Notes on the genus *Enoplocephala* Miller (Hemiptera: Reduviidae: Stenopodainae), with the description of a new species from Borneo

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**Abstract.** The Oriental assassin bug genus *Enoplocephala* Miller, 1940, is revised and redescribed. Two species are recognised: the type species, *E. perakensis* Miller, 1940, is redescribed and illustrated based on the type specimen; an additional species, *E. maculata*, new species, is described and illustrated based on one specimen from Borneo. Systematic position, distribution, and habitat of this genus are briefly discussed.

**Key words.** Heteroptera, Stenopodainae, new species, taxonomy, Borneo, Oriental Region

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**INTRODUCTION**

Stenopodainae is a relatively large group of assassin bugs, comprising about 750 species in 114 genera worldwide (Maldonado-Capriles, 1990; Gil-Santana & Oliveira, 2016). Almost all species in this subfamily are cryptically coloured, and sexual dimorphism and wing polymorphism are common within this group (Cao et al., 2011; Blinn, 2012; Ishikawa & Miyamoto, 2012). Being predacious on other arthropods, members of Stenopodainae can be found in most habitats, on trees, shrubs, and grasses, or in leaf litter and soil, and many specimens have been collected using light traps, but their biology and ecology are still largely unknown (Schuh & Slater, 1995; Weirauch et al., 2014; Gil-Santana et al., 2015).

Stenopodainae are cosmopolitan and exhibit high species diversity in the tropics (Schuh & Slater, 1995; Weirauch et al., 2014), especially in Africa and South America (Villiers, 1948, 1968; Giacchi, 1987). However, the Asian stenopodaine fauna has long been neglected. Keys for Asian Stenopodainae (Stål, 1874; Distant, 1904; Hsiao, 1977; Hsiao & Ren, 1981; Ishikawa & Miyamoto, 2012) are out-dated or incomplete, and many genera and species described by Stål (1859, 1863, 1871), Distant (1904, 1909, 1919), and Miller (1940, 1948, 1949, 1954, 1957) are lacking adequate descriptions and illustrations, indicating that comprehensive taxonomic revisions of Asian Stenopodainae are needed. Moreover, phylogenetic relationships within Stenopodainae are still poorly known due to the lack of a phylogenetic framework.

The Oriental stenopodaine genus *Enoplocephala* Miller, 1940, was established based on a single species, *Enoplocephala perakensis* Miller, 1940, from Peninsular Malaysia (Miller, 1940). Although 80 years have passed, *Enoplocephala* still remains monotypic and has virtually never been reported (Maldonado-Capriles, 1990). During our recent field expedition in Borneo, a male specimen belonging to *Enoplocephala* was collected. Further research revealed that it represents a new species, and that the generic diagnosis provided by Miller (1940) should be revised. In the present paper, the genus *Enoplocephala* is revised and redescribed, the type species, *E. perakensis*, is redescribed, and an additional species, *E. maculata*, new species, is described. Systematic position, distribution, and habitat of this genus are briefly discussed.

**MATERIAL AND METHODS**

This study is based on specimens preserved in the Natural History Museum, London, U.K. (BMNH) and the Entomological Museum of China Agricultural University, Beijing, China (CAU). Label data are copied verbatim in quotation marks (" "). Lines on the same label are separated by a backslash (\), different labels are separated by a semicolon (;), and comments on label data are provided in square brackets ([ ]).

Male genitalia were soaked in hot 10% KOH solution for approximately five minutes to remove soft tissue, rinsed in distilled water, and dissected under a Motic binocular dissecting microscope. Dissected genitalia were placed in a vial with glycerin and pinned under the corresponding specimen after examinations. Photographs were all taken using a Canon 7D Mark II digital camera with Canon micro lens EF 100 mm and MP-E 65 mm for habitus and an Olympus BX51 microscope for dissected body parts. Helicon Focus version 5.3 was used for image stacking. The distribution map was modified from a map downloaded...
from the online version of SimpleMapper (Shorthouse, 2010). Measurements were obtained using a calibrated micrometer. Morphological terminology mainly follows Lent & Wygodzinsky (1979), but we use the term “labium” instead of “rostrum”. The term “jugum” used by Lent & Wygodzinsky (1979) is equivalent to “mandibular plate” used in the present paper. The visible labial segments are numbered as II to IV, given that the first segment is lost or fused into the head capsule in most Reduviidae (Weirauch, 2008a; Schuh et al., 2009).

