

MICRONESIAN ORIBATEI

III. A new species of *Lohmannia* from Saipan
(Acari: Oribatei: Lohmanniidae)¹Howard G. Sengbusch²

Abstract. *Lohmannia pinnigera*, n. sp., is described from the island of Saipan in Micronesia.

Lohmannia is a confused genus, containing several species that are inadequately described and figured. Too often, structures that are now considered of taxonomic importance were neglected by early workers. Thus, without examining types, it is difficult to be certain of the placement of new species within the group. It is beyond the scope of this report to review all the ambiguities within the genus, but a short recapitulation seems advisable.

New material of the type-species, *Lohmannia paradoxa* (Haller, 1884), has never been collected (van der Hammen 1959), and the original description and figure are so imprecise that Grandjean (1950) erected an auxiliary type, *Lohmannia lanceolata*. In the meantime, Berlese (1896, 1916, 1923) described 3 more species of which only *L. regalis* Berlese, 1923, is accepted today; later van der Hammen (1959) was unsure if that species should be in *Lohmannia* or *Thamnacarus*. Sellnick (1931) published a detailed description of a variety (*L. regalis* var. *reticulata*), but I doubt if his specimens really differ from the typical *regalis*. Willmann (1931) figured *L. paradoxa* after Haller and admitted that he had searched in vain for this interesting animal. However, in 1936 he did describe and illustrate a valid species, *L. bifoliata*. In America, Banks (1910, 1947) described 2 more species, both of uncertain status. After Grandjean's (1950) detailed study of the family Lohmanniidae, the genus *Lohmannia* was more firmly established. However, Mihelčič (1956, 1957, 1958), reviewing the lohmanniids of Spain, further attempted to clarify the *L. paradoxa* enigma in addition to describing 2 new species, but he succeeded only in creating more confusion. Pérez-Iñigo (1967), in reexamining Mihelčič's species, assigned *L. paradoxa* sensu Mihelčič, 1956, to the new taxon *L. hispaniola*, confirmed the transfer of *L. valdemorica* to the genus *Thamnacarus* Grandjean, 1950, and declared *L. ornata* a nomen nudum. Sellnick (1960), in his compilation of the Oribatei of middle Europe, checked one of Haller's specimens

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of *L. paradoxa* and noted several discrepancies with the type description, e.g., divided genital plate, 2 setae (not 1) on anal plate. All of which added to the invalidity of the type. Balogh (1961), in an outline of the family, listed only 4 authenticated species for *Lohmannia*, including his *L. javana*, the 1st species from the Pacific area; the following year he added *L. similis* from Peru. Mahunka (1974) described *L. loebli* from Greece, and Elbadry & Nasr (1977) delineated *L. egypticus* from Egypt. Norton et al. (1978) transferred *L. brevipes* Banks, 1947, to *Mixacarus* Balogh, 1958, and determined 2 new species from the same area, *L. banksi* and *L. carolensis*. In the case of the latter, the presence of only 1 pair of anal setae led to the erection of the 1st subgenus in the group, *Carolohmannia*. This seems another instance of setal regression, which will probably result in the elevation of *Carolohmannia* to generic status. An example of this regression is seen in *Dendracarus* Balogh, 1960, and *Haplacarus* Wallwork, 1962, 2 closely related genera in the family Lohmanniidae that are separated on the basis of number of anal setae, as well as width of preanal plate, etc. (Balogh 1972). Until the present, there were only 9 recognizable species in the genus *Lohmannia*. This paper describes a 10th, *Lohmannia pinnigera*, collected on the island of Saipan in Micronesia.

***Lohmannia pinnigera* Sengbusch, new species**

Fig. 1-2

Length: 1149 × 636 μm. Color: golden brown.

Diagnosis. *Lohmannia pinnigera* is differentiated from other species by its larger size; location (Saipan); number of notogastral bands (s_2 , s_8 , s_9) complete; long, featherlike dorsal setae; 2 types of ventral setae, those similar to dorsal, and shorter, flattened plumose forms (infracapitular m_2 and h , coxisternal and genital); and number of pectens on sensillus (8-10) (Fig. 3).

