

# A NEW SPECIES OF *HENOSEPILOACHNA* LI (COLEOPTERA: COCCINELLIDAE: EPILACHNINI) FROM NEW GUINEA

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**Abstract.**— *Henosepilachna niaki*, sp. nov. from New Guinea is described and illustrated. Status of *Henosepilachna* Li, 1961 as a valid genus within the tribe Epilachnini is discussed.



**Key words.**— Entomology, taxonomy, new species, Cucujoidea, *Henosepilachna*, *Epilachna*, New Guinea.

## INTRODUCTION

Epilachnini traditionally were treated as a subfamily within the family Coccinellidae but according to a recent research by Seago *et al.* (2011), the group should be treated as a tribe in a broadly defined subfamily Coccinellinae.

The genus *Henosepilachna* Li, 1961 with about 250 described species (Jadwiszczak and Węgrzynowicz 2003) is the second most speciose genus within the tribe Epilachnini. *Henosepilachna* species are mostly distributed in tropical and subtropical regions in Africa, Asia, Australia and two species occur in Europe. Although *Henosepilachna* has never been revised, there are several papers concerning regional faunas. Fürsch in several works (1960, 1964, 1991) revised African species, Dieke (1947) and Bielawski (1963, 1967, 1972) described Asian and Australian taxa.

Li (in Li and Cook 1961) established *Henosepilachna* based on two main characters: three-dentate tarsal claw and a female abdominal ventrite 6 divided longitudinally. Approximately 110 species of *Henosepilachna* are known from Asia and Australia but only 27 among them occur in New Guinea (Jadwiszczak and Węgrzynowicz 2003). New Guinean species of *Henosepilachna* form two morphological groups: *H. vigintioctopunctata* (Fabricius, 1775) group and *H. guttatopustulata* (Weise, 1903) group. *H. viginti-*

*octopunctata* group which occurs also in Asia and Australia, can be characterized by the following characters: phallobase of tegmen provided with two small teeth; male tergite X with distinct depression on dorsal side; 6<sup>th</sup> ventrite of male truncate or with shallow emargination; females with coxites subrectangular with emargination on inner surface; trochanters subquadrate in both sexes with distinct emargination for receiving tip of tibiae. *H. guttatopustulata* group recognized by Dieke (1947) can be characterized by: male tegmen without teeth on phallobase; male tergite X simple; 6<sup>th</sup> ventrite in male with deep notch; coxites almond-like, without any emargination; trochanters subtriangular in both sexes with barely marked emargination for receiving the tip of tibiae.

During recent examination of the unnamed material from New Guinea a new species of *Henosepilachna* was found and it is described below as *H. niaki* sp. nov. It belongs to the *H. vigintioctopunctata* group which comprises now 20 of 28 New Guinean species of *Henosepilachna*.

## MATERIAL AND METHODS

This paper is based on the examination of the material from Department of Entomology of Bernice P. Bishop Museum collection (BPBM).

Measurements were made using an ocular micrometer attached to an Olympus SZH-10 dissecting microscope. Measurements recorded were as follows: (TL) total body length, from apical margin of clypeus to apex of elytra; (PL) pronotal length, from the middle of anterior margin to margin of basal foramen; (PW) pronotal width at widest part; (EL) elytral length along suture, including scutellum; (EW) elytral width across both elytra at widest part. Male genitalia were dissected, cleared in 10% solution of KOH, and subsequently transferred in glycerol on slide for further study. Illustrations were made from slide preparations using a camera lucida attached to the Carl Zeiss Jenamed microscope. After examination the genitalia were transferred to microvial and pinned beneath the specimen. Digital photographs were made using a Leica digital camera mounted on microscope and subsequently enhanced using Auto-Montage software in the Electron Microscopy Laboratory of the MIZ.

Terminology used in this paper follows Ślipiński and Tomaszewska (2010).

