

## Four new taxa of *Micronecta* from the Philippines (Insecta: Heteroptera: Micronectidae)

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### Abstract

*Micronecta* species from the Philippines are studied. *Micronecta abra* sp.n. from Palawan, *M. melanopardala melanopardala* sp.n. from Luzon, *M. melanopardala adiaphana* ssp.n. from Leyte, and *M. pacheta* sp.n. from Samar are described as new. *Micronecta skutalis* NIESER & CHEN, 1999 is first recorded from the Philippines, Palawan. *Micronecta lenticularis hungerfordi* CHEN, 1960 is raised again to the status of full species.

**Key words:** Heteroptera, Micronectidae, *Micronecta*, new species, new record, new status, Philippines, Palawan, Luzon, Samar, Leyte

### Zusammenfassung

*Micronecta*-Arten von den Philippinen werden untersucht. *Micronecta abra* sp.n. von Palawan, *M. melanopardala melanopardala* sp.n. von Luzon, *M. melanopardala adiaphana* ssp.n. von Leyte und *M. pacheta* sp.n. von Samar werden neu beschrieben. *Micronecta skutalis* NIESER & CHEN, 1999 wird erstmals von den Philippinen, Palawan, nachgewiesen. *Micronecta lenticularis hungerfordi* CHEN, 1960 wird wieder in den Artstatus erhoben.

### Introduction

The Micronectidae of the Philippines have hardly been studied. There are three species recorded, but the identity of two of these is an enigma. *Micronecta proxima* (LETHIERRY, 1877) was described from Manila. It is probably a synonym of *Micronecta quadristrigata* BREDDIN, 1905, the only species recorded with certainty, which is widespread in the Philippines (POLHEMUS & REISEN 1976, NIESER & CHEN 1999). The identity of *Micronecta vanduzeei* KIRKALDY, 1905 described from Negros is totally unclear. According to WRÓBLEWSKI (1968) the description is based on a brachypterous form, so it cannot be *M. quadristrigata* which is always macropterous. As there are doubtless many more undescribed or unrecorded species to be found, we refrain for the moment from presenting a key. *Micronecta quadristrigata* is easily separated from other *Micronecta* recorded from the Philippines by its size (body length 2.2 - 2.9 mm) combined with the typical curved free lobe on left part of tergite VIII (Fig. 15, based on a specimen from Indonesia, Java, Bogor, the type locality).

### Methods and Material

All measurements are in millimetres and presented as the mean of five specimens of each sex taken from the sample containing the holotype. More important measurements

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are followed by the standard deviation (s) based on sample. The measurement of the holotype is in some cases given between brackets {} after the standard deviation. Leg measurements are presented in Table 1. Length and width without specification refers to the body length and its maximal width, measured with the main body axes horizontal. Length and width of body parts are the maximal values measured, in case of leg segments in ventral view, for other parts in dorsal view. Width of head is measured across eyes; width of an eye is measured along its posterior border. A special ratio is the ocular index which is calculated as two times the synthlipsis (S) divided by the width of head (D) minus the synthlipsis, in formula  $2S/(D-S)$ ; it buffers against an imperfect horizontal orientation of the head when measuring.

Drawings were made with a camera lucida. Habitus drawings at a magnification of about 25x under a binocular microscope, structural details from microscopic slides at magnifications of 200x or 400x under a monocular microscope.

Examined specimens are dry-mounted and glued on cardboards.

### Repository of specimens:

CZVA	Coll. H. & S.V. Zettel, Vienna, Austria
NCTN	Coll. N. Nieser, Tiel, The Netherlands
NHMW	Natural History Museum Vienna, Austria
UPLB	Museum of Natural History, University of the Philippines Los Baños, Laguna, Philippines