Description. Prodorsum covered with finely punctate tegument more evident along margins. Tip of rostrum rounded without incision. Transverse band sb distinct, continuous between interlamellar setae. Prodorsal setae long, featherlike with prominent midrib tapering to attenuated point. Blade thin, almost transparent, often twisted on midrib, with finely ciliate margins. Rostral setae ro directed forward, somewhat longer (160-165 μm) and broader than lamellar la (120-122 μm). Anterior exopseudostigmatic exa much shorter than la , falcate, curving forward along margin of rostrum. Posterior exopseudostigmatic exp short, almost circular, with strong petiole, but lacking typical midrib, plumose, margin finely serrate. Interlamellar in about ½ length (75-89 μm) or ro . Sensillus ss long, filiform with 8-10 long, wavy, pectinate branches on 1 side and 6-8 short barbs on the other. *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 length (80-90 μm) with h_1 somewhat heavier and longer (103 μm). Setae c_2 , d_2 , e_2 similar in shape, but longer (94-118 μm). Marginal bristles c_3 , d_3 , f_2 , h_2 much longer and heavier (117-141 μm). Eight notogastral bands s present, but only s_2 , s_8 , s_9 complete. Body surface covered with fine punctation mentioned above forming irregular patterns, especially along margins. *Venter.* Infracapitular setae of 2 types: a and m_1 primitive, lanceolate, serrate; m_2 and h short, broad, finely ciliate. Coxisternal formula 3-1-3-4. Setae short, curved, similar to m_2 and h above. Genital plates divided, anterior and posterior halves each with 5 setae similar to those of coxisternum, 4 lateral pairs slightly longer than medial 6. Preanal plate as broad as and overlapping genitals. Narrow anal plates each with 2 very long (68-94 μm) setae like those of the notogaster. Four pairs of adanal setae, similar to anal, but longer