## SYSTEMATICS

### *Henosepilachna niaki* sp. nov.

(Figs 1–10)

**Etymology.** The species is named after my dear friend Wojtek Sarnecki whose nickname is 'Niak'.

**Diagnosis.** Its black colouration distinguishes it from several species with pattern made of black spots or stripes on yellowish brown elytron. General body shape of *H. niaki* is similar to other black species of *Henosepilachna* from New Guinea but it is distinguishable by its red maculae on elytral humeri. Male genitalia are most similar to *H. huonensis* Bielawski, but the new species differs in having several tubercles on outer surface of the base of penis guide and also in shape of penis.

**Description.** Length 10.3 mm; width 8.9 mm; TL/EW = 1.23; PL/PW = 0.48; PL/EL = 0.23; PW/EW = 0.51; EL/EW = 1.06.

Body heart-shaped, convex; dorsum pubescent. Head and mouth parts light brown to brown with last three antennomeres black. Pronotum black with anterior angles light brown. Scutellum black. Elytra black with large cherry red maculae at humeral part touching anterior margin of elytra (Figs 1, 2). Ventral surface black; epipleuron at anterior and anterior inner margin cherry red. Procoxa, trochanter and femur brown; tibia and tarsi dark brown; mid- and hind legs black.

Head exposed, transverse. Eye finely faceted, not emarginate. Antennal insertions exposed in front of eyes, with distance between antennal sockets more

than twice as long as distance between antennal socket and inner margin of eye. Antenna shorter than width of head, 11-segmented; scape large, swollen, more than twice as long as pedicel; 3<sup>rd</sup> antennomere elongate, about as long as antennomeres 4–5 together; antennomeres 4–6 elongate, each about two times longer than wide; antennomere 7 subquadrate; antennomere 8 transverse; antennal club relatively thick and compact, 3-segmented. Labrum transverse with broad, shallow emargination at anterior margin, covered with dense, short setae.

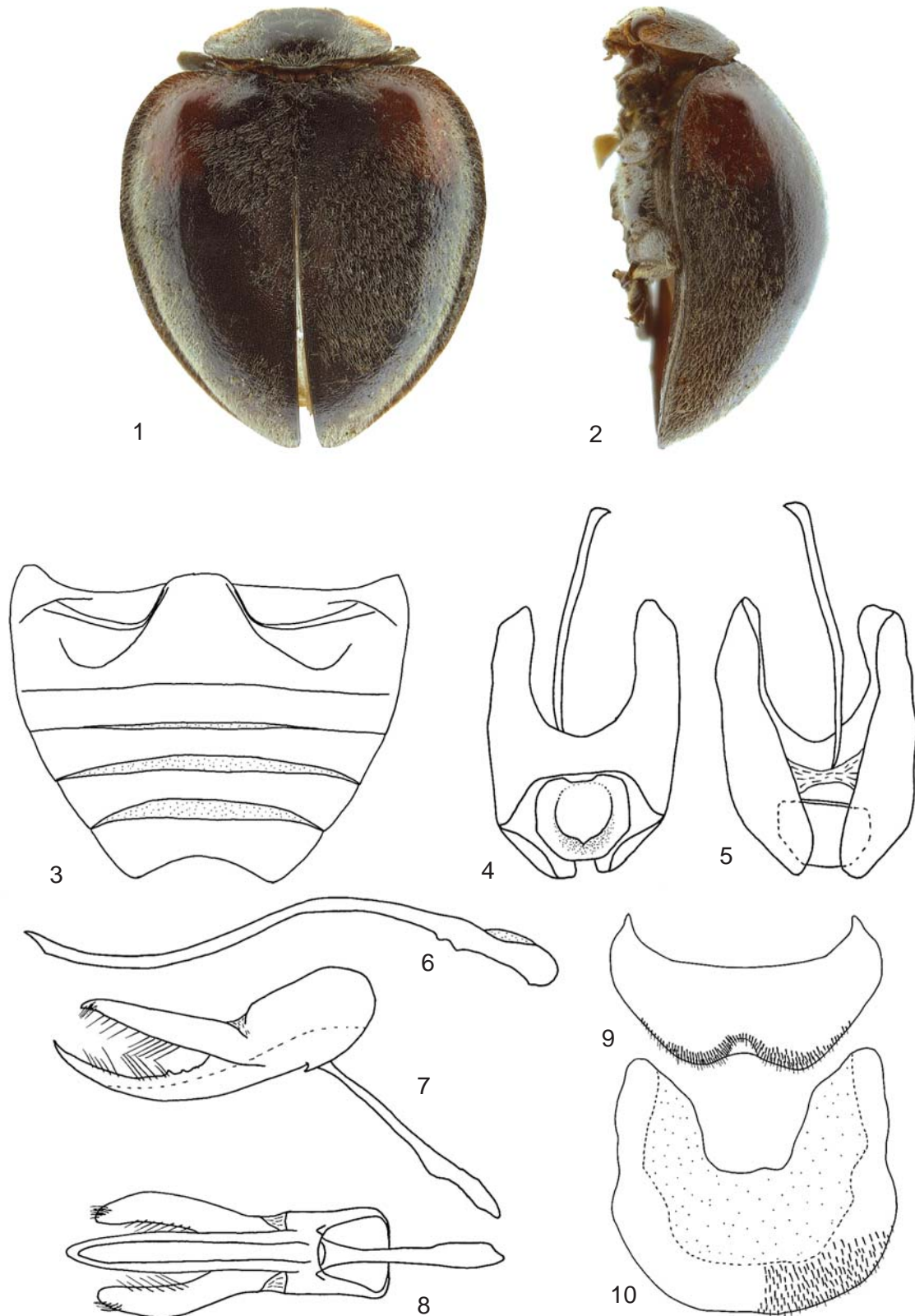
Pronotum transverse, widest at base and gradually narrowing anteriorly; anterior and hind margins not bordered; anterior angles blunt, indistinct; lateral edge smooth without submarginal carina; disc convex, finely punctate. Prothoracic hypomerion smooth; notosternal suture distinct.