**TAXONOMY**

*Enoplocephala* Miller, 1940

(Figs. 1–29)

*Enoplocephala* Miller, 1940: 440.

**Type species.** *Enoplocephala perakensis* Miller, 1940, by original designation.

**Revised diagnosis.** Macropterous; body surface covered with scale-like setae arising from wart-like tubercles; head slightly or distinctly shorter than pronotum, with antecocular part about twice as long as postocular; mandibular plates conical, produced; antenniferous tubercle with a spine-like process; bucculae prominent anteroventrally; antennal segment I longer than head; labial segment II distinctly longer than combined length of segments III and IV; pronotum with anterolateral and humeral angles strongly produced; fore femur not thickened, without denticle, or with two tiny denticles at base; fore wing with a hexagonal cubital cell; posterolateral angles of each abdominal segment produced, making lateral outline of abdomen serrate; abdomen with a medial longitudinal ridge beneath.

**Redescription.** Macropterous male (Figs. 1–3, 9–11).

**Colouration.** Body brown to dark brown, mottled with yellowish brown spots and markings; antennae, labium, and legs lighter, with irregular blackish markings and annuli; fore wing with several faint, rounded, light spots and distinct, irregular, blackish patches in corium, clavus, and membrane; veins in corium yellowish brown.

**Structure.** Body oblong. Body surface finely rugose and densely covered with decumbent, short, scale-like setae arising from flat, rounded, wart-like tubercles (Figs. 1–3, 9–11); dorsal surface of antecocular part with a pair of longitudinal glabrous areas (Figs. 5, 12); eyes, transverse sulcus, ventral surface of postocular part, lateral and ventral surfaces of neck, ventral surface of labium, part of anterior pronotal lobe, apical process of scutellum, and both sides of meso- and metasterna glabrous; ventral surface of antecocular part and dorsal surface of neck with decumbent, short pubescence; inner and ventral surfaces of antennal segments I and II densely covered with erect setae, length of setae longer than diameter of respective segment (Figs. 6, 13); antennal segments III and IV densely covered with suberect, short setae interspersed with several erect, long setae; apex of labial segment II and full length of segment III with sparse, erect, long setae; lateral margins of stridulatory sulcus with
Figs. 5–8. Enoplocephala perakensis Miller, 1940, holotype, male. 5, 6, anterior part of body; 7, body habitus; 8, posterior part of body. 5, 8, dorsal view; 6, lateral view; 7, ventral view. Scale bars = 3.00 mm.

erect, short setae; tarsi and apical two-thirds of tibiae with decumbent, long, stiff setae arising from small tubercles.