## Systematic part

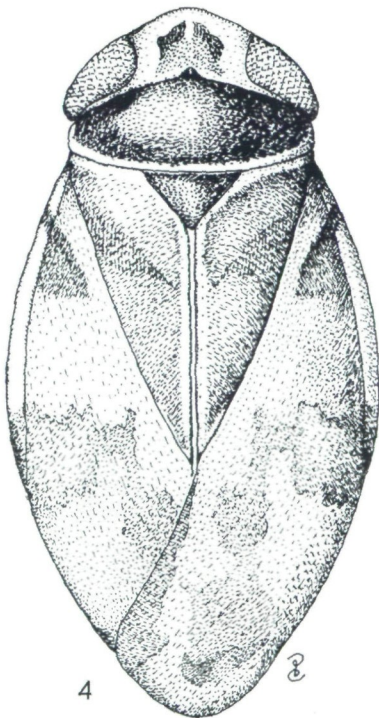
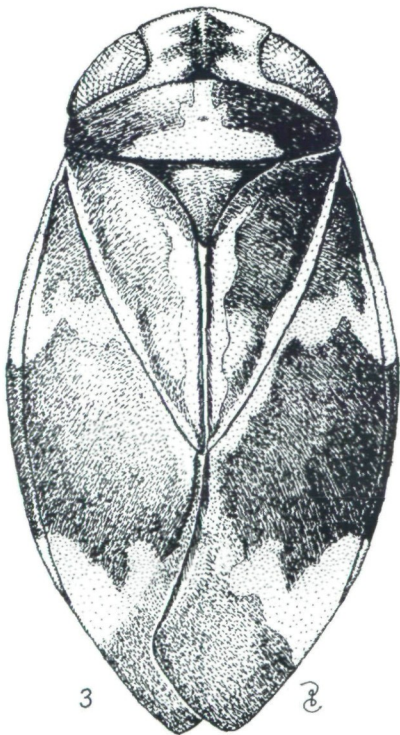
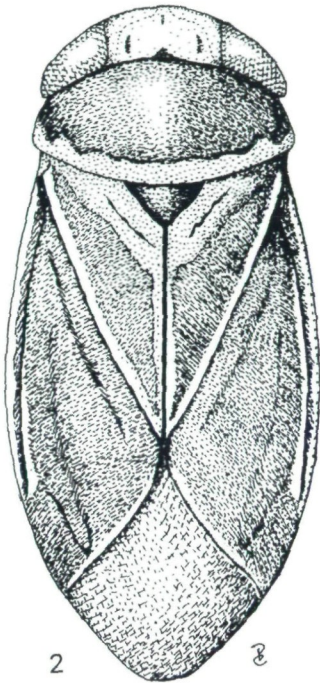
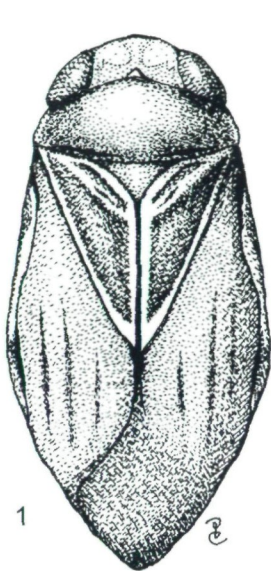
### *Micronecta abra* sp.n. (Figs. 1, 5 - 14)

**Type material:** **Holotype**, macropterous male, with apex of abdomen and genitalia glued separately on a cardboard (NHMW); **PHILIPPINES**: Palawan, 10 km NE Quezon, Tumarbon Falls, 3.-4.IV.1994, leg. H. Zettel (58). **Paratypes**: same data as holotype, 13 ♂♂ 5 ♀♀ all macropterous (NHMW, UPLB, 3 ♂♂ 2 ♀♀ NCTN).

**Description** (based on macropterous specimens): Generally a small, brown, parallel-sided species (Fig. 1). Dimensions: Length ♂ 1.48, s 0.023 {1.50}, ♀ 1.48, 0.038; width ♂ 0.71, 0.015 {0.72}, ♀ 0.70, 0.011; width of head ♂ 0.55, 0.018 {0.54}, ♀ 0.55, 0.020; synthlipsis ♂ 0.25, 0.009 {0.25}, ♀ 0.26, 0.011; width of eye ♂ 0.17, 0.009 {0.16}, ♀ 0.16, 0.012; width of pronotum ♂ 0.60, 0.019 {0.59}, ♀ 0.59, 0.016; ocular index ♂ 1.72, 0.009 {1.72}, ♀ 1.75, 0.21.

