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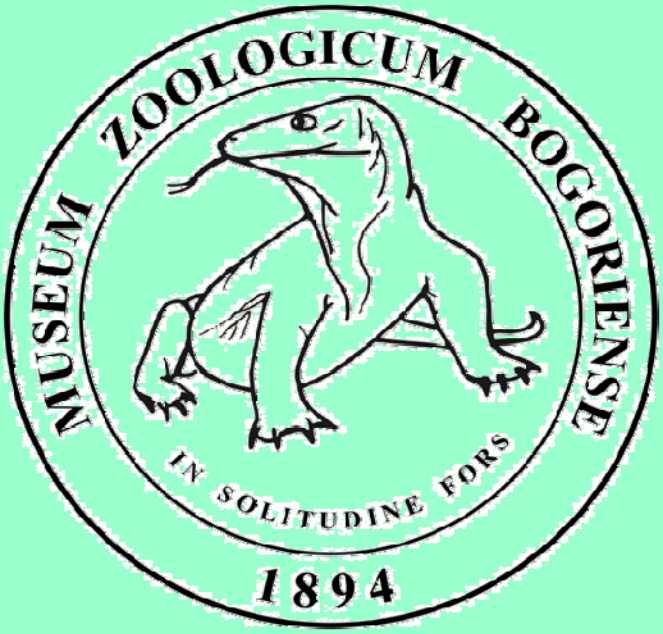

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CONTENT

TREUBIA

(A JOURNAL ON ZOOLOGY OF THE INDO-AUSTRALIAN ARCHIPELAGO)

ISSN : 0082 - 6340 Date of issue: DECEMBER 2015
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UDC: 594.1 (594)

Reni Ambarwati

New record of two mactrid bivalves (Bivalvia: Mactridae) from Indonesia

TREUBIA, December 2015, Vol. 42, pp. 1–8.

The occurrence of two mactrid bivalves, *Mactra (Mactra) queenslandica* E.A. Smith and *Heterocardia gibbosula* Deshayes, in coastal water of Sidoarjo, East Java, Indonesia is reported here. The two species are examined and illustrated based on the local specimens collected. Previously, the distribution of *M. queenslandica* was reported only from northern – north-east Australia. This finding revealed that the distribution of this bivalve reaches Indonesian waters. Meanwhile, *H. gibbosula* is common in south-east Asian waters, however this is the first record for Indonesian waters. This result indicated that more mactrid bivalves could be discovered in Indonesian waters.

(Reni Ambarwati and Trijoko)

Key words: *Heterocardia gibbosula*, *Mactra queenslandica,* Mactridae, Sidoarjo

UDC: 595.78: 577.2 (594.5)

Hari Sutrisno

Mitochondrial DNA variation of the rice yellow stem borer, *Scirpophaga incertulas* (Lepidoptera: Crambidae) in Java, Indonesia

TREUBIA, December 2015, Vol. 42, pp. 9–22.

Scirpophaga incertulas is an economically important rice pest. A systematic investigation on the biological characteristics of ecological races linked to recent changes of agricultural practices and the environment has been conducted in order to assess genetic variation of *S. incertulas* in Indonesia. A 685bp segment of mitochondrial DNA, COII, was amplified from 42 yellow stem borer samples from five locations in Java (Madiun, Ngawi, Wonogiri, Tasikmalaya, and Indramayu). Six different haplotypes (YSB1, YSB2, YSB3, YSB4, YSB5 and YSB6) were identified in the sequenced yellow stem borer populations, with haplotype YSB2 being dominant.

(Hari Sutrisno)

Key words: COII, mitochondrial DNA, *Scirpophaga incertulas*, yellow stem borer

UDC: 595.42: 595.764 (594.59)

Sri Hartini

Macrochelid mites (Acari: Mesostigmata) associated with dung beetles in Baluran National Park, East Java, Indonesia

TREUBIA, December 2015, Vol. 42, pp. 23–36.

Eight mite species of the family Macrochelidae (Acari: Mesostigmata) were collected from the body surface of dung beetles in Baluran National Park, East Java, Indonesia. Of these, one species, *Macrocheles subwallacei* sp. nov., is described as new to science. The female of *Macrocheles crispa* (Berlese, 1910) is redescribed and the male is described for the first time. The remaining six species are *Neopodocinum jaspersi* (Oudemans, 1900), *M. dispar* (Berlese, 1910), *M. hallidayi* Walter & Krantz, 1986, *M. entetiensis* Hartini & Takaku, 2005, *M. jabarensis* Hartini & Takaku, 2003 and *M. persimilis* Hartini, Dwibadra & Takaku, 2007.

(Sri Hartini, Dhian Dwibadra, Masahiro Ohara and Gen Takaku)

Key words: Baluran, dung beetles, East Java, Indonesia, Macrochelidae

UDC: 574.9: 57.065

Rena Tri Hernawati

Exploring the dynamics during community assembly through community phylogenetics

TREUBIA, December 2015, Vol. 42, pp. 37–52.

Species diversity through speciation and accumulate in ecological communities, a process known as community assembly. Relying on both evolutionary mechanisms acting at regional scale and ecological mechanisms acting at local scale, the process of community assembly results from intricate interactions among mechanisms at play across varying spatial and temporal scales. During the last decade, community assembly theory has been reconsidered in the light of evolutionary dynamics of species diversification and ecological dynamics have been formalised in an explicit spatial framework (*i.e*. metacommunity theory). The aims of the present review are: (1) to present the community assembly theory and the main paradigms that have been proposed, (2) to discuss how the metacommunity theory as defined an explicit spatial framework for community ecology, (3) to discuss the potential mechanisms at play during community assembly and their associated predictions, (4) to present new approaches to study community assembly based on phylogenetics approaches and discuss how they have been integrated in empirical studies.

