

CHIGGERS (ACARINA, TROMBICULIDAE) OF *MAXOMYS* *BARTELSII* FOUND IN WEST JAVA, INDONESIA, WITH DESCRIPTIONS OF TWO NEW SPECIES

by

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ABSTRACT

A collection of chiggers infesting Maxomys bartelsii, a rat commonly found in the highlands of West and Central Java, was obtained during the extensive study of this particular rat species in 1970 — 1972, conducted by U.S. Naval Medical Research Unit No. 2 Jakarta Detachment. Two of the seven chigger species identified are considered as new species and described in this paper. Diagnostic characters and the Indonesian records of the other 5 species were included.

INTRODUCTION

Maxomys bartelsii is a rat species commonly found in the highlands of West and Central Java, Indonesia (Musser *et al.* 1979). An extensive study of this rat species was conducted by U.S. Naval Medical Research Unit No. 2 Jakarta Detachment in the period of 1970 — 1972 (Van Peenen *et al.* 1974). During this study a collection of chiggers was obtained. Seven species of chiggers were identified, among which two are considered as new species which are described in this paper.

The taxonomic terminology used follows that of Goff *et al.* 1982. All measurements are in micrometers. The type deposition of the new species are as follows: holotype and paratypes: Mammalogy Laboratory, Health Ecology Research Centre, National Institute of Health Research and Development, Jakarta, Indonesia; paratypes: Museum Zoologicum Bogoriense, Bogor, Indonesia; Institute for Medical Research, Kuala Lumpur, Malaysia; Bishop Museum, Honolulu, Hawaii.

1. *Gahrliepia (Gahrliepia) bartelsii* n. sp. (Figs. 1 A — H)

Diagnosis of larva: Palpal setal formula B/B/N(b)NN(b)/ 4B; claw 3 pronged; galeala N(b); cheliceral blade edentate; 5 pairs of dorsal setae arranged in a vertical row beside the scutum.

Description of larva: **Idiosoma.** Ovate measuring 216 — 337 x 189 in unengorged larvae and 360 — 537 x 250 — 429 in partially engorged larvae. Eyes 2/2 with the posterior one reduced, on ocular plate, anterior pair 11 — 13 x 6 — 8. **Gnathosoma.** Palpal setal formula B/B/N

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(b)NN(b) / 48; palpal claw 3 — pronged; galeala N(b); cheliceral blade edentate (33 — 34). **Scutum.** Elongate with lateral margin posterior to PLs almost straight, slightly rounded at apex, scrobiculae of different sizes smaller to bigger than sensillary bases, distributed bigger to smaller from anterior to posterior part of the scutum, 4 usurped setae; sensilla clavate. Scutal measurements of holotype follow by mean and range : AW 44 (41, 38—46); PW 93(91, 84—101); SB 45 (46, 43—53); ASB 21 (22, 21—24); PSB 199 (198, 180—214); SD 220 (220, 201—238); AP 45 (44, 40—49); AL 35 (32, 22—37); PL 47 (47, 42—52); PPW—1 62 (52, 40—62); PPW—2 51 (49, 33—69); PPP—1 123 (123, 108—134); PPP—2 70 (69, 50—83); sensilla 29—36 x 10—14. **Body setae.** One pair of humeral setae, 44 — 53; 14—44 dorsal setae (usurped setae excluded), 5 pairs arranged in a vertical row beside the scutum, 35 — 48 and posterior to the scutum arranged horizontally, 29 — 39 arranged 2.2.2.2.2.6.6.6.4.2.2 in holotype; 2 pairs of sternal setae except in 2 specimens which have 3 posterior sternals, anterior 32 — 47 and posterior 22 — 31; 43—66 preanal setae, 17 — 26 and 13—33 postanals, 19 — 23; total body setae 89—123, Legs. 7—6—6 segmented with a pair of claws and a claw-like empodium. Ip 725 — 877. Leg I. 264 (225 — 285); tarsus (63 x 30) 20—238, tarsala (16 — 21). Leg II. 242 (215 — 270); tarsus (53 x 25) 14—168, tarsala (13 — 17). Leg III. 304 (215 — 340); trochanter 28; tarsus (71 x 19) 14—168.