**Colour:** Head yellow, frons beneath the eyes with a castaneous mark, rostrum blackish, eyes grey. Pronotum medium brown without markings except for yellowish lateral angles and posterior margin indistinctly yellowish. Scutellum medium brown. Hemelytra medium brown with the usual hyaline stripes at base of clavus and base of membrane of right hemelytron; costal margin and embolium yellow, costal margin variably

Figs. 1 - 4: Habitus of *Micronecta* spp. dorsal view, legs omitted: (1) *M. abra* sp.n., holotype male, length 1.50 mm; (2) *M. pacheta* sp.n., holotype male, length 1.92 mm; (3) *M. melanopardala melanopardala* sp.n., holotype male, length 1.96 mm; (4) *M. melanopardala adiaphana* sp.n., holotype male, length 1.95 mm.



infuscated, basal quarter of embolium blackish. Clavus with yellowish margins. Corium with four longitudinal stripes in posterior half. Apical half of right membrane castaneous. Venter dark brown to grey, metasternal xiphus, medial area of thoracic venter and apex of abdominal venter somewhat lighter. Legs yellowish.

Dorsal surface smooth and shiny, hemielytra, except for apical part of membrane, rather densely beset with small spines. Ratio length/width of body 2.10. Head slightly narrower than pronotum, synthlipsis 1.5 times width of eye. Pronotum dorsally convex, 2.6 - 2.7 times as wide as long. Spines laterally on abdominal segments: V 2 short, 1 long; VI 2 short, 2 long; VII 2 short, 2 long; VIII 4 short, 2 very long, hair-like. Measurements of leg segments see Table 1.

Male: Forefemur (Fig. 10) with two short spines in basal third, one spine dorsally in apical third and two spines apically. Foretibia with one subapical spine ventrally and two apical spines; pala with three long hairs dorsally, dorsal palmar row consisting of about 12 short bristles and one apically somewhat longer and thicker bristle (Fig. 11); ventral palmar row with about 17 bristles, the penultimate bristle distinctly thicker than the others. Claw (Fig. 11) simple, narrowly clavate. Prestigilar flap (Fig. 12) with sharp medio-caudal angle; strigil elongate with about 85 teeth in one row (Figs. 7, 8). Abdominal sternite VII with two long bristles, its submedial caudal lobe well developed with acute apex (Fig. 9). Free lobe on left part of tergite VIII nearly parallel-sided, medio-caudal angle broadly rounded (Fig. 14) lateral margin with about 10 bristles in one row. Right paramere apically expanded into short hook (Fig. 5); pars stridens with 7 - 8 ribs. Left paramere with finger-like shaft with scaly structures on its middle part (Fig. 6).

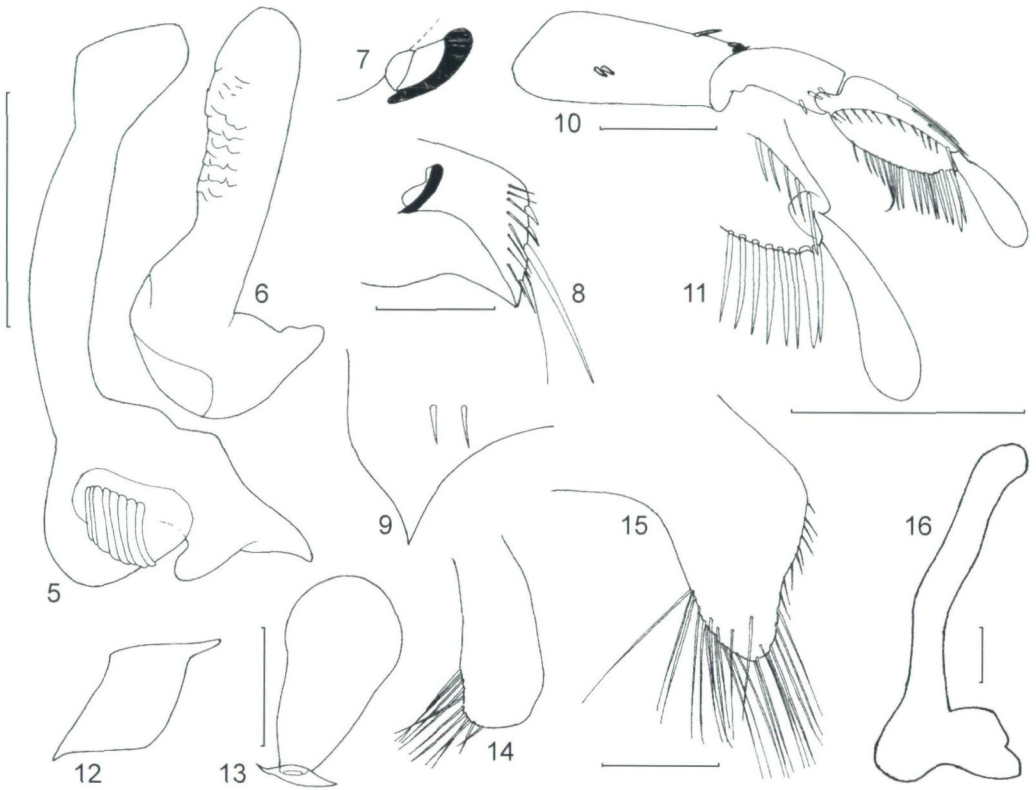
Female: Spines and bristles of foreleg essentially as in male. Receptaculum seminis mushroom-shaped (Fig. 13).

