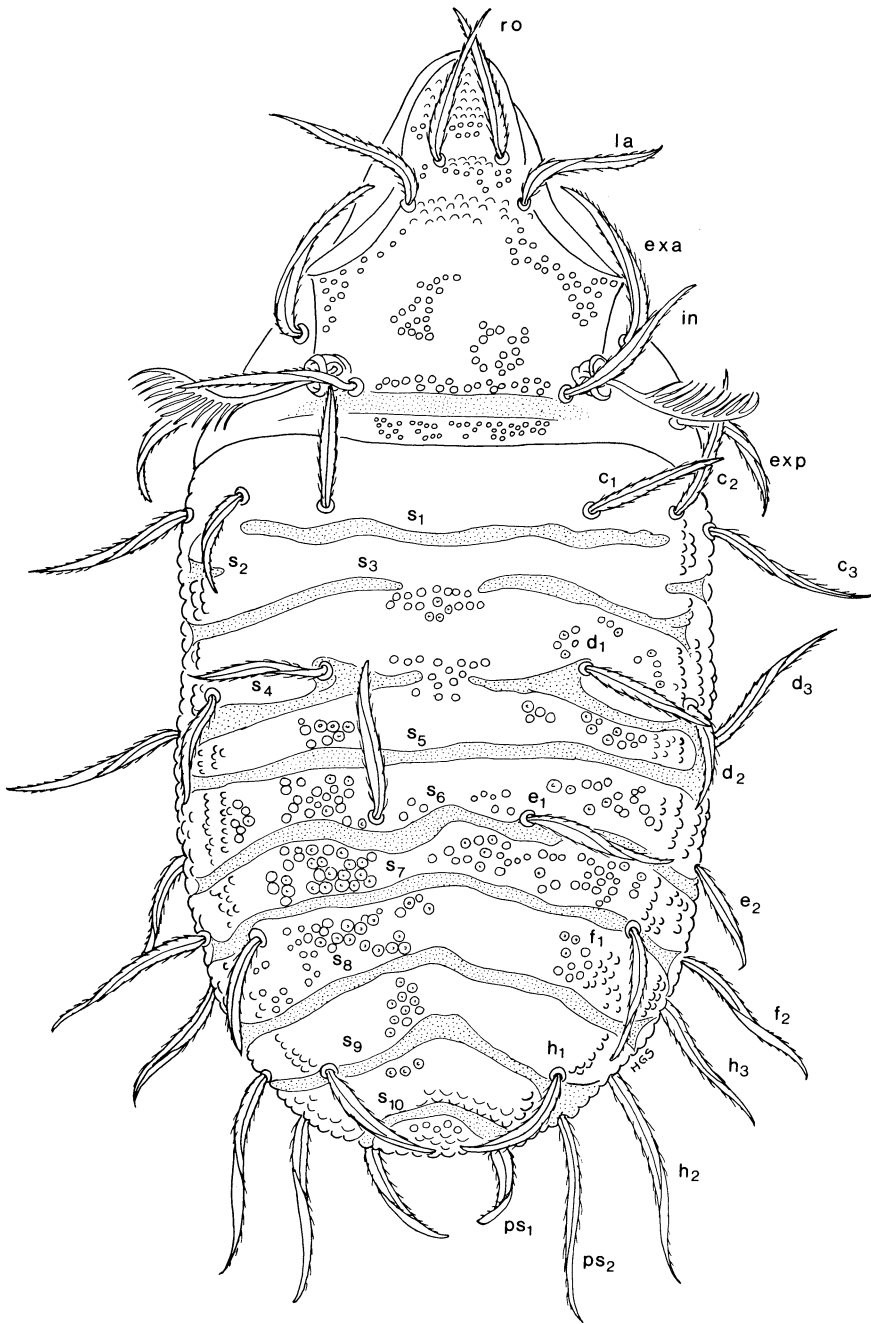


FIG. 1. *Haplacarus pandamus*, dorsal aspect.