Remarks: This species is similar to *Gahrliopia (Gahrliopia) marshi* Traub & Morrow, 1957 by the similar shape of scutum, the presence of 4 usurped setae, and the distribution of the punctation. However, it is separable by the presence of 5 pairs of dorsal setae arranged in vertical row beside the scutum. The character just mentioned is similar to *Gahrliopia (Gahrliopia) ordinata* Traub & Morrow, 1957, however, it can be separated by the shorter of scutum (SD 220 compared to 264); PPW—1 greater than PPW—2 in the n. sp. and PPW—2 greater than PPW—1 in *G. (G.) ordinata*; the number of body setae in the n. sp. (89—123) is greater than in *G. (G.) ordinata* (74—76). This new species is named after the specific name of the host.

Holotype: Larva (C. 6166) ex *Maxomys bartelsii*, West Java, Cibodas, 1350 m, November 1972; 40 paratypes, same data as holotype; 2 additional specimens ex *Hylomys suillus*, same locality as holotype, November 1971; 1 specimen ex *Rattus tiomanicus*, West Java, Panel, 1100 m, March 1974; 5 specimens ex black plate, West Java, Mt. Cereme, 1650 m, June 1973.

2. *Gahrliopia (Schoengastiella) doratanae* Nadchatram, 1979

Diagnosis of larva: Palpal setal formula B/N/NNN/ 4B; claw 3—pronged; galeala N; cheliceral blade edentate. Scutum tongue-shaped