(Rena Tri Hernawati, Daisy Wowor and Nicolas Hubert)

Key words: biogeography, community assembly, dispersal, phylogenetic community structure, speciation

UDC: 595.42 (594.81)

Sri Hartini

Macrochelid mites (Acari: Mesostigmata) from Kaimana,West Papua, Indonesia, and endemism of macrochelid mite fauna in New Guinea Island

TREUBIA, December 2015, Vol. 42, pp. 53–67.

As a result of our investigation in Lengguru, Kaimana, West Papua, Indonesia, six species belonging to two genera of macrochelid mites (Acari: Mesostigmata: Macrochelidae) were collected from the body surface of dung beetles (Scarabaeidae). Of these, one is undescribed species *Macrocheles kaimanaensis* sp. nov. *Macrocheles hallidayi* Walter & Krantz, 1986 is newly recorded from Papua and West Papua (Indonesian parts of New Guinea Island). Males of *Holostaspella rosichoni* Hartini & Takaku, 2006 originally described from Papua were recorded for the first time. The other three species were *M. amaliae* Hartini, 2008, *M. dispar* (Berlese, 1910) and *M. waigeoensis* Hartini, 2008, which were previously collected from Raja Ampat, West Papua.

(Sri Hartini and Gen Takaku)

Key words: Indonesia, Kaimana, macrochelid mite, West Papua

Treubia 42: 23−36, December 2015

MACROCHELID MITES (ACARI: MESOSTIGMATA) ASSOCIATED WITH DUNG BEETLES IN BALURAN NATIONAL PARK, EAST JAVA, INDONESIA

Sri Hartini [1*], Dhian Dwibadra[1], Masahiro Ohara[2] and Gen Takaku[3].

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ABSTRACT

Eight mite species of the family Macrochelidae (Acari: Mesostigmata) were collected from the body surface of dung beetles in Baluran National Park, East Java, Indonesia. Of these, one species, *Macrocheles subwallacei* sp. nov., is described as new to science. The female of *Macrocheles crispa* (Berlese, 1910) is redescribed and the male is described for the first time. The remaining six species are *Neopodocinum jaspersi* (Oudemans, 1900), *M. dispar* (Berlese, 1910), *M. hallidayi* Walter & Krantz, 1986, *M. entetiensis* Hartini & Takaku, 2005, *M. jabarensis* Hartini & Takaku, 2003 and *M. persimilis* Hartini, Dwibadra & Takaku, 2007.

Key words: Baluran, dung beetles, East Java, Indonesia, Macrochelidae

INTRODUCTION

Macrochelid mites belonging to four genera have been recorded and described from Java, Indonesia: *Glyptholaspis* (3 species), *Holostaspella* (8 species), *Macrocheles* (23 species) and *Neopodocinum* (6 species) (Oudemans 1902, Berlese 1905, 1910, 1921, Krantz 1965, 1967a, b, Hartini & Aziz 1992, Halliday 2000, Hartini & Takaku 2003a, b, 2010, 2012, Hartini *et al*. 2009, 2012, 2013). Among these four genera, *Macrocheles* is the most common genus associated with dung beetles.

Baluran National Park, located at the north-eastern extremity of Java, is characterised by dry climate. The area consists of lowland forest, savana, mangrove forest and hill around Mt. Baluran. The Baluran NP plays an important role in maintaining large herbivore populations and in protecting the endangered fauna, especially the Indonesian wild cow, or banteng, *Bos javanicus.* The dung of banteng provides a good habitat for many taxa of insects and macrochelid mites.

MATERIALS AND METHODS

Dung beetle specimens were collected by using dung traps installed in the forest or by hand-picking from dung of cattle in pastures. Following collection, each beetle was placed separately into a film case to avoid contamination of mites from different beetles.

Mite specimens were collected from the body surface of scarabaeid dung beetles and fixed in 70% ethanol. Specimens were mounted on slides in PVA (polyvinyl alcohol – lactic acid) medium, after clearing in lactic acid. In the description, all measurements are given in micrometers (μm). Measurements in each description include an average, with the range in parentheses, if more than two specimens were measured. Dorsal chaetotaxy and other terminology follow Halliday (1987), Krantz (1967b), and Walter & Krantz (1986a, b). The holotype and paratypes of new species and voucher specimens are deposited in the collection of the Museum Zoologicum Bogoriense (MZB) at Cibinong, Indonesia.

RESULTS

As the result of our investigation on macrochelid mites in Baluran National Park in 2006 and 2007, we found eight macrochelid mite species in two genera associated with scarabaeid dung beetles. One of the species is described as new to science. Another species, *Macrocheles crispa* (Berlese, 1910), is redescribed and the male is described for the first time. They are as follows:

Family Macrochelidae Vitzthum, 1930

Genus *Neopodocinum* Oudemans, 1902

Neopodocinum jaspersi (Oudemans, 1900)

Laelaps jaspersi Oudemans, 1900: 72.

Neopodocinum jaspersi: Oudemans, 1902: 25-26, figs. 31-33; Oudemans, 1904: 119-120, pl. 6, figs. 18-20; Krantz, 1965: 176-179, figs. 32-38, pl. IV, figs. 34-37, pl. V, figs. 38-39.

Material examined.–3 females, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex Copris sinicus* and *Onitis phartopus*.