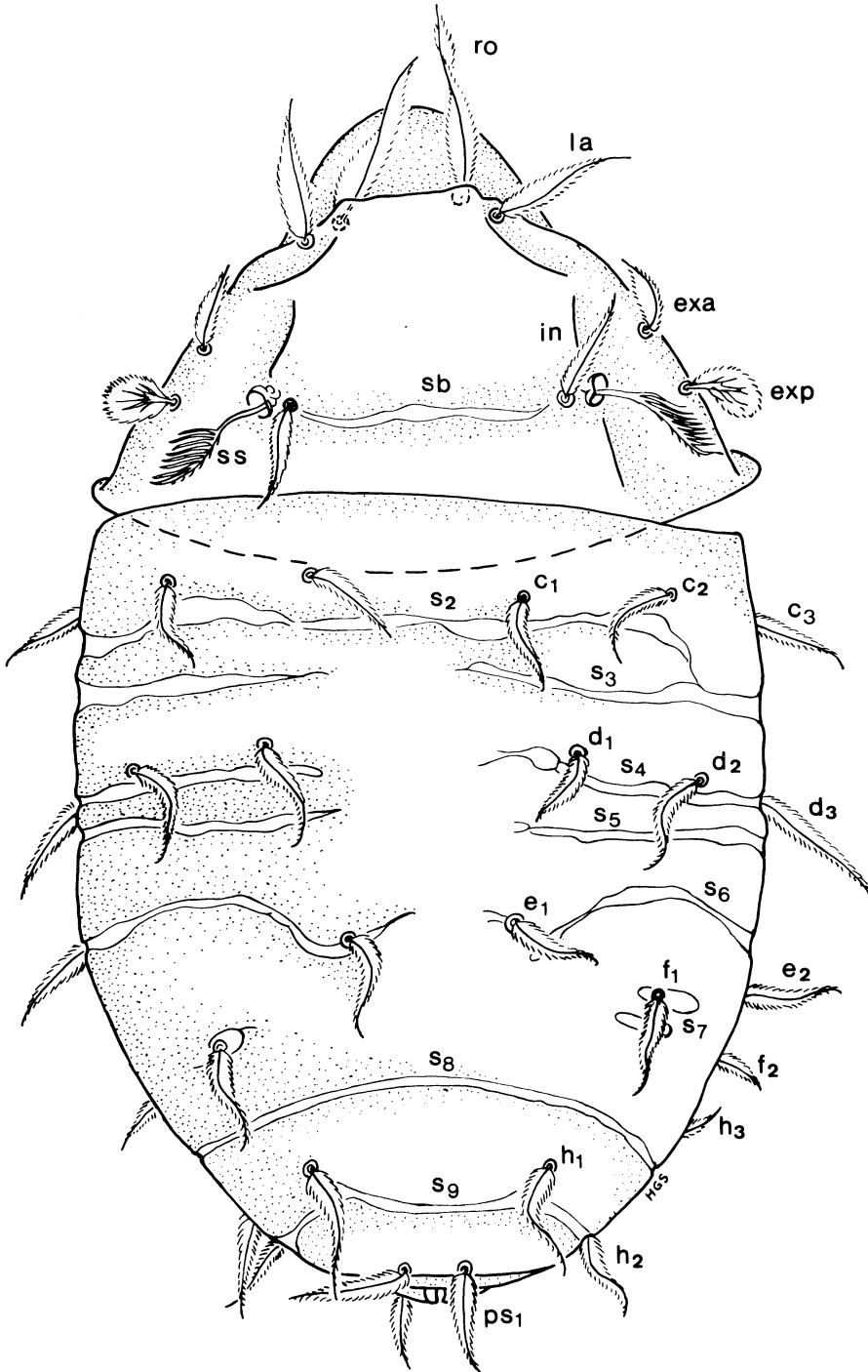
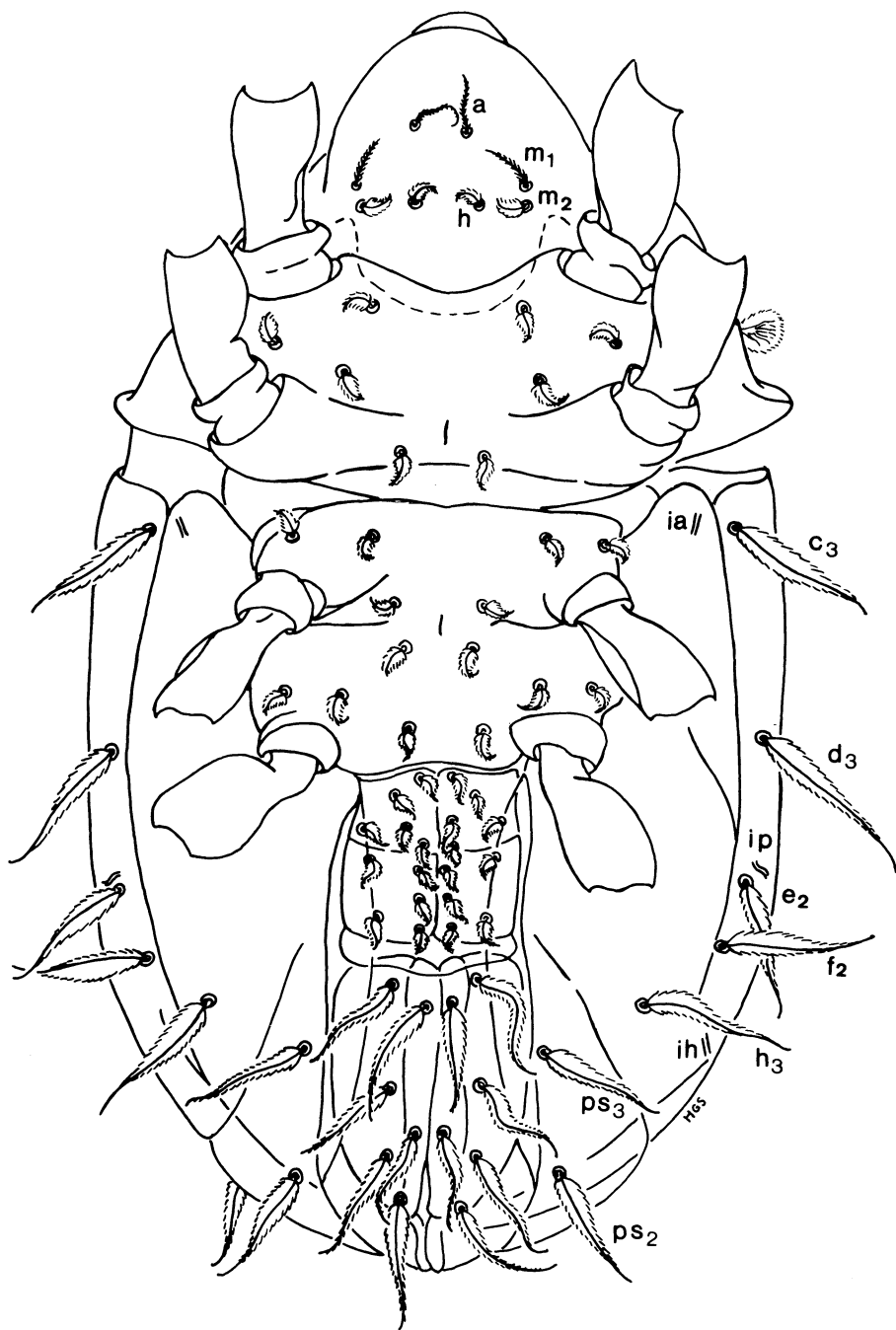