Mesoventrite with anterior edge with complete raised border; mesal surface with cavity receiving prosternal process; mesoventral process about 0.5 times as wide as coxal diameter; meso-metaventral articulation with suture visible, junction straight, without internal knob. Scutellum small, triangular. Elytra confusedly, dually punctate, at base distinctly broader than pronotum; lateral margins narrow, visible from above; elytral epipleuron incomplete at apex only, concave longitudinally, without internal submarginal carina; metaventral postcoxal lines connected medially and complete laterally, straight; metaventrite with discrimen incomplete; metepimeron distinct.

Legs slender and long; trochanter small, subrectangular with small, distinct emargination for receiving the tip of tibia. Apices of femora not protruding from outer margin of elytral epipleuron. Pro- and mid femur cylindrical; hind femur weakly swollen. Protibiae cylindrical with one apical spur; mid and hind tibiae cylindrical with two apical spurs; tarsi pseudotrimerous; tarsal claw bifid, with additional large, subtriangular basal tooth.

Abdominal postcoxal lines separate medially, recurved and incomplete laterally; they slightly exceed  $\frac{1}{2}$  of the length of 1<sup>st</sup> ventrite (Fig. 3); apical margin of male ventrite V deeply and broadly emarginate (Fig. 3), 6<sup>th</sup> ventrite deeply emarginate (Fig. 9), 8<sup>th</sup> abdominal tergite rounded, large and highly sclerotized (Fig. 10).

Male terminalia and genitalia. Apodeme of male sternum IX rod-like. Tergite IX large, highly sclerotized. Tergite X subquadrate with distinct depression at the central part (Figs 4, 5). Tegmen with penis guide curved outwardly, outer surface with long setae and several tubercles basally; parameres broad, shorter than penis guide with curved apex, separated, articulated with phallobase, with moderately long setae; basal piece with two short thorns at base of tegminal strut; tegminal strut narrow, rod-like (Figs 7, 8). Penis



Figures 1–10. *Henosepilachna niaki* sp. nov. (1) habitus, dorsal; (2) habitus, lateral; (3) abdomen; (4) male genital segment, dorsal view; (5) male genital segment, ventral view; (6) penis; (7) tegmen, lateral view; (8) tegmen, inner; (9) 6th ventrite of male; (10) 8th abdominal tergite.

base without arms; penis thin, curved in shape of tilde, apex of penis pointed (Fig. 6).

Female unknown.