Diagnosis.–Female. Dorsal shield with 28 pairs of setae and unpaired seta Jx present; tip of dorsal setae j4 not surpassing insertions of j5; linea media transversa (l.m.t.) incomplete and paired lateral extensions of l.m.t. distinctly separated medially; deutosternal groove with 5 or 6 rows of denticles.

Habitat.–*Neopodocinum jaspersi* has been collected from scarabaeid beetle species of the genera *Copris*, *Heliocopris*, *Onitis* and *Onthophagus*.

Distribution.–Indonesia (Java, Bali, Madura), Netherlands, China, and India.

Genus *Macrocheles* Latreille, 1820

***Macrocheles crispa* (Berlese, 1910)** (Figs. 1-10)

Holocelaeno crispa Berlese, 1910: 249.

Macrocheles crispa: Krantz, 1967a: 35-37, fig. 50.

Material examined.–25 females, 4 males, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex Catharsius molossus*, *Onthophagus javensis*, *Paragymnopleurus rudis* and *Onthophagus* sp.

Description.–*Female*. Length of dorsal shield 616.8 (555-657.5), width at level coxae II 375.6 (335-407.5) (n=25). Specimens yellowish brown.

Dorsum (Fig. 1). Dorsal shield oval, attenuated posteriorly; surface with line in anterior part and sculptured in around setae j3-j6 and lateral side; punctations present around j3, j4, and z4, and in posterior part; lateral margin of the shield smooth; shield with 28 pairs of dorsal setae and 22 pairs of pores; setae j1 short, expanded, and entirely plumose; z1 short and simple but in some cases sligthly pilose; j4, j6, z4, z6, s4, s5, and J2 simple; but in some cases z4, s4, s5, and J2 sligthly pilose; other setae long and plumose; pilosity of j3 weaker than other plumose setae.

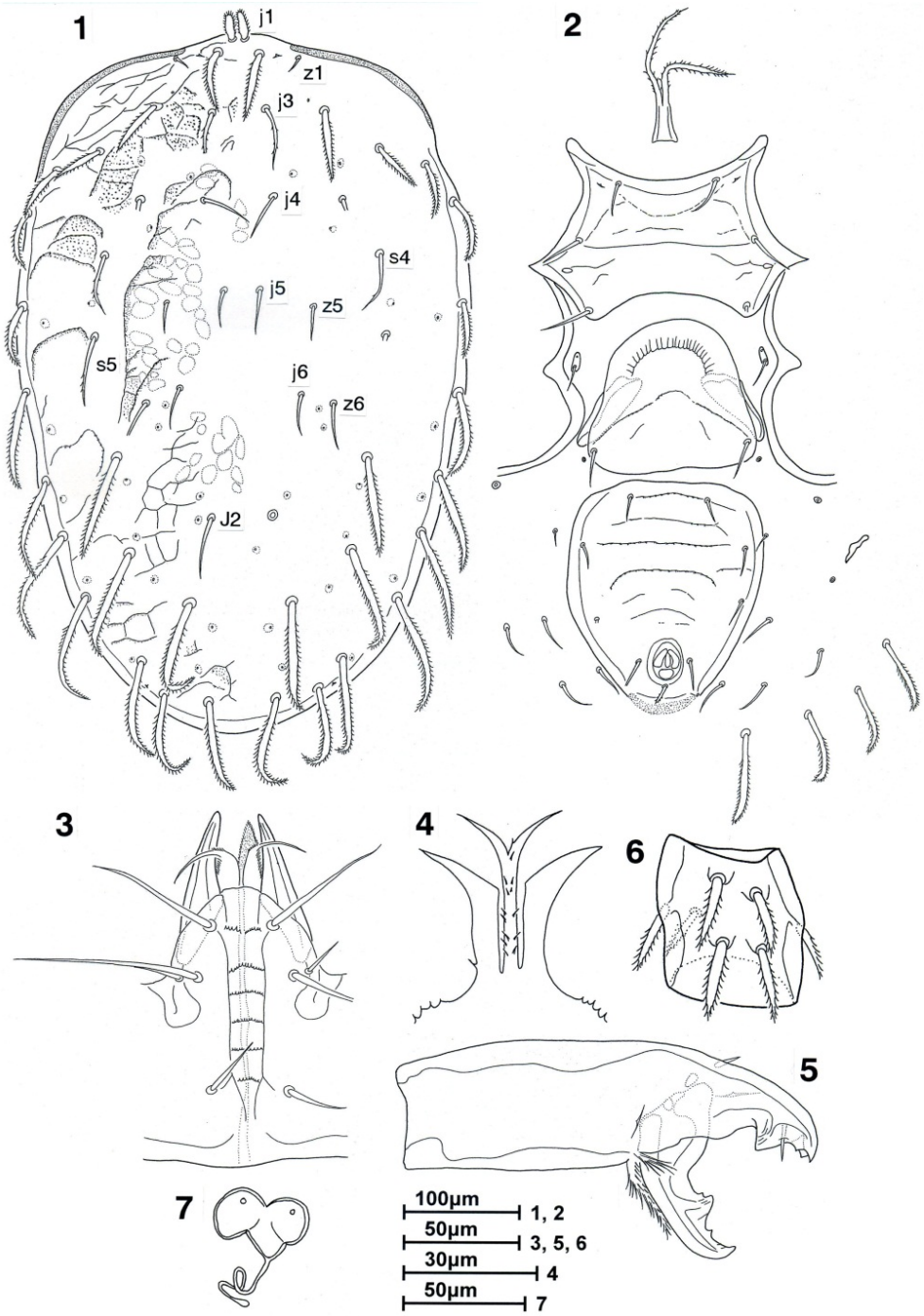
Venter (Fig. 2). Sternal shield wider than long; length 103 (100-115), width at level of coxae II 149.4 (140-160) (n=25); shield ornamented with only lines; paired short linea oblique posteriores (l.o.p.) present; linea media transversa (l.m.t.) complete, 2 linea arcuata (l.arc.) present; shield with 3 pairs of simple setae and 2 pairs of pores; setae not reaching insertions of behind setae. Metasternal shield oval, with anterior pore and 1 simple seta.