Head (Figs. 5–7, 12–14) elongate, slightly or distinctly shorter than pronotum; anteocular part parallel-sided in dorsal view, about twice as long as postocular; mandibular plates conical, produced, nearly parallel to each other; antenniferous tubercle small, with a long, spine-like process (Figs. 5, 6, 12, 13); bucculae strongly prominent anterodistally (Figs. 6, 13, 15); postocular part gradually narrowed posteriorly, with a deep, longitudinal sulcus between ocelli and a pair of blunt tubercles on posterior margin of head. Eyes distinctly protruding laterally, oval in lateral view, dorsal margin remote from vertex and ventral margin distinctly surpassing ventral surface of head (Figs. 6, 13). Ocelli large, protruding dorsally (Figs. 5, 6, 12, 13). Antennal segment I thickest, slightly longer than head, segment II slender, longer than segment I, segments III and IV gracile, very short, subequal to each other in length. Labium (Figs. 6, 13) curved, labial segment II distinctly longer than combined length of remaining segments, segment III robust, segment IV tapering. Neck distinctly separated from postocular part of head.
Pronotum (Figs. 5, 12) trapezoidal, wider than long; anterolateral angles produced into a pair of long, pointed spines (Figs. 5, 7, 12, 14); anterior pronotal lobe distinctly shorter than posterior lobe, with a medial longitudinal sulcus which is shallow on apical half and much deeper on basal half; posterior pronotal lobe with a pair of submedial carinae reaching posterior margin; lateral margins of pronotum slightly emarginated at transverse sulcus, with a pair of tubercles on both sides before transverse sulcus; humeral angles spine-shaped, strongly protruding laterally (Fig. 5) or posterolaterally (Fig. 12). Anterolateral angles of prosternum produced into a pair of moderately long, pointed spines (Figs. 6, 13); fore acetabulum open. Scutellum (Figs. 5, 12) subtriangular, with a wide, longitudinal, median furrow on disc; apical process of scutellum obtuse, slightly curved upwards. Meso- and metapleura (Figs. 6, 13) each with a ridge dorsally and anterodorsally, respectively. Meso sternum (Figs. 7, 14) with a wide, longitudinal, median ridge between mid coxae. Legs long. Femora slightly nodular at apex; fore femur not thickened, without denticle (Figs. 5, 7), or with two tiny denticles at base of ventral surface (Figs. 12, 14). Fore tibia straight, with tibial comb at apex. Tarsi three-segmented, with tarsomere I shortest, tarsomere III subequal to combined length of remaining tarsomeres. Claws simple. Fossula spongiosa absent. Fore wing (Figs. 8, 16) slightly surpassing apex of abdomen in midline, but not reaching apex of produced portion of abdomen; corium with a hexagonal cubital cell; R and M fused at basal third and separated at apical two-thirds; Cu strongly curved before separation point of R and M; membrane with a basal, subtriangular spot and a subapical, irregular patch occupying area between Cu and claval suture; blackish patch between M and Cu relatively broad (Figs. 1, 8); exocorium with an elongate, blackish patch medially; medial border of Pcu with a narrow, elongate, blackish spot; clavus with an elongate, blackish patch along its medial border; membrane with a basal, subtriangular spot and a subapical, irregular patch in outer cell, and a narrow, elongate, blackish spot near base of M in membrane (Fig. 8). Abdomen mottled with yellowish brown; basal two-thirds of all femora each with a blackish, irregular, incomplete annulus (Figs. 1–3); basal and subapical parts of fore and mid tibiae each with a blackish annulus (Figs. 1–3). Fore wing with blackish patches in corium occupying whole area of cubital cell and areas between R+M and Cu (paler), M and Cu, Cu and claval suture, and R and M+Cu (Fig. 8); blackish patch between M and Cu relatively broad (Figs. 1, 8); exocorium with an elongate, blackish patch medially; medial border of Pcu with a narrow, elongate, blackish spot; clavus with an elongate, blackish patch along its medial border; membrane with a basal, subtriangular spot and a subapical, irregular patch in outer cell, and a narrow, elongate, blackish spot near base of M in membrane (Fig. 8). Abdomen mottled with yellowish brown; basal two-thirds of lateral margins of each abdominal segment yellowish brown; posterolateral angles darker (Fig. 8).

Structure. Body shape and vestiture as in generic description. Head (Figs. 5–7) 1.43 times as long as width across eyes, slightly shorter than pronotum; ventral margin of antecocular part nearly straight in lateral view (Fig. 6); mandibular plates slightly produced anterolaterally (Fig. 5); spine-like process of antenniferous tubercle long, suberect, apically acute. Pronotum (Figs. 5, 6) 1.45 times wider than its length; spines of anterolateral angles straight, suberect; tubercles on lateral pronotal margins relatively acute; humeral angles strongly protruding laterally (Fig. 5); posterior pronotal margin slightly concave. Ventral surface of fore trochanter and femur without denticle and spine. Abdomen 1.56 times as long as its greatest width.

Diversity and distribution. Two species from the Oriental Region (Fig. 29).

**Enoplocephala perakensis** Miller, 1940
(Figs. 1–8, 29)

Enoplocephala perakensis Miller, 1940: 441.

**Holotype.** Male. Malaysia, Perak, BMNH.

**Diagnosis.** Body 18 mm in length, dark brown, mottled with yellowish brown spots and markings; head slightly shorter than pronotum, about 1.4 times longer than width across eyes; process of antenniferous tubercle long, acute, suberect; spines of anterolateral angles of pronotum straight, suberect; humeral angles protruding laterally; fore wing with blackish patch occupying area between Cu and claval suture; blackish patch between M and Cu broad.