FIG. 1. *Lohmannia pinnigera*, dorsal aspect.

FIG. 2. *Lohmannia pinnigera*, ventral aspect.

(104–113 μm). Five pairs of lyrifissures usually seen in ventral view due to curvature of notogaster, but some difficult to recognize: *im* always in band s_6 and *ih* in s_9 , *ip* small and *ips* often invisible in adanal fold.

Holotype. MICRONESIA: Marianas Is: Saipan I: Hills E of Garapan, 23.I.1945, Lot 577 (H.S. Dybas PSB 681) (BPBM 13,088). Holotype in Bishop Museum.

Remarks. *Lohmannia pinnigera* is the largest species so far described for this genus. The only others longer than 1000 μm are the uncertain *L. paradoxa* [listed by Haller (1884) as over 1 mm and by Sellnick (1960) as $1020 \times 450 \mu\text{m}$] and *L. egypticus* at $1020 \times 508 \mu\text{m}$. The geographical distribution of the genus (Fig. 3) is wide, extending from around the Mediterranean Sea, north to West Germany, east to Turkmenia USSR, Texas and North Carolina in the USA, and Central and South America. Until the present only 1 other species, *L. javana*, was listed from the Pacific area. The identification of *L. pinnigera* from Micronesia further supports the continental drift hypothesis of Hammer & Wallwork (1979) and Sengbusch (1982). However, it is remarkable that on several surveys of oribatid fauna in SE Asia and on various Pacific islands no other members of this rather large-sized genus have been found.

Balogh (1961) in regard to the family Lohmanniidae stated that the form of the prodorsal setae is exceedingly variable and that differences are usually species specific and, further, that the shape and position of the notogastral bristles are taxonomic characteristics. According to Grandjean (1950) the setae can be simply barbed or broadened and leaflike. The expanded notogastral setae of *L. pinnigera* seem to be unique within this group, being more featherlike than leaflike; hence the specific name. The midrib is prominent whereas the vane is quite thin, probably representing fine, almost transparent cerotegument, sometimes difficult to distinguish. There is a strong tendency for one side of the blade to be larger than the other, with the greatest width near the base, gradually tapering to a long, attenuated point that is often twisted. The margins are not serrate, but appear finely ciliated. Similar setae are found on the ventral side: anal, adanal, ps_2 , ps_3 , h_3 . The infracapitular setae are of 2 types: *a* and m_1 , more primitive, long, narrow, serrate forms; and m_2 and *h*, short, expanded, curved bristles. A similar situation is found only in *L. banksi*. The coxisternal and genital setae are similar to m_2 and *h*.

Wallwork (1963) noted segmental regression in the genus *Lohmannia*, with *L. lanceolata* having lost notogastral bands s_1 and s_{10} , and having only s_2 entire, with the remaining incomplete in the midline. Although information on this important taxonomic structure is limited for many of the species within this genus (Fig. 3), no other species has the same complement as *L. pinnigera*. The other Pacific species, *L. javana*, is closest, with both exhibiting less regression and being presumably more primitive.