Epigynial shield without any ornamentation, with a pair of simple setae. Length of epigynial shield 112.5 (100-147.5), width 145.4 (132.5-157.5); surface with curved line, without punctation; shield with pair of simple setae inserted laterally.

Ventrianal shield triangular with transverse lines, without punctation in anterior part but punctate in posteriolateral part; longer than wide, length 210.7 (175-222.5), width 177.1 (162.5-200) (n=25); shield with 3 pairs of preanal setae, 1 pair of simple paranal setae, and a pilose postanal seta; cribrum located posterior to postanal seta. Opisthogaster with simple and pilose setae. Anterior extremities of peritreme reaching to level of setae z1.

Gnathosoma (Figs. 3-5) well developed and sclerotised. Deutosternal groove with anteriormost divided row of denticles and 5 transverse rows of denticles; 3 pairs of hypostomal setae and 1 pair of palpcoxal setae present; all setae simple; internal posterior hypostomal setae longer than other setae. Palpal chaetotaxy of trochanter, femur, and genu 2-

5-6. Epistome (Fig. 4) with many spicules; lateral processes broadened distally; basal margin serrate. Fixed digit of chelicera (Fig. 5) with simple dorsal seta, 1 robust median tooth, 2 distal small teeth, *pilus dentilis* and terminal hook; movable digit with 1 bidentate tooth, 1 distal minute tooth, and terminal hook; arthrodial process typical for the genus; length of fixed digit 177.9 (162.5-192.5) (n=25), length of movable digit 78.2 (72.5-85) (n=25).



Figures 1-7. *Macrocheles crispa* (Berlese, 1910), female (MZB.Acar.4719.3): 1, dorsum; 2, venter; 3, ventral view of gnathosoma; 4, epistome; 5, chelicera; 6, genu IV; 7, sacculus foemineus (MZB.Acar.4719.2).

Legs. Most leg segments with simple, pilose, plumose setae, except for coxae I, II-IV, trochanters I, III, tarsus I with simple setae and genua II and IV with plumose setae. Leg chaetotaxy typical for the genus. Genu IV with 7 pilose setae (Fig. 6). Leg length (except ambulacrum, n=25); leg I, 361.6 (312.5-400); leg II, 404.8 (380-435) (n=24); leg III, 382.8 (350-412.5); leg IV, 532.7 (487.5-565).

Sacculus foemineus (Fig. 7). Pair of sacculi fused; small cornu rounded distally and sclerotised; spermatheca oval.

Male. Length of dorsal shield 484.4 (460-507.5), width at level coxae II 320 (305-330) (n=4). Specimen yellowish brown.

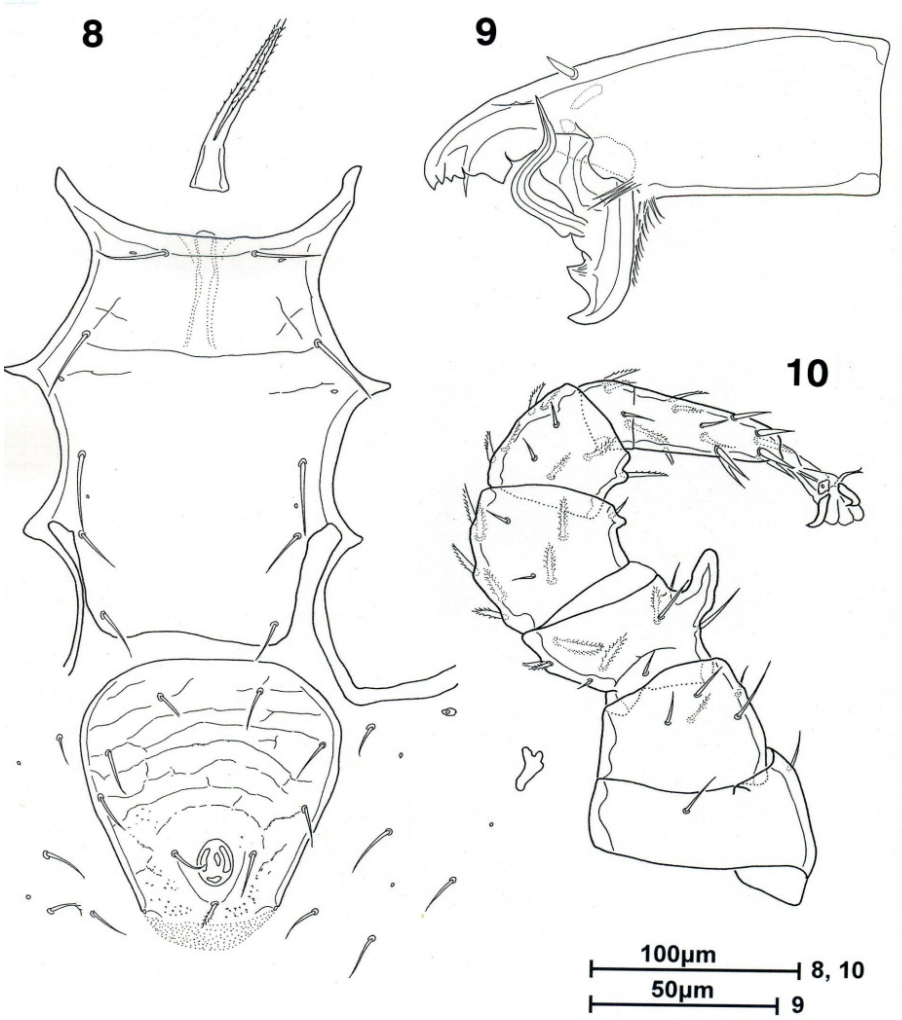
Dorsum. Dorsal shield ornamentation more or less similar to that of female; shield with 28 pairs of dorsal setae and 22 pairs of pores; setae j1 short, expanded and entirely plumose; z1 short and simple; z5, j5, and J2 simple, but in some cases j5 and J2 sligthly pilose; z4, z6, j4, and j6 sligthly pilose, but in some cases j6 simple; other setae pilose distinctly.

