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INTRODUCTION

Few species of the oribatid mite genus *Lohmannia* have been described from Central and South America (Balogh 1962, Balogh and Balogh 1987, Grandjean 1950, Mahunka 1984, 1985, Willmann 1931) and none have yet been recorded from the Galapagos Islands. In the course of an ecological investigation on soil arthropods in the Galapagos Islands started in 1985 (Schatz and Schatz 1988, 1989) several collecting expeditions, reaching all major islands and different vegetation zones of the archipelago, were carried out. Thanks to collaboration with other collectors a considerable material of oribatid mites from Galapagos is now available for evaluation.

This material includes representatives of three species of the genus *Lohmannia* collected in all juvenile instars, which comprise the subject of this paper. Other members of the family Lohmanniidae found in the Galapagos Islands and in Central America in the course of this study are being discussed separately (Schatz 1993a, b).

The genus *Lohmannia* Berlese, 1916 is characterized by following features: genital plates divided, preanal plate wide, anal and adanal plates separated; two pairs of anal setae and four pairs of anal setae present. Distribution of the genus circumtropical, subtropics, Europe and Central Asia; 21 species (including 3 species inquirendae) already known (Balogh and Balogh 1987, Elbadry and Nasr 1977, Mahunka 1987, 1988),

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** Institute of Zoology, Technikerstr. 25, A-6020 Innsbruck, Austria.
described from Germany, Hungary, Southern Europe (Spain, Italy, Yugoslavia, Greece), Northern Africa (Egypt, Tunisia), Cape Verde Islands, Réunion, Mauritius, Central Asia (Turkmenia), East Asia (Japan, Ryukyu Islands, Korea), Indonesia, Micronesia, Southern USA (S. Carolina, Texas), Central America (Panama, Guadeloupe, Curacao) and South America (Peru, Paraguay, Argentina).

*Lohmannia jortoni* MAHUNKA, 1985 (Figs. 1-6)

MAHUNKA 1985 : 124, f. 11-15; BALOGH and BALOGH 1987 : 334, pl. 8 A; BALOGH and BALOGH 1988 : 53, pl. 33 F.

**Adults:**

The adult specimens found in Galapagos correspond to the original description (MAHUNKA 1985) in most respects and are considered conspecific.

Dimensions of adults of the Galapagos populations (n = 12) : 970 (930-1020) x 434 (390-480) µm; larger than in the type population from Guadeloupe (794-826 x 389-410 µm) ***. Sensillus with 12 branches distally increasing in length, with small spines opposite the branches; length of sensillus 130 µm. Posterior exobothridial setae (exp) wide (Fig. 1), size 64x38 µm. Notogastral setae phylliform with serrated margins. Setae *ps*1 wider than *h*1 and *ps*2 (Figs. 2-3), never erect. Measurements : *ps*1 90 x 20; *ps*2 130 x 18; *ps*3 140 x 18 µm. Medial row of genital setae setiform and ciliate, lateral row phylliform with serrated margins ; aggenital setae phylliform with serrated margins like the notogastral setae, but shorter than them. The 2 pairs of anal setae spinose, not dilated. Setation and shape of leg setae as in *L. vulcania* sp. n. (see below).

**Juvenile instars:**

The instars encountered (larva to tritonymph) correspond to the adults in their species-specific characters.

Dimensions and colour :

Dimensions : larva (n = 5) : 464 (405-490) x 258 (240-270) µm ; protonymph (n = 5) : 573 (535-595) x 313 (300-320) µm ; deutonymph (n = 5) : 707 (680-725) x 361 (355-380) µm ; tritonymph (n = 5) : 913 (870-945) x 445 (435-480) µm. Colour : yellowish white. Surface granulate ; pygidial region slightly more densely granulate than the rest of the body in all juvenile instars.

**Prodorsum** (larva : Fig. 4)

Prodorsal setae thin and ciliate in larva ; phylliform with serrated margins as in adult in other juvenile instars. Sensillus with 12 branches from larva to adult ; length 95 µm larva to deutonymph, 110 µm tritonymph. Setae *exp* of larva slightly dilated and ciliate but much smaller than in the other instars where it resembles that of the adult (Fig. 1) ; size of *exp* (larva to tritonymph) 25x10 — 45x30 — 54x33 — 60x38 µm.