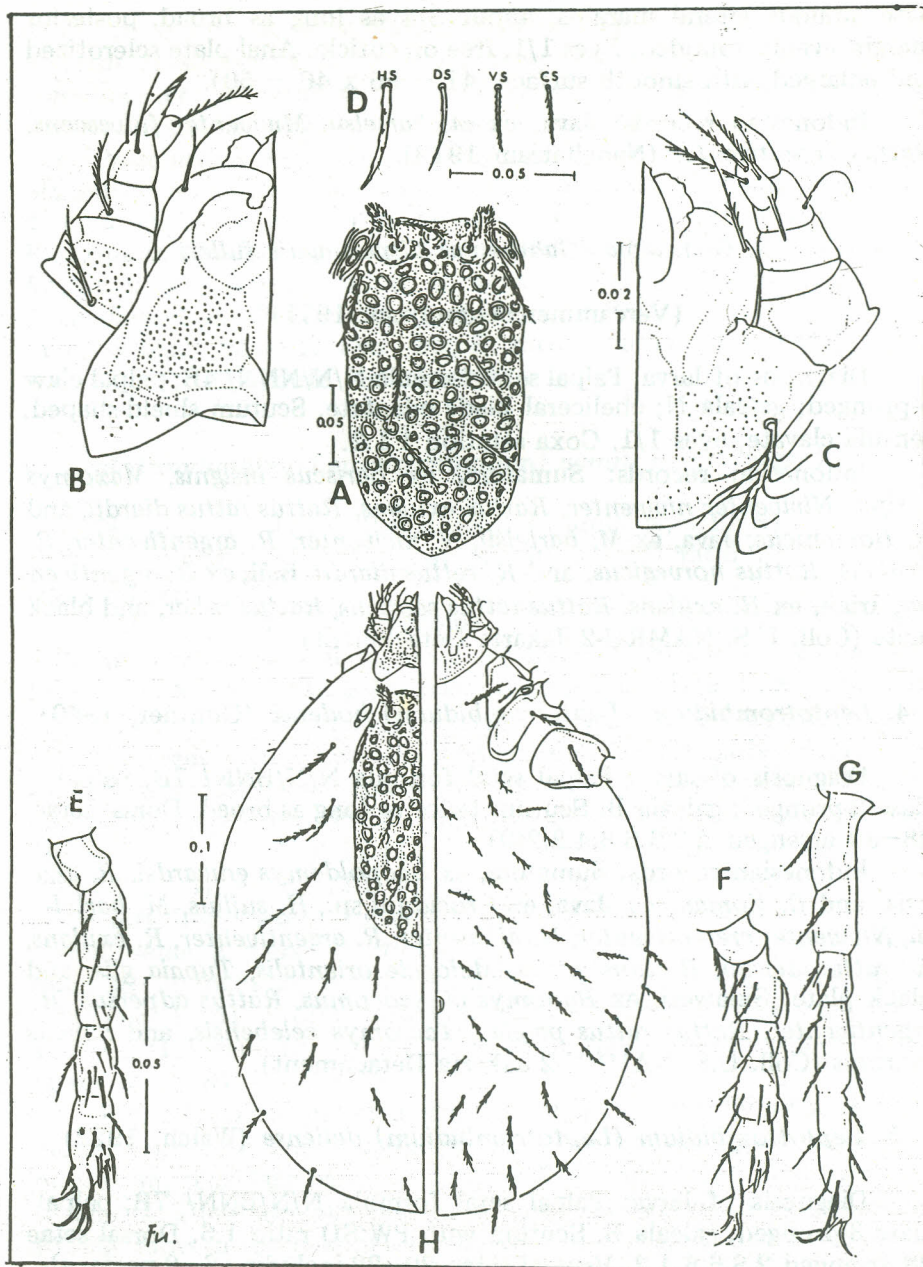


Figure 1.

Larva Gharliepia (Gharliepia) bartelsii n. sp.

- A. Scutum and eyes; B. Dorsal aspect of gnathosoma
- C. Ventral aspect of gnathosoma
- D. Selected body setae: HS humeral setae; DS dorsal body setae; VS ventral preanal setae; CS caudal/postanal setae
- E. Leg I showing specialized setae and bases of branched setae
- F. Leg II as above; G. Leg III as above; H. Dorsal and ventral aspect of idiosoma

with sinuous lateral margins, about $3/4$ as long as broad, posterior margin evenly rounded. Eyes $1/1$, free on cuticle. Anal plate sclerotized and enlarged with smooth surface ($41 - 56 \times 46 - 50$).

Indonesian records: Java, ex *M. bartelsii*, *Miviventer fulvescens*, *Rattus argentiventer* (Nadchatram 1979).

3. *Gahrliopia (Gahrliopia) disparunguis fulleri*

(Vercammen—Grandjean, 1971)

Diagnosis of larva: Palpal setal formula N/N/NNN/ 4B; palpal claw 3-pronged; galeala N; cheliceral blade edentate. Scutum shield-shaped; sensilla clavate; eyes $1/1$. Coxa setation 1.1.2.

Indonesian records: Sumatera, ex *Lariscus insignis*, *Maxomys surifer*, *Niviventer niviventer*, *Rattus exulans*, *Rattus rattus diardii*, and *R. tiomanicus*; Java, ex *M. bartelsii*, *N. niviventer*, *R. argentiventer*, *R. exulans*, *Rattus norvegicus*, and *R. rattus diardii*; Bali, ex *R. argentiventer*; Irian, ex *R. exulans*, *Rattus rattus septicus*, *Rattus ruber*, and black plate (Coll. U.S. NAMRU-2 Jakarta Detachment).

4. *Leptotrombidium (Leptotrombidium) bodense* (Gunther, 1940)

Diagnosis of larva: Palpal setal formula N/N/BNN/ 7B; palpal claw 2-pronged; galeala B. Scutum twice as long as broad. Dorsal setae 28—30 arranged 2.3.5.5.6.4.2.2(0).

Indonesian records: Sumatera, ex *Leopoldamys edwardsi*, *R. exulans*, and *R. tiomanicus*; Java, ex *Crocidura* sp., *H. suillus*, *M. bartelsii*, *Niviventer cremoriventer*, *N. niviventer*, *R. argentiventer*, *R. exulans*, *R. rattus diardii*, *R. tiomanicus*, *Melogale orientalis*, *Tupaia glis*, and black plate; Sulawesi, ex *Bunomys chrysocomus*, *Rattus adpersus*, *R. argentiventer*, *Rattus rattus palelae*, *Taeromys celebensis*, and *Suncus murinus* (Coll. U.S. NAMRU-2 Jakarta Detachment).

5. *Leptotrombidium (Leptotrombidium) deliense* (Walch, 1922)

Diagnosis of larva: Palpal setal formula N/N/BNN/ 7B; palpal claw 3-pronged; galeala B. Scutum with PW:SD ratio 1.5. Dorsal setae 28 arranged 2.3.5.6.4.2. Ventral setae 20—22 including 6—8 postanal.