Venter (Fig. 8): Surface of sternoventral shield with lines on anterior part; l.m.t. complete, length 206.9 (187.5-222.5), width 114.4 (107.5-120) (n=4); shield with 5 pairs of simple setae and 3 pairs of pores; setae not reaching insertions of behind setae. Ventrianal shield triangular and with transverse lines, without punctation in anterior part but with punctations in posteriolateral part; length 148.8 (137.5-157.5), width 142.5 (127.5-137.5) (n=4); shield with 3 pairs of simple preanal setae, 1 pair of simple paranal setae, and a pilose postanal seta. Metapodal shield oblong. Opisthogaster with simple setae. Anterior extremities of peritreme reaching at level of setae z1.

Gnathosoma. Well developed and sclerotised. Epistome same as that of female. Fixed digit of chelicera (Fig. 9) with simple dorsal seta, 1 robust tooth, 2 distal small teeth, *pilus dentilis*, and terminal hook; movable digit with 1 robust tooth, spermatodactyl, and terminal hook; spermatodactyl long, its length 50 (47.5-55) (n=4); length of fixed digit 125 (120-130), length of movable digit 55 (52.5-57.5) (n=4).

Legs. Most leg segments with simple, pilose and plumose setae, except for coxae I-IV, trochanters I, III, and tarsus I with simple setae; femur II with large spur ventrally; genu and tibia II with small spur ventrally, respectively (Fig. 10). Leg chaetotaxy typical for genus; genu IV with 7 pilose setae. Leg length (except ambulacrum, n=4); leg I, 361.9 (350-387.5); leg II, 342.5 (330-365); leg III, 340.5 (335-350); leg IV, 456.9 (435-467.5) (n=4).

Other stages. Unknown



Figures 8-10. *Macrocheles crispa* (Berlese, 1910), male (MZB.Acar.4717.10): 8, venter; 9, chelicera; 10, femur II.

Habitat.–*Macrocheles crispa* was collected from the scarabaeid dung beetle *Copris affinis*.

Distribution. – Indonesia (Java).

Remarks.–*Macrocheles crispa* was described by Berlese (1910) as a species of the genus *Holocelaeno* (Macrochelidae), based on specimens collected from Java. In the review of the genus *Holocelaeno* by Krantz (1967a), *Holocelaeno crispa* was transferred to the genus *Macrocheles* on the basis of characteristics of dorsal chaetotaxy, paranal setae, and the arthrodial process of the chelicera. The holotype is deposited in the collection of the "Berlese Acaroteca", Florence, Italy. Krantz (1967a) illustrated the dorsal shield in his review, but other female characters, e.g., ornamentation of sternal and ventrianal shields, were not shown.

Here we redescribe the adult female and describe the male on the basis of material collected in East Java.

Based on the study of type specimens of *M. crispa* in the Berlese collection by Dr. Marisa Castagnoli, the condition of the type material was judged inadequate for proper comparison with our materials. Consequently, we used the description and the figure of the dorsal shield by Krantz (1967a) to identify our material as *Macrocheles crispa*.

Macrocheles dispar (Berlese, 1910)

Holostaspis dispar Berlese, 1910: 251.

Macrocheles (*Coprholaspis*) *dispar*: Berlese, 1918: 151; Vitzthum, 1925: 13-16.

Macrocheles dispar: Walter & Krantz, 1992: 244, fig. 1D; Hartini & Takaku, 2003a: 1262-1263, figs. 1-6; Hartini *et al*., 2003: 308; Hartini *et al*., 2007: 75; Hartini, 2008: 12-13; Hartini *et al*., 2009: 419; Hartini & Takaku, 2012: 9; Hartini *et al*., 2013: 52; Dwibadra *et al*., 2014: 45.

Material examined.–240 females, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex Catharsius molossus*, *Copris sinicus*, *Onthophagus malangensis*, *O. rudis*, *O. semiaureus*, *O. tricornis*, *O. trituber*, *Paragymnopleurus rudis*, *Onthophagus* spp., *Paragymnopleurus* sp. and Scarabaeidae sp.

Diagnosis.–Female. Dorsal seta j1 plumose distally; j4, z2, z4, r2–4, J5, Z5 and S5 pilose distally; j2, j3 and s2 simple but in some cases pilose distally; other setae simple. Sternal shield ornamented with lines and punctations; linea angulata (l.ang.), l.m.t., l.o.p. with distinct punctations; l.m.t. complete; l.o.p. disjunct from l.m.t. and not bifurcated; center of posterior half of the shield with small punctations.