**Notogaster** (larva : Fig. 4)

Transverse bands visible and well developed in all instars. Notogastral setae : 13 pairs in larva, 16 pairs in all other instars ; inner rows shorter and smooth in larva, ciliate in other instars ; lateral rows slightly ciliate in larva, lateral anterior rows also ciliate and posterior rows already phylliform in protonymph, lateral rows phylliform and corresponding to the adult in other instars ; setae *ps* ; relatively long and thin in larva to deutonymph, dilated as in adult in tritonymph (Fig. 2) ; setae *ps*3, minute in larva ; measurements (larva to tritonymph) : *ps*3 70-80-80-90; *ps*2 55-90-130-130; *ps*3 15-85-120-140 µm.

**Ventral region** (larva : Fig. 5)

Subcapitulum with 4 pairs of setae in all instars : setae *h* phylliform with serrated margins from larva to adult, setae *m*2 narrowly phylliform in larva, phylliform with serrated margins in all other instars, setae *a* and *m*1 setiform and strong in all instars.

Epimeral setation (larva to tritonymph) : 3-1-2, 3-1-2-1, 3-1-3-3, 3-1-3-4 ; larvae with epimeral setae *2a, 3a, 3b* small and ciliate, the others phylliform ; protonymphs with inner row thinner and ciliate, outer row phylliform ; other instars with epimeral...

*** The measurements of the body size of each population are given as means of total length x total width, with range in parentheses.
1. — Posterior exobothridial setae: larva (La) to adult (Ad). 2. — Seta sr1: larva (La) to adult (Ad). 3. — Adult, seta sr2. 4. — Larva, dorsal view. 5. — Larva, ventral view. 6. — Larva, leg III, left side, antiaxial surface.

**Figs. 1-6: Lohmannia jornoti MAHUNKA, 1985**

100 µm

100 µm
setae I to III phylliform but median setae smaller than lateral setae; deutonymph with setae of epimeres IV small and ciliate, tritonymph with setae 4a phylliform, 4b, 4c, and 4d smaller and ciliate.

Genital region: Protonymph with 1 pair of phylliform setae; deutonymph with 2 pairs of thin and ciliate medial and 2 pairs of phylliform and serrated lateral setae on anterior, and 1 pair of phylliform and serrated setae on posterior parts of genital plates; tritonymph with 3 pairs of medial and 2 pairs of lateral setae on anterior, and 1 pair of medial and 2 pairs of lateral setae on posterior parts, setae developed as in deutonymph.

Anal region: larva with adanal and anal plates not separated and with 3 pairs of short and ciliate setae; protonymph with separated plates and with 4 pairs of short and ciliate setae; deutonymph with 4 pairs of long and slightly phylliform adanal and 2 pairs of short anal setae; tritonymph with setae formed as in adult.

Legs:
The setation of legs in the juvenile instars corresponds to that of L. vulcania sp. n. (see below) in most respects. Main differences are that the phylliform setae are generally narrower in L. jornoti; the setiform setae with long cilia are replaced by phylliform and narrow setae (Fig. 6) in L. jornoti; seta v' on trochanter IV is setiform in deutonymph of L. jornoti.

Records from Galapagos: (Fig. 7)
Isla Santa Cruz: P.ECU 178, 1985-05-29: 1 ad., 3 tritonymphs, 1 deutonymph (leg.: S. and J. PECK); Academy Bay, ECCD, littoral zone, lagoon 1 km east of Ch. Darwin station, in litter of Sesuvium. I. Isabela, V. Alcedo: GAL G079, 1988-03-22: 4 ad. and 1 tritonymph; near fumarole, 890 m a.s.l., dense forest of Psychotria rufipes and Scaleas microcephala, in moist, decayed litter and humus. I. Fernandina: GAL 260, 1985-03-15: 17 ad.; GAL 262: 1 ad.; GAL 263: 1 ad.; GAL G023: 176 ad. and 81 juveniles, all instars; western part of the crater rim, 1290 m, in fumarole, moist to wet fern litter and wet moss.

Material will be deposited in: author’s collection, Innsbruck, Austria; Museum of Natural History, Wien, Austria; Museum of Natural History, Budapest, Hungary; Muséum d’Histoire Naturelle, Genève, Switzerland; Universidad Católica, Quito, Ecuador.

General distribution:
Antilles: Guadeloupe, under shrubs near the sea (MAHUNKA 1985); Ecuador: Galapagos Islands.