Indonesian records: Sumatera, ex *insignis*, *Tupaia* sp., *L. edwardsi*, *Leopoldamys sabanus*, *M. surifer*, *M. cremoriventer*, *M. fulvescens*, *M. niviventer*, *R. argentiventer*, *R. exulans*, *R. rattus diardii*, *R. tiomanicus*, and *Sundamys muelleri*; Kalimantan, ex *Callosciurus notatus*, *T. glis*, *Tupaia tana*, *M. surifer*, *R. argentiventer*, *R. exulans*, *R. rattus diardii*, *R. tiomanicus*, *Felis bengalensis*, and black plate; Java, ex *Crocidura* sp.,

Crocidura orientalis, *M. suillus*, *L. insignis*, *T. glis*, *Bandicota indica*, *M. bartelsii*, *M. surifer*, *M. fulvescens*, *Niviventer lepturus*, *M. niviventer*, *R. argentiventer*, *R. exulans*, *R. norvegicus*, *R. tiomanicus*, *Hylopetes spadiceus*, and *M. orientalis*; Sulawesi, ex *Crocidura nigripes*, *S. murinus*, *Prosciurillus murinus*, *Bunomys fratrorum*, *Maxomys dollmani*, *Maxomys hellwaldi*, *Melasmothrix naso*, *Millardia meltada*, *Paruromys dominator*, *Rattus* sp., *Rattus arcuatus*, *R. adspersus*, *R. argentiventer*, *R. exulans*, *Rattus hamatus*, *Rattus hoffmanni*, *Rattus marmosurus*, *Rattus nitidus*, *Rattus penitus*, *R. rattus palelae*, *Taeromys callitrichus*, *T. celebensis*, and *Pipistrellus* sp.; Ambon, ex *Rattus rattus amboinensis*; Biak, ex black plate, *R. exulans*, *R. rattus septicus*, and *R. ruber* (Coll. U.S. NAMRU-2. Jakarta Detachment).

6. *Leptotrombidium* (*Leptotrombidium*) *namru* n. sp. (Figs. 2 A — G)

Diagnosis of larva: Palpal setal formula N/N/BNN/ 7B; palpal claw 3-pronged; galeala B. Scutum with PW:SD ratio 1.4; sensillary bases posterior to Pls.

Description of larva: **Idiosoma.** 331.2 — 650 x 231.2 — 550; eyes 2/2, anterior pair apical to sensillary bases. **Gnathosoma.** Palpal setal formula N/N/BNN/ 7B; palpal claw 3-pronged; galeala B. **Scutum.** PW:SD ratio 1.4; anterior margin straight, lateral margins slightly arcuate, caudal margin convex; sensilla slender with simple barbs. Scutal measurements of holotype follow by mean of 227 specimens and range; AW 48 (51, 45 — 55); PW 55 (56, 32 — 63); SB 23 (23, 18 — 27); ASB 29 (27, 19 — 31); PSB 12 (11, 9 — 20); SD 41 (38, 28 — 41); AP 21 (20, 16 — 23); AL 31 (32, 20 — 38); AM 37 (34, 21 — 53); PL 43 (42, 33 — 50). **Body setae.** Dorsal setae 28 arranged 2.8.6.6.4.2., 38 — 55; sternal setae 2 pairs (anterior 31 — 60; posterior 25 — 46); ventral setae 28—30 including 8—10 postanals. **Legs.** 7-7-7 segmented. Ip 540—903. Leg. I 151 — 300, tarsus 50 — 58 x 17 — 28, tarsala 19. Leg II 131 — 271, tarsus 43 — 68 x 17 — 28, tarsala 19. Leg III 248 — 449, tarsus 60 — 87 x 13 — 21.

Remarks. This species is similar to *Leptotrombidium* (*Leptotrombidium*) *nadiense* Traub & Nadchatram, 1967 in having the same shape of scutum, sensillary bases posterior of PLs, and microtarsala I proximal to tarsala. These two species however, can be separated by the smaller PW:SD ratio in the n. sp. (1.4 compared to 1.75); the distance between PLs to sensillary bases more than 1/2 PSB, in *L. (L.) nadiense* less than 1/2 PSB; PLs about 1.4 as long as ALs which is greater than 1.25 in *L. (L.) nadiense*; scutal setae of the new species shorter.