Habitat.–*Macrocheles dispar* has been collected from scarabaeid beetles *Catharsius molossus*, *Onthophagus cervicapra*, *O. hirustulus*, *O. luridipenis*, *O. schwaneri*, *O. vulpes*, *O.* (*O.*) *cribratus*, *O.* (*O.*) *javensis*, *O.* (*O.*) *javaecola*, *O.* (*O.*) *malangensis*, *O.* (*O.*) *orientalis*, *O.* (*Gibbonthophagus*) *fuscopunctatus*, *O.* (*Macronthophagus*) *rotundicollis*, *O.* (*Serrophorus*) *mulleri*, *Paragymnopleurus maurus*, *P. sparsus javanus*, *Sisyphus thoracicus* and species of following genera *Aphodius*, *Catharsius*, *Copris*, *Enoplotrupes*, *Onthophagus*, *Paragymnopleurus*, and a nest of the giant honey bee, *Apis dorsata dorsata* (Hymenoptera).

Distribution.–Indonesia (Java, Sumatra, Kalimantan, Lombok, Sulawesi, and Papua), Vietnam, the Philippines, China (Sichuan Province), and Taiwan.

Macrocheles entetiensis Hartini &Takaku, 2005

Macrocheles entetiensis Hartini & Takaku, 2005 in Hartini *et al*., 2005: 204, figs. 1-5: Hartini *et al*., 2009: 419; Hartini & Takaku, 2012: 11; Dwibadra *et al*., 2014: 45.

Material examined.–46 females, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex Onthophagus fuscopunctatus, O. javensis, O. tricornis, Paragymnopleurus rudis, Onthophagus* spp., *Paragymnopleurus* sp. and Scarabaeidae sp.

Diagnosis.–Female. Dorsal seta j1 pilose distally; j3 and z4 thickened and pilose distally; j5, j6, z5, z6 and J2 simple; other dorsal setae pilose distally or pilose in distal half. Sternal shield with distinct l.ang., l.arc., l.m.t. and l.o.p. disjunct from l.m.t. and not bifurcated.

Habitat.–*M. entetiensis* has been collected from scarabaeid beetles *Catharsius molossus, Onthophagus limbatus, O. schwaneri, O. uedai*, and species of the genera *Aphodius, Catharsius,* and *Onthophagus* (Scarabaeidae).

Distribution.–Indonesia (Timor, Sumba, Flores, Sumbawa, Kalimantan, and Java).

Macrocheles hallidayi Walter & Krantz, 1986

Macrocheles hallidayi Walter & Krantz, 1986a: 214-216, figs. 12, 13.

Macrocheles hallidayi: Walter & Krantz, 1986b: 289, fig. 1b; Takaku, 1998: 30-36, figs. 1-14; Takaku, 2001: 501, figs. 3, 9; Takaku & Hartini, 2001: 235; Hartini & Takaku, 2003a: 1264; Hartini *et al*., 2003: 308; Hartini *et al*., 2007: 75-76; Hartini *et al*., 2009: 420; Hartini *et al*., 2012: 529; Hartini *et al*., 2013: 53; Dwibadra *et al*., 2014: 45-46.

Material examined.–1 female, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex Onitis phartopus.*

Diagnosis.–Dorsal seta j1 pilose; z1, j5, j6, z5, z6, and J2 simple; J5 serrate; other dorsal setae sparsely to strongly bipectinate. L.ang. and 2 l.arc. on sternal shield punctate; l.o.p. bifurcated, with distinct area punctatae posteriores (a.p.p.) and area punctiformes (a.pf.). Genu IV with seven pectinate setae.

Habitat.–*Macrocheles hallidayi* has been collected from scarabaeid beetles *Catharsius dayacus, C. renaudpauliani, Onthophagus cervicapra, O. liliputanus, O. limbatus, O. obscurior, O. schwaneri, O.* (*O.*) *javensis, O.* (*O.*) *orientalis, Microcopris hidakai, Paragymnopleurus maurus,* and species of genera *Aphodius, Catharsius, Copris, Heliocopris, Microcopris, Oniticellus, Onitis, Onthophagus, Paragymnopleurus,* nests of *Apis dorsata dorsata* (Hymenoptera), and the beetle family Trogidae.

Distribution.–Indonesia (Java, Madura, Sumatra, Kalimantan, Bali, Sulawesi, Lombok, Sumbawa, Flores, and Sumba), Thailand, Cambodia, Malaysia (Sarawak), and India.

Remarks.–*Macrocheles hallidayi* is widely distributed in tropical Asia, and has been recorded from India, Thailand, Cambodia, Indonesia, and Malaysia (Sarawak) (Walter & Krantz 1986b). In Indonesia, the species occurs on islands from Sumatra, Java in the west to Sulawesi in the north and Timor in the east (Takaku 1998, 2001, Takaku & Hartini 2001, Hartini *et al*. 2007, 2009).

Macrocheles jabarensis Hartini & Takaku, 2003

Macrocheles jabarensis Hartini & Takaku, 2003: 1266, figs. 7-12.

Macrocheles jabarensis: Hartini *et al*., 2003: 308; Hartini *et al*., 2007: 76; Hartini *et al*., 2009: 420; Hartini & Takaku, 2012: 11; Hartini *et al*., 2013: 53; Dwibadra *et al*., 2014: 46.

Material examined.–1 female, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex* Scarabaeidae sp.