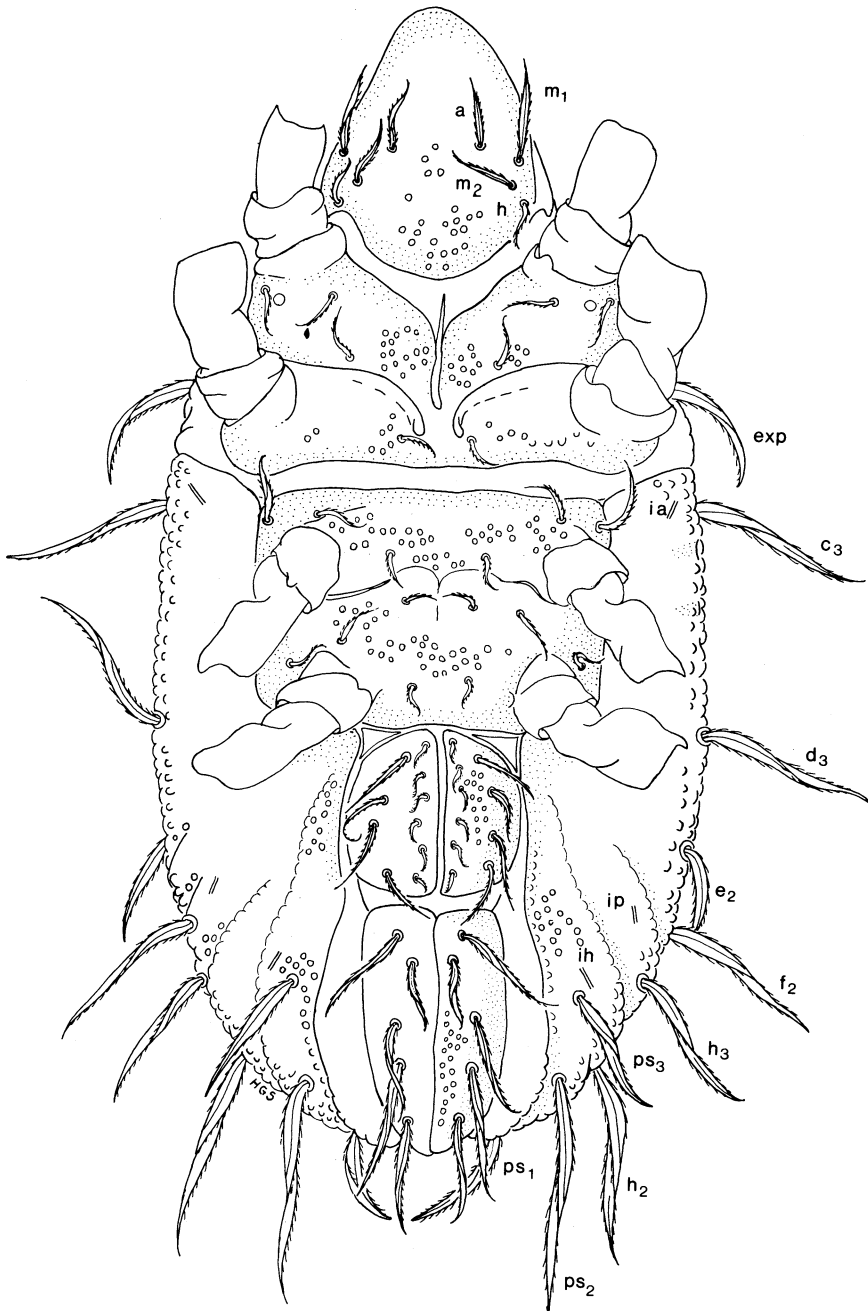


FIG. 2. *Haplacarus pandanus*, ventral aspect.

TABLE 1. Differential characters for *Haplacarus* spp.

	<i>H. foliatus</i> WALLWORK, 1962	<i>H. pairathi</i> AOKI, 1965	<i>H. javensis</i> HAMMER, 1979	<i>H. pandanus</i> , n. sp.
Distribution	Ghana, Annobón	Thailand	Java	Yap (Micronesia)
Size	678 × 323 μm	570 × 245 μm	720 × 204 μm	682 × 329 μm
Prodorsal setae	<i>ro</i> Length 3-4× distance bet. insertions	2.5-2.7×	Ca. 2.3×	Ca. 2.7×
	<i>exa</i> Foliate, short barbs, 85-90 μm	Smooth, insertion <i>la</i> far below <i>exa</i>	Long, foliate, slightly dentate	Foliate, barbed 100-110 μm
Sensillus	10-12 branches	11-12 branches, 3-4 smaller post.	8 branches	10-12 branches
Notogastral setae	All foliate, usu. smooth w/out barbs, 80-100 μm; <i>ps</i> <sub>1</sub> thick strong, incurved	All smooth exc. <i>ps</i> <sub>1</sub> & <i>ps</i> <sub>2</sub> , which are sim. to <i>ro</i> & <i>la</i> ; <i>ps</i> <sub>1</sub> not incurved	Foliate; dentate; margin setae longer than dorsal; <i>ps</i> <sub>1</sub> strong, incurved	Foliate & ciliated w. ½ turn; 80-130 μm; <i>ps</i> <sub>1</sub> strong, incurved
Distance <i>d</i> <sub>1</sub> - <i>d</i> <sub>1</sub>	1.6× distance <i>d</i> <sub>1</sub> - <i>d</i> <sub>2</sub>	2.6-4.7×	2.3-2.5×	2.5×
Notogastral bands	<i>s</i> <sub>2</sub> Very short; incomplete from <i>c</i> <sub>2</sub> - <i>c</i> <sub>2</sub>	Complete	Very short; present only behind <i>c</i> <sub>2</sub>	Very short; as in <i>H. foliatus</i>
	<i>s</i> <sub>3</sub> Complete	Complete	Complete	Incomplete; interrupted middorsally
	<i>s</i> <sub>6</sub> Complete	Incomplete; broken middorsally	Complete	Complete
	<i>s</i> <sub>7</sub> Incomplete; broken middorsally	Incomplete; broken middorsally	Complete	Complete
Aggenital plate	Triangular; broader than long	Triangular, ca. equal bases	Triangular; longer than broad	Triangular; ca. equal bases
Preanal plate	Broad; straight post. border	Broad; post. border with outgrowth	Broad; straight post. border	Broad; midventral round projection