Lohmannia vulcania sp. n. (Figs. 8-24)

Diagnosis:
The adult instar of L. vulcania sp. n. differs from its congeners by: large size; body surface homogeneously granulate; posterior exobothridial setae (exp) nearly round; transverse bands s5 — s8 medially interrupted; all prodorsal and all 16 pairs of notogastral setae phylliform, with serrated margins; setae ps1 and ps2 of same length and width, setae ps1 directed dorsad; 2 pairs of subcapitular setae phylliform; epimeral setae strongly dilated; all medial genital setae setiform, lateral setae dilated; adanal setae phylliform, 1st pair slightly wider than others; legs with 2 types of setae: setiform and ciliate, and broadly phylliform with serrated margins; known distribution restricted to the Galapagos Islands.

Adults: (Figs. 8-17)
Dimensions and colour:
Dimensions: 1078 (1035-1125) x 480 (450-500) μm; Isla Santa Cruz (n=2): 1110 (1095-1125) x 490 (480-500) μm; I. Pinzón (n=5): 1068 (1035-1100) x 475 (450-500) μm; I. Floreana (n=1): 1090 x 480 μm; I. Isabela, Volcán Sierra Negra (n=6): 1072 (1050-1095) x 480 (465-500) μm.
Colour light to medium brown. Body surface homogeneously and finely granulate.

Prodorsum: (Fig. 8)
Rostrum slightly elongated, anterior part very thin, almost membranous. Lateral margin weakly bisinuate anterior to setae exa. Transverse band sb
between interlamellar setae distinct, straight, clearly situated anterior to notogastral tectum.

Setae ro slightly phylliform with serrated margins, resembling a willow leaf, length 120-130 µm, reaching anteriad of the rostrum. Setae la and exa strongly phylliform with serrated margins, curved, slightly funnel-shaped. Setae exp nearly round, wider than long (55 × 60 µm), with serrated margins and finely spinose surface (Fig. 11). Sensillus with 12 branches, distally increasing in length, with small spines opposite the branches (Fig. 10). Setae il also phylliform with serrated margins, smaller than setae ro.

Notogaster: (Fig. 8)

Notogastral lateral margins parallel-sided in anterior half, posteriorly rounded. Transverse bands weakly developed, bands s5-s8 incomplete and interrupted medially; s5 with a characteristic curve behind setae e1 on each side. Lyrifissures hardly discernible.

Sixteen pairs of notogastral setae present, all phylliform, with serrated margins like a willow leaf. Setae of inner rows c1, c2, d1, d2, e1, f1, h1 shorter and thinner than those in marginal position. Setae ps1 strongly dilated, constantly erect dorsad;
Figs. 8-12: Lohmannia vulcania sp. n., adult

making $ps_1$ much shorter than $ps_2$ in dorsal aspect (cf. Figs. 8, 12). Measurements of setae: $c_1$ 85, $c_2$ 90, $c_3$ 140, $d_1$ 85, $d_2$ 130, $ps_1$ 120 × 45, $ps_2$ 120 × 35, $ps_3$ 125 × 20 µm.

Ventral region: (Fig. 9)

Subcapitulum: Setae $h$ and $m_2$ strongly dilated with serrated margins and spinose surface, setae $m_1$ setiform and ciliate, setae $a$ setiform and smooth.

Epimeral region: Apodeme I complete, with two sternal extensions medially; apodeme II incomplete medially; apodeme III complete with a short central extension directed posteriorly; apodeme IV complete, uniform. Epimeral setal formula: 3-1-3-4, all setae strongly dilated with spiculate surface; setae of median row ($la$ to $4a$) shorter and smaller than those of the lateral rows.

Genital region: 6 pairs of medial setae setiform and ciliate, 4 pairs of lateral setae dilated with spinulate surface. Anterior lateral setae inserted close to median row.


Legs: (Figs. 13-17)

All legs monodactyle, short and stout. Femora I and II with ventral ridge. Claws each with a short ventral tooth near base. Legs of adult with two different kinds of setae: wide phylliform with serrated margins (ph), and setiform and ciliate (set). Setal formula of adult legs see below (juvenile instars).

Juvenile instars: (Figs. 18-24)

The instars encountered (larva to tritonymph) correspond to the adults in their species-specific characters.

Dimensions and colour:

Dimensions (all juveniles from sample GAL 616): larva (n = 2): 457 (455-460) × 247 (235-260) µm; protonymph (n = 7): 600 (580-615) × 299 (290-320) µm; deutonymph (n = 2): 745 (740-750) × 370 (360-380) µm; tritonymph (n = 1): 940 × 430 µm.

Colour yellowish white. Surface granulate.