Diagnosis.–Female. Dorsal seta j1 plumose distally, S5 and Z5 pilose in distal half, J5 entirely pilose, and in some case j4 pilose distally; other dorsal setae simple. Sternal shield ornamented; l.ang., l.m.t., and l.o.p. distinct; l.o.p. disjunct from l.m.t. and not bifurcated.

Habitat.–*Macrocheles jabarensis* has been collected from *Catharsius molossus*, *C. dayacu*s, *C. renaudpauliani*, *Onthophagus aurifex*, *O. borneensis*, *O. cervicapra*, *O. dux*, *O. incisus*, *O. obscurior*, *O. pasificus*, *O. pastillatus*, *O. papulatus*, *O. rudis*, *O. schwaneri*, *O. vulpes*, *O. waterstradti*, *O.* (*O.*) *javensis*, *M. hidakai*, *O.* (*O.*) *orientalis*, *Paragymnopleurus maurus*, and species of genera *Catharsius*, *Microcopris*, *Onthophagus*, *Paragymnopleurus*, and a nest of *Apis dorsata dorsata* (Hymenoptera).

Distribution.–Indonesia (Java, Kalimantan, Sumatra, Lombok, and Sumbawa).

Macrocheles persimilis Hartini, Dwibadra & Takaku, 2007

Macrocheles persimilis Hartini, Dwibadra & Takaku, 2007: 82, figs. 3, A-E.

Macrocheles persimilis: Dwibadra *et al*., 2014: 48.

Material examined.–141 females, Baluran National Park, East Java, 8 April 2007, Hartini, Rofik & Darmawan leg., *ex Copris sinicus*, *Onthophagus javensis*, *O. trituber*, *P. rudis*, *Onthophagus* spp., and Scarabaeidae sp.

Diagnosis.–Female. Dorsal shield oval, attenuated posteriorly; surface ornamented with distinct reticulate pattern and punctation; shield with 28 pairs of dorsal setae; setae j1-4 pilose distally; j5, j6, z1, z5, z6, and J2 simple; J5 bipectinate entirely; other dorsal setae pilose in distal halves to distal 2/3. Sternal shield ornamented with lines and punctations; l. ang., one or two l.arc., linea oblique anteriores (l.o.a.), l.m.t. present and with punctations; anterior l.arc. faint; l.o.p. distinct, with punctations and disjunct from l.m.t.

Habitat.–*Macrocheles persimilis* has been collected from the scarabaeid beetles of species of genus *Onthophagus* and residue in the vial in which the scarab had been fixed and preserved.

Distribution.–Indonesia [Sulawesi; Java (new record)].

***Macrocheles subwallacei* sp. nov. Hartini, Dwibadra & Takaku** (Figs. 11-15)

Material examined.–Type series. Holotype: female (MZB.Acar.4471.1) Baluran National Park, East Java, Indonesia, 6 April 2007, S. Hartini, Rofik & Darmawan leg., *ex Paragymnopleurus rudis*. Paratypes: 4 females, same data for holotype, *ex P. rudis* and *Copris sinicus*.

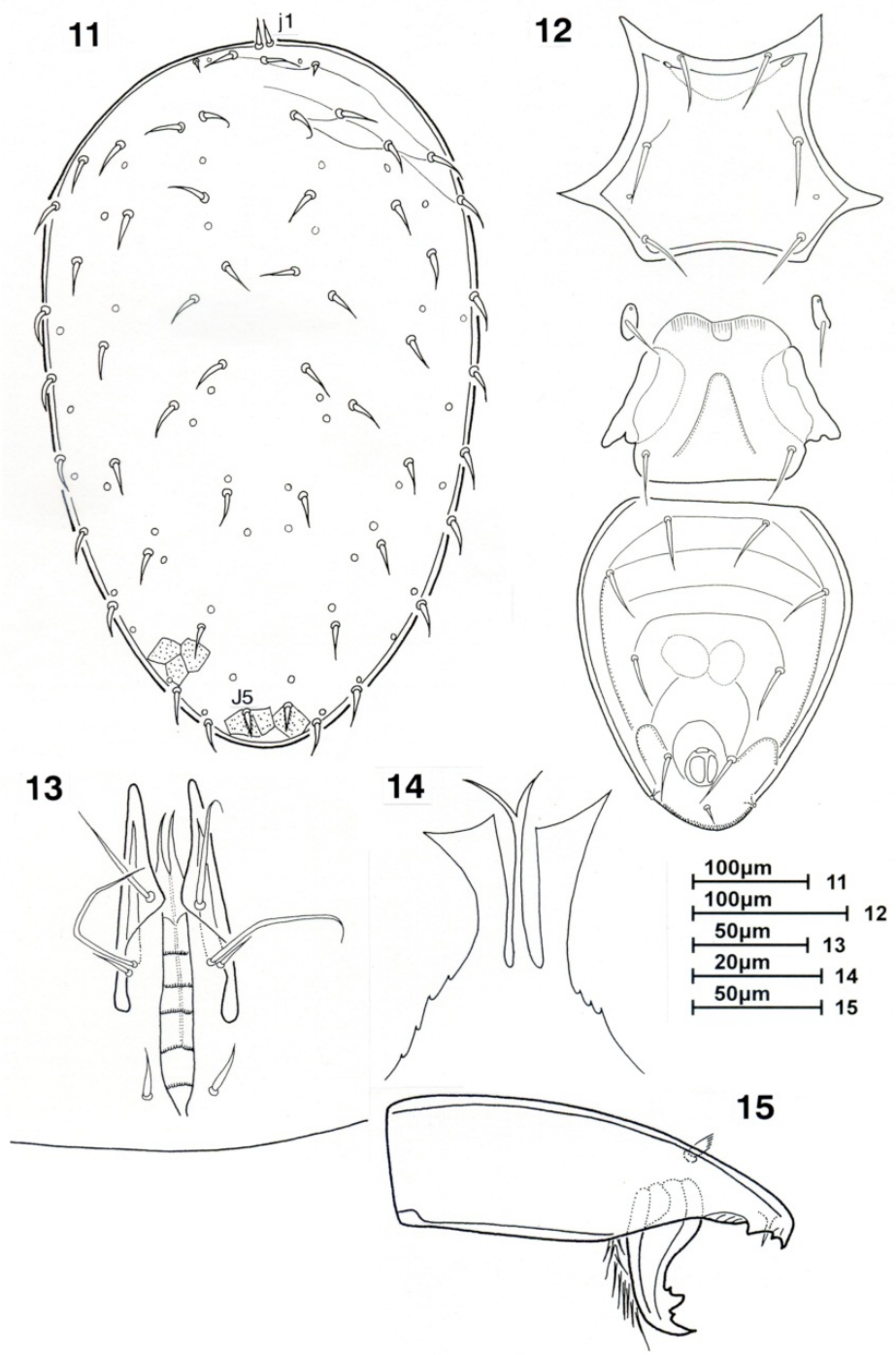
Description.–*Female*. Length of dorsal shield 611 (595-630), width at level coxae II 323 (315-330) (n=5). Living specimens yellowish brown.