**Redescription.** Macropterous male (Figs. 1–3). **Colouration.** Body dark brown. Head with ventrolateral and ventral surfaces darker; ocelli yellowish brown; antennal segments I and II brown, segment I mottled with black on basal third and apical third, and with two narrow, incomplete, blackish annuli medially (Fig. 5), segment II black on base, medial third, and apex (Fig. 6), segment III greyish brown; labium brown, with dorsal and lateral surfaces of apical half of segment II and apical third of segment III black (Figs. 6, 7). Pronotum with apical half of spines of anterolateral angles, tubercles on lateral margins, submedian carinae, and spines of humeral angles lighter (Fig. 5). Legs brown; basal, medial, and subapical parts of all femora each with a blackish, irregular, incomplete annulus (Figs. 1–3); basal and subapical parts of fore and mid tibiae each with a blackish annulus (Figs. 1–3). Fore wing with blackish patches in corium occupying whole area of cubital cell and areas between R+M and Cu (paler), M and Cu, Cu and claval suture, and R and M+Cu (Fig. 8); blackish patch between M and Cu relatively broad (Figs. 1, 8); exocorium with an elongate, blackish patch medially; medial border of Pcu with a narrow, elongate, blackish spot; clavus with an elongate, blackish patch along its medial border; membrane with a basal, subtriangular spot and a subapical, irregular patch in outer cell, and a narrow, elongate, blackish spot near base of M in membrane (Fig. 8). Abdomen mottled with yellowish brown; basal two-thirds of lateral margins of each abdominal segment yellowish brown; posterolateral angles darker (Fig. 8).

Male genitalia. Pygophore (Figs. 20–22) oblong, simple in shape. Parameres (Figs. 23–25) club-shaped, bent, apically rounded, with a subapical process on inner surface.

**Measurements** [in mm, male (n = 1, holotype)]. Length of body (to apex of abdomen) = 18.00; length of head =
3.00; length of anteocular part = 1.65; length of postocular part = 0.60; width across eyes = 2.10; interocular space = 0.80; intercellar space = 0.20; length of antennal segments I–IV = 3.30, 3.65, 0.90, ?; length of labial segments II–IV = 2.10, 0.85, 0.60; length of pronotum = 3.30; length of anterior pronotal lobe = 1.30; length of posterior pronotal lobe = 2.00; width of anterior pronotal lobe = 2.10; width of posterior pronotal lobe = 4.80; median length of scutellum = 1.60; basal width of scutellum = 1.40; length of fore femur, tibia, tarsus = 6.00, 6.20, 1.10; length of mid femur, tibia, tarsus = 6.30, 7.40, 1.10; length of hind femur, tibia, tarsus = 9.00, ?, ?; length of fore wing = 12.40; length of abdomen = 10.20; greatest width of abdomen = 6.55.

**Type material examined.** Holotype (male): red-margined holotype disc; red-margined type disc; “male sex symbol”; “PERAK \ DOHERTY”; “Distant Coll \ 1911-383”; “Enoplocephala [Miller’s handwriting] \ perakensis [Miller’s handwriting] \ gen. nov. sp. n. [Miller’s handwriting] \ det. N.C.E.Miller 193 [printed] 8 [Miller’s handwriting]”; “NHMUK 013587199”. Pinned specimen, fourth antennal segments of both antennae, tarsus of left fore leg, tibiae and tarsi of left mid leg and both hind legs missing, male genitalia taken off and glued on card pinned with the specimen (BMNH).

**Distribution.** Malaysia (Perak).

**Remarks.** *Enoplocephala perakensis* was described by Miller (1940) based on the holotype from Distant’s collection. After our examination of the holotype, it can be declared that Miller’s illustrations (see Miller, 1940: 441) are not completely accurate, especially for the blackish patches on the fore wing. The “dissected” male genitalia of the specimen are glued on a card, pinned with the specimen. Morphological information on the male genitalia of this species is obtained from our observation on the specimen, and Miller’s illustration, thus the phallus of this species remains unknown. Data of the specimen labels (Fig. 4) are scarce, and no additional specimen is available, resulting in our limited knowledge of this species.

In his worldwide catalogue of Reduviidae, Maldonado-Capriles (1990) documented the type locality of this species incorrectly as “Selangor”.