Prodorsum: (Figs. 18, 22-24)

Transverse band $sb$ between setae $il$ distinct and curved posteriad in larva and protonymph, slightly curved posteriad in deutonymph, almost straight in tritonymph as in adult. Larva with setae $ro$, $la$, $exa$ slightly dilated with serrated margins and setae $il$ setiform and ciliate; protonymph to tritonymph with setae $ro$, $la$, $exa$, $il$ phylliform with serrated margins as in adult. Larva with setae $exp$ strongly dilated, with serrated margins, longer than wide (Fig. 20), in all other instars wider than long (Fig. 22-24). Size of $exp$ (larva to tritonymph): 27×13—45x47 — 47x50 — 55x60 µm. Sensillus with 8 branches in larva and protonymph, with 10 branches in deuto- and tritonymph. Cuticle of sejugal articulation wide and striated in all juvenile instars.

Notogaster: (Figs. 18, 22-24)

Transverse bands visible and well developed in all instars. Notogastral setae: 13 pairs in larva, 16 pairs in all other instars; setae of inner rows shorter than those in marginal position. Larva and protonymph with setiform and ciliate notogastral setae except setae $ps_1$ and $ps_3$, deutonymph with slightly dilated and ciliate notogastral setae except setae $ps_1$, tritonymph with phylliform with serrated margins notogastral setae as in adult. Setae $ps_3$ minute in larva. Setae $ps_1$, dilated and spinose, directed posteriad in larva and protonymph, phylliform, slightly erect and directed dorsal in deuto- and tritonymph as in adult. Measurements of setae (larva to tritonymph): $c_1$ 30-50-60-85, $c_2$ 30-50-60-85, $c_3$ 70-90-120-140, $d_1$ 50-50-65-85, $d_2$ 70-100-125-125, $ps_1$ 80-95-100-115, $ps_2$ 40-100-115-120, $ps_3$ 12-90-115-120 µm.

Ventral region: (larva: Fig. 19)

Subcapitulum with 3 pairs of setae in larva ($m_1$ missing), and 4 pairs of setae in all other instars: setae $h$ dilated with serrated margins and spinose surface, setae $a$ setiform and smooth in all instars; larva with setae $m_2$ setiform and ciliate, protonymph with setae $m_1$ and $m_2$ slightly dilated and
Figs. 13-17: Lohmannia vulcania sp. n., legs of adult, antiaxial surface

Figs. 18-24: *Lohmannia vulcania* sp. n.

ciliate, deuto- and tritonymph with setae m₁ setiform and ciliate, and setae m₂ slightly dilated and spinose.

Epimeral region: Apodemes I and II in all instars as in adult; larva with apodeme III uniform, protonymph with interrupted medially with a short central extension directed posteriorly, deuto- and tritonymph with complete and formed as in adult; apodeme IV interrupted medially in protonymph. Epimeral setation (larva to tritonymph): 3-1-2, 3-1-2-1, 3-1-3-3, 3-1-3-4; larva with epimeral setae 2a, 3b setiform and ciliate, setae 1a, 1b, 1c, 3a dilated and spinose; protonymph with setae 2a, 3a, 3b, 4a, 4b, 4c dilated and spinose, setae 1a, 1b, 1c strongly dilated and spinose; deutonymph with setae 2a, 3a, 4a, 4b, 4c dilated and spinose, the others strongly dilated and spinose; tritonymph with setae 4a, 4b, 4c dilated and spinose, the others strongly dilated and spinose.

Genital region: Protonymph with 1 pair of long, setiform and ciliate setae; deutonymph with 4 pairs of setae (2 medial and 2 lateral) on anterior and 1 pair on posterior parts of genital plates, medial row setiform and ciliate, lateral row slightly dilated and spinose; tritonymph with 5 pairs of setae (3 medial and 2 lateral) on anterior and 3 pairs of setae (1 medial and 2 lateral) on posterior plates, medial row setiform and ciliate, lateral row dilated and spinose.

Anal region: Larval pseudanal plates with 3 short and smooth setae; protonymph with separated plates and with 4 pairs of short and setiform setae, slightly different in length; deuto- and tritonymph with 4 pairs of slightly dilated and spinose anal setae and 2 pairs of short and setiform anal setae in deuto- and tritonymph.

Legs:

Femora I and II with ventral ridge in all instars. Ventral tooth on claw not always visible. Solenial formula (leg I to leg IV: genu — tibia — tarsus): 2-1-2, 1-1-1, 1-1-0, 0-0-0 in all instars. All solenidia setiform and smooth. One solenidion of genu I, solenidia of genu II — IV, and of tibia I and II flagellate, solenidion of tibia I much longer than others.