**Comparative notes:** The right paramere, with its apex forming a short hook, reminds of *Micronecta wui* LUNDBLAD, 1933, which is widespread in temperate east Asia (WRÓBLEWSKI 1962). However, *M. wui* has much finer ribs on pars stridens and a small but distinct projection apically on the left paramere, which is lacking in *M. abra* sp.n. In addition, *M. wui* has four rather weak larger bristles on sternite VII and is usually larger, with a length of about 2 mm, but Lundblad's original specimens were very small, about 1.4 mm. Other species have the apical hook of the right paramere much longer as in *M. anatolica* LINDBERG, 1922, which is widespread from Arabia and Asia Minor through India to Vietnam (WRÓBLEWSKI 1968), or have no hook at all. *Micronecta pacheta* sp.n. from Samar in the Philippines has a similar body shape and lack of distinct markings on hemielytra. It is larger, body length 1.9 - 2.0 mm, the right paramere of the male is only slightly swollen apically (Fig. 38), and the receptaculum seminis is urn-shaped (Fig. 48).

**Etymology:** Abros (Greek adjective meaning coarse) referring to the coarse ribs on pars stridens of right paramere.

### *Micronecta melanopardala melanopardala* sp.n. (Figs. 3, 17 - 27)

**Type material:** **Holotype** macropterous male (UPLB): PHILIPPINES, Luzon, Camarines Sur, Pili, Buncao, Caririga Creek, 1.II.2002, leg. H. Zettel (301). **Paratypes:** same data as holotype, 4 ♂♂ 14 ♀♀ (NHMW, UPLB, CZVA 2 ♂♂ 4 ♀♀ NCTN); same, Buncao, Himaao Creek, 1.II.2002, leg. H. Zettel (301), 3 ♂♂, 1 ♀ (CZVA, 1 ♂ NCTN).



Figs. 5 - 16: (5 - 14) *Micronecta abra* sp.n., paratypes, (5 - 12, 14) male, (13) female: (5) right paramere, (6) left paramere, (7) strigil, (8) right part of abdominal tergite VI, (9) median lobe of abdominal sternite VII, (10) foreleg, (11) apex of pala, (12) prestrigilar flap, (13) receptaculum seminis, (14) free lobe of left part of tergite VIII; (15) *Micronecta quadristrigata*, free lobe of left part of tergite VIII; (16) *Micronecta skutalis*, right paramere; scales = 0.1 mm.

**Description** (based on macropterous specimens): Generally a rather small, elongate oval species with extensive dark markings dorsally. Dimensions: Length ♂ 1.97, s 0.103 {1.96}, ♀ 1.99, 0.065; width ♂ 1.06, 0.034 {1.06}, ♀ 1.06, 0.029; width of head ♂ 0.76, 0.016 {0.75}, ♀ 0.77, 0.024; synthipsis ♂ 0.31, 0.005 {0.31}, ♀ 0.31, 0.008; width of eye ♂ 0.22, 0.011 {0.22}, ♀ 0.23, 0.013; width of pronotum ♂ 0.77, 0.052 {0.75}, ♀ 0.81, 0.022; ocular index ♂ 1.34, 0.051 {1.41}, ♀ 1.33, 0.059.