**Holotype**, male, "New Guinea: NE Wau, 1200 m 8.II.1966/ J. Sedlacek Collector, Bishop. Mus." (BPBM).

**Distribution**. Papua New Guinea.

## DISCUSSION

As Li and Cook wrote (1961), "One of the serious problems confronting the student [of Epilachninae] is that of nomenclature in the subfamily". Genus *Epilachna* was proposed by Chevrolat in 1837. He did not provide any description of a new genus, just listed taxa that he included. Hope (1840) designated *Coccinella borealis* Fabricius, 1775 as the type species. Redtenbacher (1844) was the first who make a short description of the genus, and therefore many researchers recognized him as an author of the name *Epilachna*. However, according to the International Code of Zoological Nomenclature, Chevrolat fulfilled all the requirements and he should be regarded as the author of the genus *Epilachna*.

In 1898 Weise proposed division of the genus *Epilachna* into two genera. He retained the name *Epilachna* for species having a basal tooth on their tarsal claws and proposed the name *Solanophila* for those species without such a basal tooth. That caused confusion because *E. borealis* do not have a basal tooth on their tarsal claws. This problem was discussed in details by Dieke (1947).

Dieke (1947) introduced another character that he recognized as helpful in dividing large genus *Epilachna* into two groups. He stated that species with a basal tooth on their tarsal claw also have sixth ventrite of female divided longitudinally. Those which do not have basal tooth have also non-divided sixth ventrite in females. Unfortunately also Dieke misinterpreted *E. borealis* as having divided sixth ventrite in females and without basal tooth. Following this confusion he decided that the shape of female ventrite is more important character than presence or absence of basal tooth on tarsal claw. He retained *E. borealis* as a type of *Epilachna* for species with divided sixth ventrite in females and for those species that have non-divided sixth ventrite he proposed a name *Afissa* (Dieke 1947).

Li and Cook (1961) restudied *E. borealis* and found that "the sixth visible abdominal sternite of the type species, *E. borealis*, is entire, having only a median, longitudinal, lightly sclerotized area but not a split". They redefined *Epilachna* as having non-divided sixth ventrite in females and without basal tooth on tarsal claw. Further they synonymized *Afissa* with *Epilachna* because the type species of *Afissa* (*E. flavicollis* Thunberg, 1781) share the same characters.

Subsequently they designated a type species for genus *Solanophila* as *E. gibbosa* Crotch, 1874 and recognized that *Epilachna* and *Solanophila* are congeneric.

Finally Li (in Li and Cook 1961) erected the genus *Henosepilachna* for species with longitudinal division of the sixth ventrite in females and with basal tooth on tarsal claw, with *H. sparsa* (Herbst, 1786) [= *Coccinella vigintioctopunctata* Fabricius, 1775] as the type species.

Kapur (1965) re-examined a female specimen of *E. borealis* and observed that the last abdominal sternite "appears to be longitudinally divided in the middle". Once again he recognized *E. borealis* as type for *Epilachna* and for species that have divided last abdominal ventrite in females, and for those without such division he follows Dieke and retained name *Afissa*.

Richards (1983) follows Kapur's interpretation of *E. borealis* but she synonymized all previous generic names with *Epilachna* because of variability of key characters. However Richards had never seen the type of *E. borealis* or probably other specimens of this species. She just simply followed Kapur.

In 1993 Li examined the type series of *E. borealis* (deposited in Zoological Museum of University of Copenhagen), designated the lectotype and replied Richards that in fact the last abdominal sternite in females is not divided and "both *Epilachna* and *Henosepilachna* must be regarded as distinct genera".

This unbelievable confusion through more than a century in interpretation of the type species of *Epilachna* pushed me to re-examine *E. borealis*. During my examination of lectotype and other specimens of *E. borealis* I found that the last abdominal sternite in females is not divided longitudinally. There is also lack of basal tooth on tarsal claw. That induces the correct interpretation of *Epilachna* by Li and Cook (1961) and *Henosepilachna* as valid genus within Epilachnini.

This is, however, clear that further taxonomic and phylogenetic studies are highly needed to check if both genera are the natural lineages.

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