Different setae (phylliform with serrated margins: ph, and setiform and ciliate: set) as in adult, but larva and protonymph with phylliform setae of different width in leg II and III (setiform with long cilia: slc, phylliform and narrow: phn (Fig. 21), phylliform and wide: phw). Setal formula of legs (trochanter to tarsus):


Eggs

Some females bearing 1 egg each. Dimensions (n=3): 147 (140-155) x 107 (95-115) μm. Surface reticulate.

Remarks:

Lohmannia vulcania sp. n. is similar to L. jornoti Mahunka, 1985. Both species occur in Galapagos and a direct comparison is possible. Common characters separating these two species from other
Lohmannia species:

1. sensillus with 12 branches;
2. transverse bands $s_3 - s_8$ interrupted medially;
3. prodorsal and notogastral setae phylliform with serrated margins;
4. notogastral setae $ps_1$, wide and phylliform;
5. size ratios of notogastral setae (except setae $ps_1$ and $ps_2$);
6. medial row of genital setae setiform;
7. anal setae $ad_1$ slightly shorter and wider than other anal setae.

Differences between L. jornoti and L. vulcania sp. n. are:

1. body size: Although the population of L. jornoti is of larger body size in Galapagos than in Guadeloupe (MAHUNKA 1985) it is always smaller than L. vulcania sp. n. (jornoti: Guadeloupe: 794-826 µm; Galapagos: 930-1020 µm — vulcania: 1035-1125 µm).

2. posterior exobothridial setae (exp) (jornoti: longer than wide; Galapagos population: 64x38 µm — vulcania: extremely dilated, wider than long: 55x60 µm).

3. notogastral setae (vulcania: slightly shorter and wider than in jornoti).

4. shape and size ratio of setae $ps_1$ and $ps_2$ (jornoti: setae $ps_1$, shorter and wider than setae $ps_2$; $ps_1$ directed posteriorly — vulcania: setae $ps_1$ of same shape and size as setae $ps_2$; setae $ps_3$ directed dorsad).

5. shape of setae on legs of juvenile instars (jornoti: 3 types of setae: phylliform and narrow, phylliform and wide, setiform and ciliate — vulcania: 4 types of setae: phylliform and narrow, phylliform and wide, setiform with short cilia, setiform with long cilia. The latter type is replaced by phylliform and narrow setae in L. jornoti). Also the distribution of narrow and wide phylliform setae on legs of larva and protonymph is different in both species. All phylliform setae are generally narrower in L. jornoti than in L. vulcania sp. n.


Lohmannia vulcania sp. n. is easily distinguished from most other Lohmannia species by its extremely dilated posterior exobothridial setae, which are wider than long in adult and the last juvenile instars. Only L. banksi NORTON et al., 1978 has similar exp, but it differs from L. vulcania by the different shape of the other setae. The remarkable orientation of the wide notogastral setae $ps_1$, which are always directed dorsad in L. vulcania, is hitherto known only from L. hungarorum MAHUNKA, 1980, but the latter species has extremely wide phylliform setae and slightly dilated genital setae. The new species also closely resembles L. vanharteni MAHUNKA, 1987 in general appearance, which has similar phylliform notogastral setae, but it can be distinguished from the latter in having wider exp and genital setae of different shape.

In all instars of L. vulcania sp. n. the number of setae on legs corresponds with the other hitherto studied species of the genus and follows mainly the pattern of L. lanceolata (GRANDJEAN 1950), but the shape of these setae is different (Table 1). An exception is the trochanter III of deutonymph with 2 phylliform setae in L. vulcania.

The body sizes of the studied populations of L. vulcania sp. n. from different islands in Galapagos are in the same range. Lohmannia vulcania is among the largest species of the Lohmanniidae (BALOGH and BALOGH 1987). It is remarkable that many of these large species occur mainly on islands.

Table 1: Formation of setae on legs in some neotropical Lohmannia species: (ph: phylliform setae; s: setiform setae)

<table>
<thead>
<tr>
<th>Lohmannia</th>
<th>lanceolata</th>
<th>similis</th>
<th>jornoti</th>
<th>vulcania</th>
</tr>
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<tbody>
<tr>
<td>phylliform setae</td>
<td>small</td>
<td>small</td>
<td>wide</td>
<td>wide</td>
</tr>
<tr>
<td>femur II — adult</td>
<td>4 ph + 2 s</td>
<td>4 ph + 2 s</td>
<td>5 ph + 1 s</td>
<td>5 ph + 1 s</td>
</tr>
<tr>
<td>trochanter III — 1 ph + 1 s</td>
<td>2 ph</td>
<td>2 ph</td>
<td>2 ph</td>
<td>2 ph</td>
</tr>
<tr>
<td>adult</td>
<td>ph: $v'$; s: $f$</td>
<td>(v', f)</td>
<td>(v', f)</td>
<td>(v', f)</td>
</tr>
<tr>
<td>trochanter III — 1 ph</td>
<td>2 ph</td>
<td>2 ph</td>
<td>2 ph</td>
<td>2 ph</td>
</tr>
<tr>
<td>deutonymph</td>
<td>(v')</td>
<td>(v', f)</td>
<td>(v', f)</td>
<td>(v', f)</td>
</tr>
</tbody>
</table>
Records from Galapagos: (Fig. 7)