**Colour** (Fig. 3): In dorsal view, vertex yellow with median brown patch, in frontal view, rostrum and frons beneath eyes dark brown to blackish, black area extending dorsad to halfway between eyes leaving only narrow lateral strips yellow; eyes medium brown to grey. Pronotum dark brown with median triangular yellow spot, diverging posteriorly. Scutellum dark brown to blackish. Hemelytra shiny, dark brown to blackish with a, sometimes more or less interrupted, yellow transverse band at the level of caudal half of clavus; in addition apex of corium yellow; the usual hyaline stripes at base of clavus and base of membrane of right hemelytron indistinct. Venter greyish. Legs yellowish, hind femur and basal part of fore- and middle femur brown.



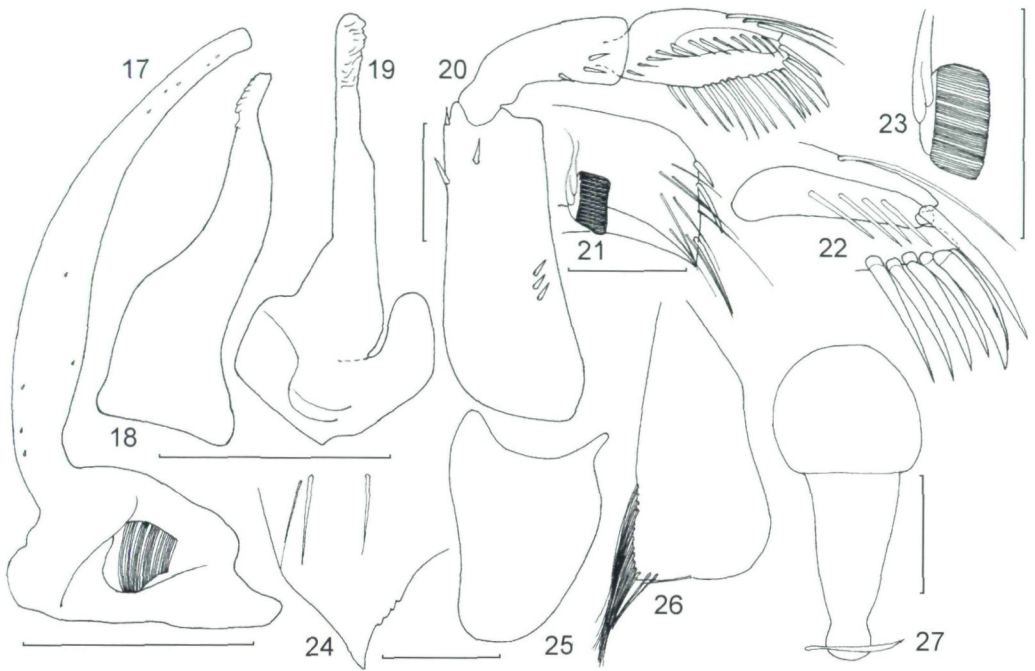
Dorsal surface smooth and shiny, hemielytra beset with small spines situated in small pits. Ratio length/width of body 1.9 (1.98/1.06). Head varying from slightly narrower to very slightly wider than pronotum, synthlipsis 1.3 - 1.4 times width of eye. Pronotum dorsally varying from rather flat to distinctly convex, 2.9 - 3.0 times as wide as long. Spines laterally on abdominal segments: V 1 or 2 short, 1 long; VI 2 short, 1 long; VII 2 short, 2 long; VIII 5 short, 2 very long, hair-like. Measurements of leg segments see Table 1.

Male: Forefemur (Fig. 20) with two to five short spines in basal third, the number may vary between femora of the same specimen, and three short spines in the apico-dorsal area. Foretibia with three spines in apical third; pala with two to three long hairs dorsally, dorsal palmar row consisting of about 13 - 15 short bristles and one apically distinctly longer and somewhat thicker bristle, ventral palmar row consisting of about 14 - 15 bristles of which the penultimate one distally is distinctly thicker (Fig. 22). Claw (Fig. 22) a simple strap, wider apically than at base. Prestrigilar flap (Fig. 25) with broadly rounded mediocaudal angle; strigil (Figs. 21, 23) comparatively short and broad with about 40, rather distinct, teeth in one row. Abdominal sternite VII with two rather weak longer bristles, its submedial caudal lobe short, with acute apex, with left margin weakly serrate (Fig. 24). Free lobe on left part of tergite VIII with median margin broadly curved toward the virtually straight caudal margin (Fig. 26), lateral margin with about 15 bristles arranged in one row along margin. Right paramere narrowed at base of the narrow and elongate shaft (Fig. 17); pars stridens with about 25 ribs. Left paramere with a basally wide, apically narrowing shaft having scaly structure apically (Fig. 18); viewed at certain angles shaft looking narrow, parallel-sided (Fig. 19).