Dorsum (Fig. 11). Dorsal shield oval, attenuated posteriorly; surface with line in anterior part; lateral margin of the shield smooth; shield with 28 pairs of dorsal setae and 22 pairs of pores; j1 pilose distally, J5 pilose entirely; other dorsal setae simple.

Venter (Fig. 12). Sternal shield longer than wide; length of sternal shield 125 (120-130), width at level of coxae II 112 (105-115) (n=5); l.ang. present and with punctations; l.m.t. absent; 3 pairs of simple setae present but not reaching insertions of behind seta, and 2 pairs of pores present. Metasternal shield small and free; each shield with 1 simple seta and an anterior pore.

Length of epigynial shield 111 (105-115), width 124 (120-130); surface with curved lines and punctations; shield with a pair of simple setae on lateral side.

Ventrianal shield pentagonal with transverse lines, punctations and lines on lateral side; length 196 (190-200), width 167 (165-170) (n=5); shield with 3 pairs of preanal setae and 1 pair of paranal setae, and 1 postanal seta, all setae simple; cribrum located posterior to postanal seta. Opisthogaster with simple setae and a pair of oblong metapodal shields. Postcoxal pore free from podal shield. Peritreme with stigmata at level between coxae III and IV; anterior extremities of peritreme located at level of setae z1.



Figures 11-15. *Macrocheles subwallacei* sp. nov., holotype (MZB.Acar.4471.1), female: 11, dorsum; 12, venter; 13, ventral view of gnathosoma; 14, epistome; 15, chelicera.

Gnathosoma (Fig. 13) well developed and sclerotised; deutosternal groove with 5 transverse rows of denticles; 3 pairs of hypostomal setae and 1 pair of palpcoxal setae present; all setae simple; internal posterior hypostomal setae (h3) longer than other setae. Palpal chaetotaxy of trochanter, femur, and genu 2-5-6. Epistome (Fig. 14) with median process and pair of lateral elements; median process bifurcate distally and with small

spicules; lateral margin serrate. Fixed digit of chelicera (Fig. 15) with serrate dorsal seta, robust median tooth, small distal tooth, *pilus dentilis*, and terminal hook; movable digit with bidentate median tooth, minute distal tooth, and terminal hook; length of fixed digit 154 (150-155) (n=5), length of movable digit 61.3 (60-65) (n=5).

Legs. Most leg segments with simple setae, except for femora II-IV, genu and tarsus II with spinose setae. Leg chaetotaxy typical for the genus. Genu IV with 6 simple setae. Leg length (except ambulacrum, n=5); leg I, 417 (405-435); leg II, 389 (370-400) (n=5); leg III, 335 (320-350); leg IV, 461 (440-475).

Sacculus foemineus. Not observable.

Other stage. Unknown

Etymology.–This specific name refers to its morphological similarity to *Macrocheles wallacei* Halliday, 2000.

Remarks.–*Macrocheles subwallacei* sp. nov. is similar to *M. wallacei* Halliday, 2000 recorded from Australia, but it can be distinguished from the latter by the following characteristics (corresponding conditions of *M. wallacei* in parentheses on the basis of the original description): 1) l.m.t. absent (a faint line joining setae st2); and 2) transverse line absent in posterior half of sternal shield (short transverse line through the second pair of pores).

DISCUSSION

Macrochelid mites collected in the present study were found associated with large dung beetles, i.e. *Catharsius molossus*, *Copris sinicus*, *Onitis phartopus*, *Paragymnopleurus rudis* that usually inhabit and process dung of large animals. The Baluran NP has an important role in large herbivore conservation and in the protection of the endangered fauna, especially the Indonesian wild cow, or banteng, *Bos javanicus*. The dung of such herbivores provides a habitat for many taxa of insects and macrochelid mites, which means that long term conservation of these herbivores will also protect dung beetle and macrochelid mite fauna. The macrochelid fauna of Java has not been studied comprehensively, although more than 40 species have thus far been recorded there.

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