Isla Santa Cruz: GAL 747, 1987-03-07: 2 ad.; dry zone, barranco north of CDRS, 60 m a.s.l., in dripping wet and well-decayed grass litter of Cypereus sp. with roots and humus. I. Pinzón: GAL 577, 1987-01-31: 2 ad.; and GAL 580: 4 ad.; southern crater rim, 310 m, under Scalesia incisa and Croton scouleri, in moist leaf and wood litter. I. Floreana: GAL 527, 1987-01-17: 1 ad.; cultivated area north of Cerro Pajas, 320 m, moist litter and moss under Zanthoxylum fagara and Macarea laricifolia. I. Isabela, V. Sierra Negra: GAL 616, 1987-02-07: 6 ad., 2 larvae, 7 proto-, 2 deutonymphs, 1 tritonymph; Transition - Scalesia zone on the southern slope, 230 m, under Sapindus saponaria, moist decayed leaf litter with roots; GAL 653, 1987-02-12: 1 ad.; and GAL 657: 2 ad.; ibid., fern-sedge - Guajaba zone, 360 m, in forest of Psidium guajava, Pteridium aquilinum, in moist leaf litter, partially decayed, and moss.

Holotype from sample GAL 577, Isla Pinzón, will be deposited in: Natural History Museum, Wien, Austria. Paratypes in: author's collection, Innsbruck, Austria; Museum of Natural History, Budapest, Hungary; Muséum d'Histoire Naturelle, Genève, Switzerland; Universidad Católica, Quito, Ecuador.

General distribution:

Hitherto known only from Ecuador: Galapagos Islands.

Lohmannia similis BALOGH, 1962 (Figs. 25-30)

BALOGH 1962: 59, f. 2; BALOGH and BALOGH 1987: 333, pl. 4 C; BALOGH and BALOGH 1988: 54, pl. 33 G.

This species was found in large numbers (adults and juveniles) in Galapagos. It was identified by comparison with BALOGH's material. A more detailed description including the juvenile instars based on individuals from the Galapagos Islands is appropriate.

Diagnosis:

In the adult instar L. similis differs from its congeners by: body surface irregularly granulate, without polygonal structure; sensillus with 10 branches (9-10 branches, BALOGH 1962); posterior exobothridial setae (exp) strongly dilated, 2-3 × longer than wide; all other prodorsal setae and notogastral setae slightly phylliform with serrated margins; anal setae shorter than the adanal setae.

Adults: (Figs. 25-30)

Dimensions and colour:

Dimensions (n=20 from different islands): 842 (800-930) × 362 (345-390) µm: Isla Santa Cruz (n=10): 818 (800-855) × 357 (345-375); I. Bartolomé (n=9): 872 (825-930) × 368 (360-390); I. Rábida (n=1): 810 × 360 µm.

Colour yellowish to light brown. Surface irregularly granulate.

Prodorsum: (Fig. 25)

Rostrum slightly elongated, anterior thin, almost membranous. Transverse band sb continuous, posterior of a densely granulate area. Setae ro, la, exa and il slightly phylliform with serrated margins. Lengths: ro 105, la 80, il 92, exa 60 µm. Sensillus with 10 branches, with small opposing spines (Fig. 27), length of sensillus 105 µm. Setae exp strongly dilated, two to three times longer than wide (Fig. 29); sizes in different populations: 60x24, 55x27, 47x28, 45x21 µm.

Notogaster: (Fig. 25)

Lateral margins parallel-sided in anterior half, posteriorly rounded. Eight transverse bands, weakly developed and medially interrupted; except transverse band s2 uninterrupted. Sixteen pairs of notogastral setae, all of similar shape and length, slightly phylliform with serrated margins. Posterior setae more dilated than anterior ones (ps1: Fig. 28). Measurements of setae: c1 80, c2 90, c3 110, ps1 95, ps2 95, ps3 105 µm.