Female: Spines and bristles of foreleg essentially as in male. Receptaculum seminis mushroom-shaped (Fig. 27).

**Remark:** Although all specimens have fully developed hind wings, the development of the pronotum differs. Some specimens have the pronotum somewhat wider than the head and usually more convex dorsally than others, which have the pronotum very slightly narrower than or equally wide as the head. These latter specimens may not be able to fly in spite of their developed hind wings. Unfortunately all specimens were dry-mounted, so the status of the indirect flight muscles could not be checked.

**Comparative notes:** The dorsal colour pattern is distinctive. The only species known with a really similar pattern is *M. hungerfordi* CHEN, 1960 from Taiwan which is somewhat smaller, length 1.7 mm. The male has an entirely different left paramere with the shaft widening apically and with a short apical finger-like projection. In addition, the prestrigilar lobe of *M. hungerfordi* has a very sharp apical point which is directed medially, whereas the apex of the prestrigilar lobe of *M. melanopardala* sp.n. is rounded and directed caudally. *Micronecta transversa* CHEN & NIESER (in press), a Thai species with distinct dark marks dorsally, is smaller, mean length 1.86 mm, and only known in the brachypterous form; its pattern is a mirror image of that of *M. melanopardala* sp.n. with a dark band over the middle of the hemielytra and its base and apex light. *Micronecta maculata* NIESER (2002) from West Malaysia has less distinct dark patches on the hemielytra in a entirely different pattern and is distinctly smaller, mean length 1.3 mm. For comparison with *M. m. adiaphana* ssp.n. see below.



Figs. 17 - 27: *Micronecta melanopardala melanopardala* sp.n., paratypes, (17 - 26) male, (27) female: (17) right paramere, (18, 19) different views of left paramere, (20) foreleg, (21) right part of abdominal tergite VI, (22) apex of pala, (23) strigil, (24) median lobe of abdominal sternite VII, (25) prestigilar flap, (26) free lobe of left part of tergite VIII, (27) receptaculum seminis; scales = 0.1 mm.

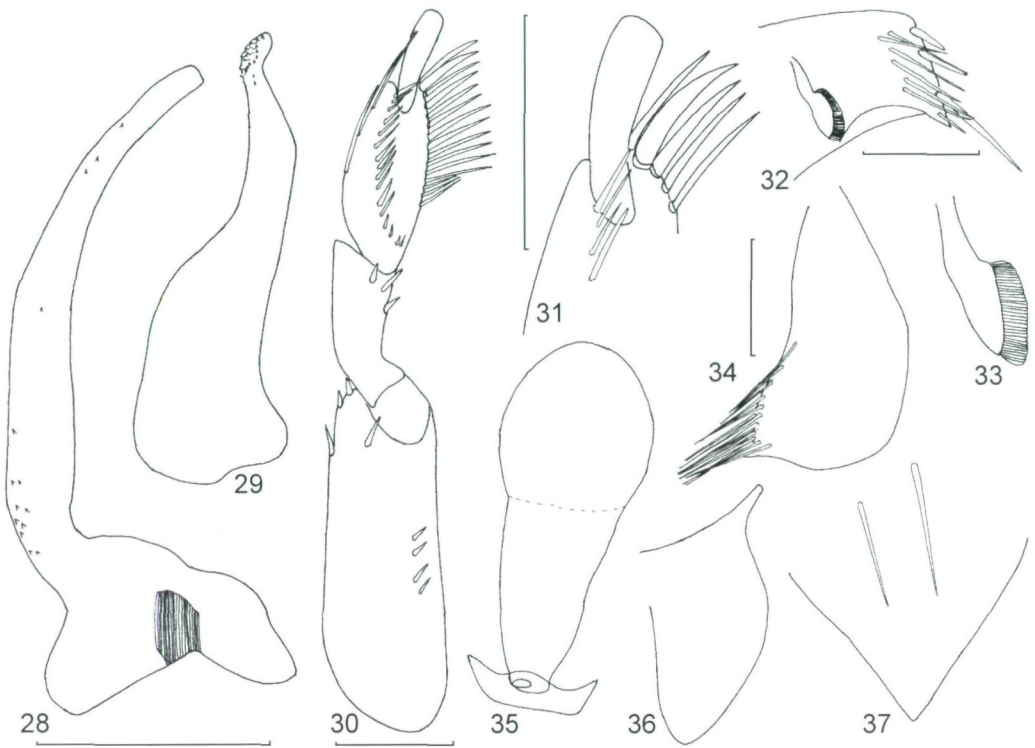
**Etymology:** *Melanopardalos* (compound greek adjective meaning "with dark spots"), referring to the extensive dark markings of this species.