approximate halfturn resembling leaf of screwpine, *Pandanus* sp., hence specific name. *Prodorsum*. Rostral tectum narrow, smooth, not incised. Lateral margins of prodorsum somewhat angular. Rostral setae *ro* long (98 μm), extending beyond anterior margin, inserted close together, about 2.7× longer than mutual separation. All prodorsal setae as described above: lamellar *la* somewhat longer (109 μm), tending to extend outward; anterior exopseudostigmatic *exa* strongly incurved; posterior exopseudostigmatic *exp* shorter falcate, bent backward; interlamellar *in* erect. Sensillus *ss* long, strongly pectinate with 10-12 branches. Broad transverse prodorsal band posterior to pseudostigmata. *Notogaster*. As in all other species in genus, 32 notogastral setae arranged in 6 rows (*c*, *d*, *e*, *f*, *h*, *ps*). General location and orientation of these setae similar to condition in *H. foliatus* and *H. javensis*. Setae ranging in length from approximately 87 μm for *c*<sub>1</sub> and *d*<sub>1</sub> to about 130 μm for *h*<sub>2</sub> and *ps*<sub>2</sub>. Mutual distance between *d*<sub>1</sub> and *d*<sub>1</sub> about 2.5× distance from *d*<sub>1</sub> to *d*<sub>2</sub>. Seta *ps*<sub>1</sub> a bit thicker and strongly incurved. Complete segmentation

(primary and secondary) indicated by 10 transverse bands  $s$  represented by lack of papillae and presence of fine punctation. Segmental sutures complete posterior from  $s_5$  to  $s_{10}$ , but anterior 4 in various stages of regression:  $s_1$  extends across dorsum but ends posterior to insertion of  $c_2$ ;  $s_2$  very short, arising laterally and terminating also behind  $c_2$ ;  $s_3$  broken mid-dorsally; and  $s_4$  lacking between  $d_1$  and  $d_1$ , but enlarged and encompassing both insertions. *Gnathosoma*. Infracapitulum bears 4 pairs of setae ( $a$ ,  $m_1$ ,  $m_2$ ,  $h$ ); setae foliate, rather thin, pointed and uniciliated. Insertion of  $h$  much more laterad than other species. *Podosoma*. Coxisternal formula 3-1-3-4 arranged in usual manner in this group. Setae short, thin, twisted and ciliated. *Genitoanal region*. Aggenital plates at anterolateral corners of genital field, triangular in shape, with bases approximately equal length. Genital plates undivided by transverse suture, each shield with 10 setae; 4 long, finely ciliated antiaxials, and 6 short, curled paraxials. Preanal plate broad, with midventral slightly rounded posterior projection. Fused adanal and anal plates bearing 4 adanal and 1 anal setae (4 + 1). Adanal setae quite long (78  $\mu\text{m}$ ); anal noticeably shorter (44  $\mu\text{m}$ ) and thinner. Fissures  $is$ ,  $ip$ , and  $ih$  clearly visible on ventral side. Cerotegumental microsculpture evident throughout venter, with underlying punctate tegument seen at suture areas, edges of plates, bases of legs, etc.

Holotype. MICRONESIA: Western Caroline Is: Yap I, Gagil Distr, 21.VII.1950, R.J. Goss (BISHOP 12,378). Holotype in Bishop Museum.

*Remarks*. Notogastral metamerism figures prominently in descriptions of genera and species within the family Lohmanniidae. Grandjean (1949, 1950) listed 6 primitive segments, each bearing a row of notogastral setae for a total of 32 in the holotrichous condition. Five additional segments (false segments) developed secondarily in the evolution of the group (Wallwork 1963), with the complete segmentation indicated by 10 transverse bands separating 11 notogastral somites. The segmental sutures  $s$  are referred to as "sillons rubannés transversaux" (Grandjean 1950, Csiszár 1961), "fossulae vittiformes" (Balogh 1960, Aoki 1965), and "notogastral bands" (Wallwork 1962, Hammer 1979). In the phylogenetic development of the family there is a progressive decrease in the number of metameres, with a concomitant reduction in the size and number of transverse bands (segmental regression). *Haplacarus* probably represents an early stage in this regression with some of the bands being incomplete. Therefore, the presence or absence of these structures is useful in the determination of species (Table 1).

Balogh (1972) in his key to the lohmanniids repeatedly used the width of the preanal plate as one of the dichotomous criteria. *Haplacarus* is characterized by a broad configuration, whereas *Dendracarus*, among a number of other genera, has a narrow preanal plate. *H. pandanus* has a midventral rounded posterior projection on the sclerite; this is also indicated on *H. pairathi* but not on the other species. Whether this is an intermediate condition is unknown. *Dendracarus* also has fused adanal and anal plates with a setal formula of 4 + 1. However, *Dendracarus* has the anterior anal seta missing, whereas *Haplacarus* has the posterior one lacking.

It is suggested that too few specimens have been studied to construct a practicable key to the species of the genus *Haplacarus* at this time. However, Table 1 should be useful in further investigations.

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