Ventral region: (Fig. 26)

Subcapitulum with 4 pairs of setae; setae h slightly dilated and ciliate, setae m1 and m2 setiform, thin and ciliate, setae a setiform, stronger and velate.

Epimeral region: Apodeme I complete with two sternal extensions medially; apodeme II incomplete.
FIGS. 25-30: Lohmannia similis BALOGH, 1962

Adult: 25. — Dorsal view. 26. — Ventral view (25-26: Notation of setae see Figs. 8, 9). 27. — Sensillus. 28. — Seta psD, dorsal view. 29. — Posterior exobothridial setae: larva (La) to adult (Ad). 30. — Larva, leg III, left side, antiaxial surface (Notation of setae see Fig. 21).
medially, apodeme III complete with a short central extension directed posteriorly, and two small lateral thickenings, apodeme IV complete, uniform. Epimeral setation 3-1-3-4, setae 1a, 1b, 1c, 3b, 3c slightly phylliform and serrate, the remaining setae setiform and ciliate.

Genital region: 10 pairs of setae present, 6 medial and 4 lateral, all setiform and ciliate, lateral setae slightly dilated.

Anal region: four pairs of anal setae and two pairs of anal setae present, all long, setiform and velate. Anal setae clearly shorter than the anal setae; first pair of anal setae not reaching insertion of second pair.

Legs:

Setation on legs similar to that of L. vulcania sp. n. (see above), but femur II with 4 phylliform and 2 setiform setae as in L. lanceolata Grandjean, 1950. All setiform setae ciliate, solenidia setiform and smooth.

Juvenile instars:

The instars encountered (larva to tritonymph) correspond to the adults in their species-specific characters.

Dimensions and colour:


Prodorsum:

Rostral setae ciliate in larva, slightly phylliform, like adult, in other instars; sensillus with 8 branches in larva and protonymph, with 10 branches in deutu- and tritonymph; setae exp small and slightly penicillate in larva, strongly dilated, three times longer than wide, with serrated margins, like adult, in other instars (Fig. 29); other prodorsal setae relatively long (setae h 105 μm) and velate in larva, slightly phylliform with serrated margins in all other instars. Cuticle of sejugal articulation wide and striated in all juvenile instars.

Notogaster:

Thirteen pairs of notogastral setae in larva, 16 pairs in all other instars, all setiform and velate, lateral setae slightly dilated with serrated margins in larva to deutonymph, slightly dilated in tritonymph, lateral setae longer than medial ones; setae ps1 and ps2 relatively long in larva and protonymph, ps3 minute in larva, longer in the other instars. Measurements of setae (larva to tritonymph): c1 40-40-55-60, c2 40-40-75-90, c3 65-80-85-105, ps1 75-75-90-90, ps2 60-70-90-95, ps3 15-65-90-100 μm.

Ventral region:

Subcapitulum with 3 pairs of setae in larva (setae m1 missing), and 4 pairs of setae in all other instars, setae b is slightly dilated and ciliate, setae a setiform, thicker and velate, setae m1 and m2 setiform and ciliate in all instars.

Epimeral region: Apodemata as in adult. Epimeral setation (larva to tritonymph): 3-1-2, 3-1-2-1, 3-1-3-3, 3-1-3-4; all epimeral setae setiform and ciliate in larva and protonymph, setae 1b, 1c, 3b, 3c phylliform and spinose, the others setiform and ciliate in deuto- and tritonymph.

Genital region: Protonymph with 1 pair of long, setiform and ciliate setae; deutonymph with 4 pairs of setae (2 medial and 2 lateral) on anterior and 1 pair on posterior plates, all setae setiform and ciliate, lateral setae slightly dilated; tritonymph with 5 pairs of setae (3 medial and 2 lateral) on anterior and 3 pairs of setae (1 medial and 2 lateral) on posterior plates, all setiform and ciliate, lateral setae slightly dilated.

Anal region: Larval pseudanal plates with 3 short and smooth setae; protonymph with separated plates and with 4 pairs of short and setiform setae; deuto- and tritonymph with 4 pairs of setiform and ciliate anal setae and 2 pairs of anal setae, anal setae minute in deutonymph, posterior anal setae slightly shorter than anterior in tritonymph.

Legs:

Claws without tooth. Four different types of setae present (phylliform with serrated margins; setiform and ciliate; phylliform and narrow; phyl-
liform and wide, but narrower than in *L. vulcania* sp. n.); femur to tarsus III of larvae (Fig. 30) and trochanter III of protonymph also with setiform setae with long cilia; trochanter III of deutonymph with 2 phylliform setae (Table 1); trochanter IV of deutonymph with 4 phylliform and 1 setiform setae; femur II of deutonymph with 4 phylliform and 1 setiform setae as in adult. Otherwise setation on legs as in *L. vulcania* sp. n.