**Enoplocephala maculata, new species**

(Figs. 9–29)

**Diagnosis.** Body 17.6 mm in length, brown, mottled with yellowish brown spots and markings; head distinctly shorter than pronotum, about 1.3 times longer than width across eyes; process of antenniferous tubercle relatively short, blunt, nearly horizontal; spines of anterolateral angles of pronotum curved, nearly horizontal; humeral angles protruding...
Description. Macropterous male (Figs. 9–11). Colouration. Body brown. Head with glabrous areas of anteocular part, ventrolateral and ventral surfaces darker; dorsum of head with several blackish markings; antennal segments I and II yellowish brown, segment I mottled with black on basal third and apical third, and with two narrow, incomplete, blackish annuli medially (Figs. 9, 13), segment II black on base, medial third, and apex (Figs. 9, 13); segments III and IV greyish brown; labium yellowish brown, with basal spots and apical half (except apex) of segment II black, segment III mottled with black, segment IV darker (Fig. 13). Pronotum with spines of anterolateral angles, medial carinae and spines of humeral angles yellowish brown; propleuron and prosternum darker. Apical process of scutellum yellowish brown. Legs yellowish brown; coxae dark brown; each trochanter with a
dark brown spot at base; basal, medial, and subapical parts of all femora each with an irregular, incomplete, blackish annulus (Figs. 9, 11); each tibia with a narrow, basal, blackish annulus and a broad, subbasal, blackish annulus (Figs. 9, 11); apical two-thirds of fore tibia, apical half of mid tibia, apex of hind tibia darker; tarsomeres I and II brown, tarsomere III and claws darker. Fore wing with blackish patches in corium, clavus and membrane similar with that of *E. perakensis*, but without patch between Cu and claval suture, and patches in outer cell of membrane much smaller; blackish patch between M and Cu acuminate (Figs. 9, 16). Anterolateral and posterolateral angles of each abdominal segment yellowish brown (Fig. 17); lateral margins of each segment with a reddish spot medially (Fig. 17); ventral surface of abdomen mottled with several light spots (Fig. 18).
Structure. Body shape and vestiture as in generic description. Head (Figs. 12–14) 1.29 times as long as width across eyes, distinctly shorter than pronotum; ventral margin of antennal part strongly concave in lateral view (Fig. 13); mandibular plates produced anteriorly, nearly parallel to each other; spine-like process of antenniferous tubercle relatively short, nearly horizontal, apically blunt (Figs. 12, 13). Pronotum (Figs. 12, 13) 1.41 times wider than its length; spines of anterolateral angles curved outwardly, nearly horizontal; tubercles on lateral pronotal margins blunt, wart-like; humeral angles spine-shaped, strongly protruding posterolaterally (Fig. 12); posterior pronotal margin nearly straight. Scutellum (to apex of apical process) 1.06 times as broad as its basal width, lateral margins convex, base of apical process distinctly constricted (Fig. 12). Ventral surface of fore trochanter with one (right) or three (left) small denticles; fore femur with two tiny denticles at base of ventral surface (Figs. 12, 14, 15). Abdomen 1.61 times as long as its greatest width.

Male genitalia. Pygophore (Figs. 20–22) oblong, posterior part of pygophore expanded, posterior margin slightly concave at middle; median process (Fig. 22) short, stout, apically rounded. Parameres (Figs. 23–25) angularly bent near middle, with apical half covered with dense setae; subapical process lamellate. Phallus as shown in Figs. 26–28; articulatory apparatus thick; basal plates relatively narrow, basal plate bridge thin and short, with two pairs of capitate processes; pedicel thin, slightly longer than basal plates; phallobase elongate oval; dorsal sclerotised plate. (Figs. 26, 27) wrinkled at apical half and slightly incised at apex; struts (Figs. 26–28) nearly parallel to each other, apical portion converged and fused with dorsal sclerotised plate.

Measurements [in mm, male (n = 1, holotype)]. Length of body (to apex of abdomen) = 17.60; length of head = 2.70; length of antennal part = 1.35; length of postocular part = 0.55; width across eyes = 2.10; interocular space = 0.90; interocellar space = 0.40; length of antennal segments I–IV = 3.15, 3.85, 0.80, 0.90; length of labial segments II–IV = 1.70, 0.70, 0.50; length of pronotum = 3.20; length of anterior pronotal lobe = 1.20; length of posterior pronotal lobe = 2.00; width of anterior pronotal lobe = 2.25; width of posterior pronotal lobe = 4.50; median length of scutellum = 1.85; basal width of scutellum = 1.75; length of fore femur, tibia, tarsus = 4.55, 5.25, 0.95; length of mid femur, tibia, tarsus = 5.15, 5.80, 0.95; length of hind femur, tibia, tarsus = 7.15, 10.20, 1.15; length of fore wing = 11.75; length of abdomen = 9.90; greatest width of abdomen = 6.15.