The sensillus seems to be of some systematic significance, although variability within populations has not been studied sufficiently. Within the genus *Lohmannia*, the species fall into 3 groups based on number of pectens: those species with 8 or fewer (*L. bifoliata*, *L. lanceolata*, *L. javana*); those with 11 or more (*L. hispaniola*, *L. loebli*, *L.*

	Distri- bution	Dimen. (μ m)	Prodorsal Setae					Notogastral	
			ro	la	exa	exp	ss	Setae	Bands
<i>regalis</i> Berlese, 1923	Yugoslavia, Greece	865-902 X 320-374	setiform, not greatly expanded	similar, but much shorter than ro	similar to la, erect	long, narrow, setiform	pectinate, 9-10 br.	narrow, lanceolate, serrate, subsimilar, marginal longer	unknown
<i>bifoliata</i> Willmann, 1936	Curacao	840 X 405	expanded like willowleaf	shorter than ro, arcuate	shorter than la, arcuate	oar-shaped	pectinate, 6-8 br.	narrow, attenuate, medial rel. short, marginal long	not con- spicuous
<i>lanceolata</i> Grand- jean, 1950	Panama, Peru, Turkmenia	840-880 X 400-440	lanceolate, shorter than la	not as broad as ro	shorter than la, curved to body	rounded, almost as wide as long	7-8 br.	much longer than <i>bifoliata</i> , serrate, marginal longer	only s ₂ complete, s ₃ - s ₉ incomplete
<i>javana</i> Balogh, 1961	Java	942-972 X 460-493	expanded like willowleaf	shorter than ro, more erect	shorter than la, arcuate	oar-shaped	6-8 br.	length like <i>bifoliata</i> , serrate, marginal longer	s ₂ , s ₄ , s ₈ , s ₉ complete
<i>similis</i> Balogh, 1962	Peru	830 X 325	hardly expanded	as long as ro, thinner	shorter than la, arcuate	oar-shaped, length 3X width	9-10 br.	length like <i>bifoliata</i> , serrate, marginal longer	unknown
<i>hispaniola</i> Perez- Inigo, 1967	Spain	840-900 X 410-440	large, leaflike, serrate	leaflike, serrate, thinner than ro	leaflike with short petiole, angled fwd.	almost circular toothed, transp.	12-14 br., opposite 6-7 short	long, narrow, leaf- like, strong mid- rib, toothed	unknown
<i>loebli</i> Mahunka, 1974	Greece, Egypt	931-980 X 429-454	lamelli- form, serrate	similar to ro, smaller	similar to la	broader than exa	12 long, opposite 6-8 short	lamelliform, similar to la, marginal much longer	only s ₉ complete
<i>egypticus</i> Elbadry & Nasr, 1977	Egypt	1020 X 508	lanceolate	lanceolate, attenuate, hardly vis- ible cilia	similar to la	fan-shaped	12 long op- posite sev. very short	lanceolate, margi- nals longer	all incomplete
<i>banksi</i> Norton et al., 1978	USA: N Carolina, Texas	792-886 X 389-443	broad, leaflike, serrate, barbed	similar to ro, smaller	similar to ro, smaller	almost round, serrate, barbed	usual. 11, opposite sev. small barbs	very broad, similar to ro, increase in length further from midline	7 pairs, none com- plete
<i>pinnigera</i> , n. sp.	Saipan	1149 X 636	broad, feather- like, mid- rib	similar to ro, smaller	similar to la, smaller & arcuate	almost round, no midrib	8-10 long, opposite 6-8 short branches	similar to la, increase in length further from midline	s ₂ , s ₈ , s ₉ complete

FIG. 3. Differential characters for *Lohmannia* species.

egypticus, *L. banksi*); and those in-between (9–10) (*L. regalis*, *L. similis*, *L. pinnigera*) (Fig. 3).

In view of the uncertain status of several species within the genus, and the incompleteness of data on others, a key to the species of *Lohmannia* has not been constructed. Instead, Fig. 3 is presented to facilitate identification and to stimulate further research on this interesting group.

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