Holotype: Larva (C. 9540) ex *Niviventer lepturus*, West Java, Mt. Masigit, 2000 m, June 1972; 12 paratypes, same data as holotype; 8 paratypes ex *M. bartelsii*, same locality as holotype; 13 additional specimens ex *M. bartelsii* and 90 specimens, same locality as holotype;

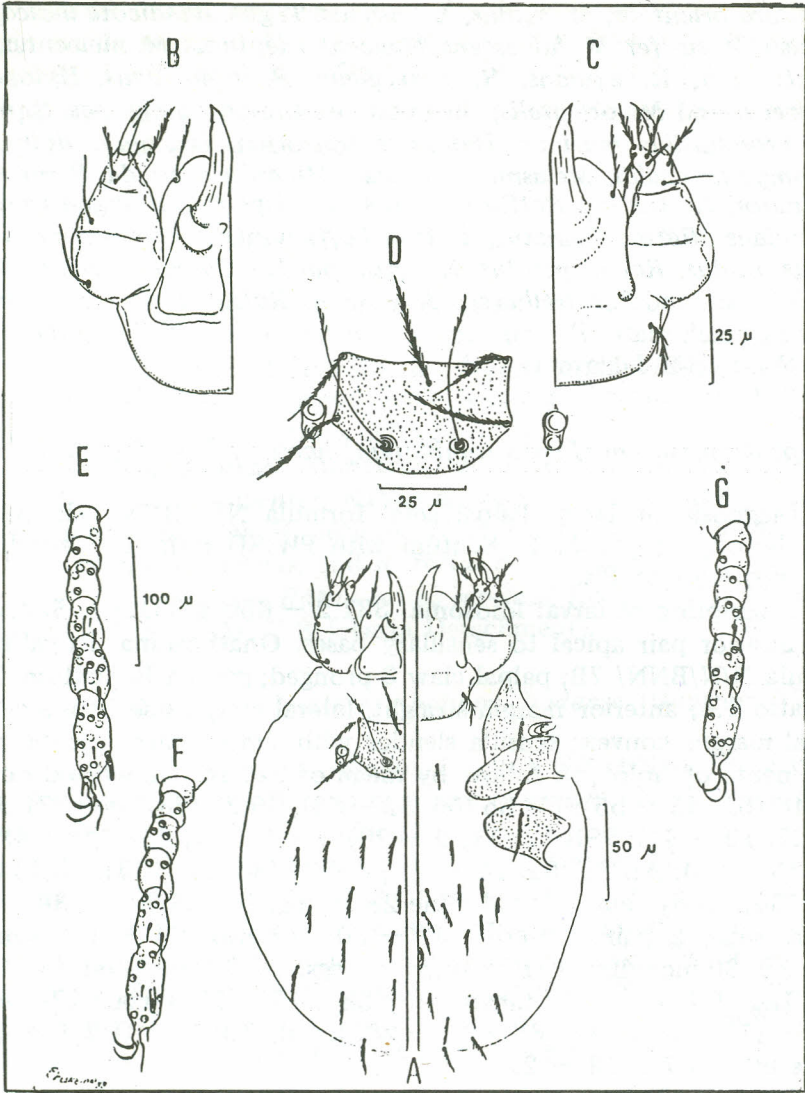


Figure 2

Larva *Leptotrombidium* (*Leptotrombidium*) *namrui* n. sp.

- A. Scutum and eyes
- B. Dorsal aspect of gnathosoma
- C. Ventral aspect of gnathosoma
- D. Dorsal and ventral aspects of idiosoma
- E. Leg I showing specialized setae
- F. Leg II as above
- G. Leg III as above

98 specimens ex *R. exulans*, East Java, Wonotoro, 1900 m; and 6 specimens ex *M. Niviventer*. Coll. U.S. NAMRU — 2 Jakarta Detachment. This species is named after U.S. NAMRU—2 Jakarta Detachment for the big contribution to the chigger collection of Indonesia.

7. *Schoengastia vandersandei* (Oudemans, 1905)

Diagnosis of larva: Palpal setal formula B/B/NNB/ 7B; palpal claw 2-pronged; galeala N; cheliceral blade with 14—16 dorsal teeth. Scutum with PW:SD ratio 1.3; sensilla clavate. Dorsal setae 52—62; ventral setae 44 including 16 postanals. Mastitarsala III present.

Indonesian records: Java, ex *M. bartelsii* and *T. glis* (Coll. U.S. NAMRU—2 Jakarta Detachment); Irian, ex *Homo sapiens* (Nadchatram *et al.* 1980).

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