Type material. Holotype (male): “Malaysia, Sabah \ Borneo Jungle Girl Camp \ 2017-II- [printed] 4 [handwritten] \ leg. Liu Yingqi \ Ent. Mus. CAU. Beijing”; “HOLOTYPE [printed] \ Enoplocephala [handwritten] \ maculata sp. n. [handwritten] \ Det. CHEN Zhuo [printed]” (CAU).

Etymology. The specific epithet is derived from Latin ‘maculatus’ (meaning spotted), referring to the mottled body colour of the new species.

Distribution. Malaysia (Sabah).

DISCUSSION

Comparative notes. Enoplocephala maculata, new species, differs from its only known congener, E. perakensis, in general body shape and the following characters: body brown, mottled with yellowish brown spots and markings (vs. E. perakensis being much darker); head distinctly shorter than pronotum (vs. slightly shorter than pronotum in E. perakensis); ventral margin of antennal part strongly concave in lateral view (vs. nearly straight in E. perakensis); process of antenniferous tubercle relatively blunt and nearly horizontal (vs. such process much larger, sharper, and suberect in E. perakensis); spines of anterolateral pronotal angles slightly curved and nearly horizontal (vs. nearly straight and suberect in E. perakensis); humeral angles protruding posterolaterally (vs. protruding laterally in E. perakensis); fore trochanter and femur with tiny but distinct denticles on ventral surface (vs. although coarse, no such denticle can be observed in E. perakensis); fore wing without blackish patch between Cu and claval suture, and patch between R and M+Cu much paler (vs. areas between Cu and claval suture, and R and M+Cu, with distinct blackish patch in E. perakensis); blackish patch between M and Cu acuminate (vs. relatively broad in E. perakensis).

Systematic position of Enoplocephala. The diagnostic characters of Enoplocephala, provided by Miller (1940), are revised and listed above. This unique set of characters distinguishes Enoplocephala from all other genera of Stenopodainae. The primary diagnostic feature is the conspicuously prominent bucculae while the strongly produced anterolateral pronotal angles are uncommon in most other Stenopodinae genera, particularly in the Oriental fauna. Although such characters justify Enoplocephala as a distinctive genus, there remain difficulties on the phylogenetic position of the genus.

In the Oriental Region, Enoplocephala is most similar to Argolis Stål, 1861, Burdesanes Distant, 1909, Neoklugia Distant, 1919, Oncocephalus Klug, 1830, and Stirogaster Jakovlev, 1874, all sharing the following characters: head posteriorly narrowed, eyes oval or reniform, ocelli elevated, first two antennal segments of male covered with long setae, scutellum with apical process, fore wing with cubital cell, and ventral surface of abdomen with a medial longitudinal ridge. Enoplocephala can be separated from these genera by: (1) the prominent bucculae (vs. bucculae not produced in other genera); (2) labial segment I distinctly longer than the length of the remaining segments combined (vs. labial segment I subequal to segment II in other genera); (3) the strongly produced anterolateral pronotal angles (vs. such angles not produced, or produced but not surpassing the posterior margin of the head in other genera). Furthermore, Enoplocephala also differs from Oncocephalus and Stirogaster by its unthickened and unarmed fore femur (vs. fore femur thickened and with rows of denticles beneath in the latter two genera). This group of genera usually exhibits obvious sexual dimorphism: females are almost always larger than males, and different from the males with respect to antennal setation, shape of head, size of eye, and wing development.
Fig. 29. Known distribution of Enoplocephala species.

Distribution and habitat of Enoplocephala. The previously described species of Enoplocephala, E. perakensis, was described based on a single specimen from Perak, on the west coast of the Malay Peninsula. However, label data of this specimen are very limited, and there is no other available specimen, thus we do not know anything about its habitat, collecting season, and collecting method. The discovery of E. maculata, new species, considerably expands the known distribution range of the genus to northeastern Borneo (Fig. 29). The holotype of the new species was collected at an altitude of about 1,200 metres, by using light traps located in tropical rainforest on Mt. Trus Madi. The two species of Enoplocephala are very similar externally, indicating that they diverged into different species in the relatively recent past, perhaps in connection with the glacial-interglacial cycles redistricting the boundaries of land parts of the Sundaland during the Quaternary which isolated Borneo from the Malay Peninsula (Voris, 2000; Sathiamurthy & Voris, 2006).

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