**Remarks:**

The range of the body size in the studied populations of *L. similis* is relatively wide. The body length in the population from Santa Cruz Island is slightly smaller compared with the population from Bartolomé but the difference is not significant. The population from Peru (Balogh 1962) lies within this range (830 × 325 µm).

*Lohmannia similis* Balogh, 1962, *L. lanceolata* Grandjean, 1950, and *L. bifoliata* Willmann, 1936 belong to a group of very similar neotropical species. Differential characters of these species are listed in Table 2. Because of the close relationship Grandjean (1950) suggested that *L. bifoliata* and *L. lanceolata* are possibly two subspecies or geographical variations of the same species. Balogh (1962) listed the differences between *L. lanceolata* and *L. similis* (see Table 2).

*L. bifoliata* was described from a single specimen from Curaçao "under a flower pot" (Willmann 1936); Grandjean (1950) found *L. lanceolata* around Colón (Panama) between rotting roots of a palm.

**Table 2**: Differential characters for some neotropical *Lohmannia* species of the *lanceolata* group:

<table>
<thead>
<tr>
<th>Lohmannia</th>
<th>bifoliata</th>
<th>lanceolata</th>
<th>similis</th>
<th>similis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Distribution</strong>:</td>
<td>WILLMANN, 1936</td>
<td>GRANDJEAN, 1950</td>
<td>Balamogh, 1962</td>
<td>Galapagos</td>
</tr>
<tr>
<td><strong>Body length in µm</strong>:</td>
<td>Curaçao</td>
<td>Panama, Peru</td>
<td>Peru</td>
<td>790-930</td>
</tr>
<tr>
<td><strong>Body width in µm</strong>:</td>
<td>840</td>
<td>840-880</td>
<td>830</td>
<td>345-390</td>
</tr>
<tr>
<td><strong>Rostral setae (ro)</strong>:</td>
<td>broad, lanceolate like a willow leaf</td>
<td>broad, lanceolate like a willow leaf</td>
<td>very slightly dilated</td>
<td>slightly dilated</td>
</tr>
<tr>
<td><strong>Anterior exobothridial setae (exa)</strong>:</td>
<td>dilated</td>
<td>dilated; almost like a willow leaf</td>
<td>very slightly dilated</td>
<td>slightly dilated</td>
</tr>
<tr>
<td><strong>Posterior exobothridial setae (exp)</strong>:</td>
<td>2x longer than wide</td>
<td>almost circular, hardly longer than wide</td>
<td>3x longer than wide</td>
<td>2-3x longer than wide</td>
</tr>
<tr>
<td><strong>Sensillus branches</strong>:</td>
<td>8</td>
<td>7-8</td>
<td>9-10</td>
<td>10</td>
</tr>
<tr>
<td><strong>Notogastral setae</strong>:</td>
<td>short, serrate c₁-d₁ &gt; 2x c₁</td>
<td>long, serrate c₁-d₁ &lt; 2x c₁</td>
<td>short, serrate c₁-d₁ &gt; 2x c₁</td>
<td>short</td>
</tr>
<tr>
<td><strong>First anal setae</strong>:</td>
<td>?</td>
<td>long</td>
<td>short</td>
<td>short</td>
</tr>
</tbody>
</table>

**Records from Galapagos**: (Fig. 7)

Numerous records in the littoral zone, among algae and mangrove litter, of following investigated islands: Isla Santa Cruz; I. San Cristóbal; I. Bartolomé; I. Rábida; I. Genovesa, Lake Arcturus; I. Isabela, Punta García; I. Fernandina, Punta Espinosa. One specimen was collected in a higher vegetation zone on I. Santa Cruz: P.ECU 103, 1985-06-23: 1 ad. (leg. : S. and J. Peck); Sinkhole at Cerro Banderas near Santa Rosa, 620 m a.s.l., in litter of *Miconia*.

Material will be deposited in: author’s collection, Innsbruck, Austria; Museum of Natural History, Wien, Austria; Museum of Natural History, Budapest, Hungary; Muséum d’Histoire Naturelle, Genève, Switzerland; Universidad Católica, Quito, Ecuador.
General distribution:

Peru: low rain forest plain in the Amazon valley near Iquitos, litter from dense forest and secondary forest (Balogh 1962); Ecuador: Galapagos Islands.

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