**Remark on *Micronecta hungerfordi*:** WRÓBLEWSKI (1968) considers *M. hungerfordi* to be a subspecies of *M. lenticularis* L.C. CHEN, 1960. However, as both have been collected together (CHEN 1960), this status is impossible. Therefore we restore the specific status of *M. hungerfordi*.

***Micronecta melanopardala adiaphana* ssp.n. (Figs. 4, 28 - 37)**

**Type material:** **Holotype** brachypterous male with apex of abdomen and right foreleg glued separately on cardboard (UPLB): PHILIPPINES, Leyte, Hilusig, rivers, 14.II.2000, leg. H. Zettel (238). **Paratypes** (adults only): same data as holotype, 9 ♂♂ 13 ♀♀ brach., 1 larvav V (NHMW, UPLB, 3♂ 3♀ NCTN).

**Description** (based on brachypterous specimens): Generally a rather small, oval species, which dorsally light brown with dark spots. Dimensions: Length ♂ 1.92, s 0.049 {1.95}, ♀ 1.96, 0.038; width ♂ 1.07, 0.019 {1.08}, ♀ 1.09, 0.021; width of head ♂ 0.74, 0.022 {0.73}, ♀ 0.75, 0.023; synthlipsis ♂ 0.31, 0.008 {0.29}, ♀ 0.32, 0.013; width of eye ♂ 0.24, 0.009 {0.25}, ♀ 0.25, 0.016; width of pronotum ♂ 0.73, 0.025 {0.70}, ♀ 0.73, 0.020; ocular index ♂ 1.42, 0.088 {1.32}, ♀ 1.45, 0.138.



Figs. 28 - 37: *Micronecta melanopardala adiaphana* ssp.n., paratypes, (28 - 34, 36 - 37) male, (35) female: (28) right paramere, (29) left paramere, (30) foreleg, (31) apex of pala, (32) right part of abdominal tergite VI, (33) strigil, (34) free lobe of left part of tergite VIII, (35) receptaculum seminis, (36) prestrigilar flap, (37) median lobe of abdominal sternite VII; scales = 0.1 mm, except for (33) scale = 0.05 mm.

Colour (Fig. 4): In dorsal view, pattern basically as in the nominate subspecies but distinctly reduced and less clear. Head yellow to light brown, frons infuscated, eyes grey. Pronotum light brown (due to underlying structures usually appearing medium brown) with rather large but vague darker markings laterally, these hardly discernible in most dry specimens. Scutellum castaneous to reddish. Hemelytra medium brown with the usual hyaline stripes at base of clavus and base of membrane of right hemelytron. Clavus light to medium brown with lateral margins narrowly yellowish. Corium yellowish with one small black dot and one larger reddish spot in basal angle; one broad, interrupted, transverse dark band just posterior of caudal apices of clavus, reaching costal margin. Interruptions giving the transverse band a zigzag appearance. Right membrane dark brown with one central yellowish spot, left membrane hyaline in medial half, brown in lateral half. Costal margin and embolium yellow except where dark transverse band reaching lateral margin of hemelytron. Venter medium brown. Legs yellowish.

Dorsal surface shiny, hemelytra densely pitted, with very small spines in the pits. Ratio length/width of body 1.8. Head slightly wider than pronotum, synthlipsis 1.3 times width of eye. Pronotum dorsally nearly flat with lateral angles curving ventrad, 2.9 - 3.9



times as wide as long, usually 2.9 - 3.1. Spines laterally on abdominal segments: V 2 short, 1 long; VI 2 short, 2 long, bristle-like; VII 2 short, 2 long; VIII 5 short, 2 very long, hair-like.

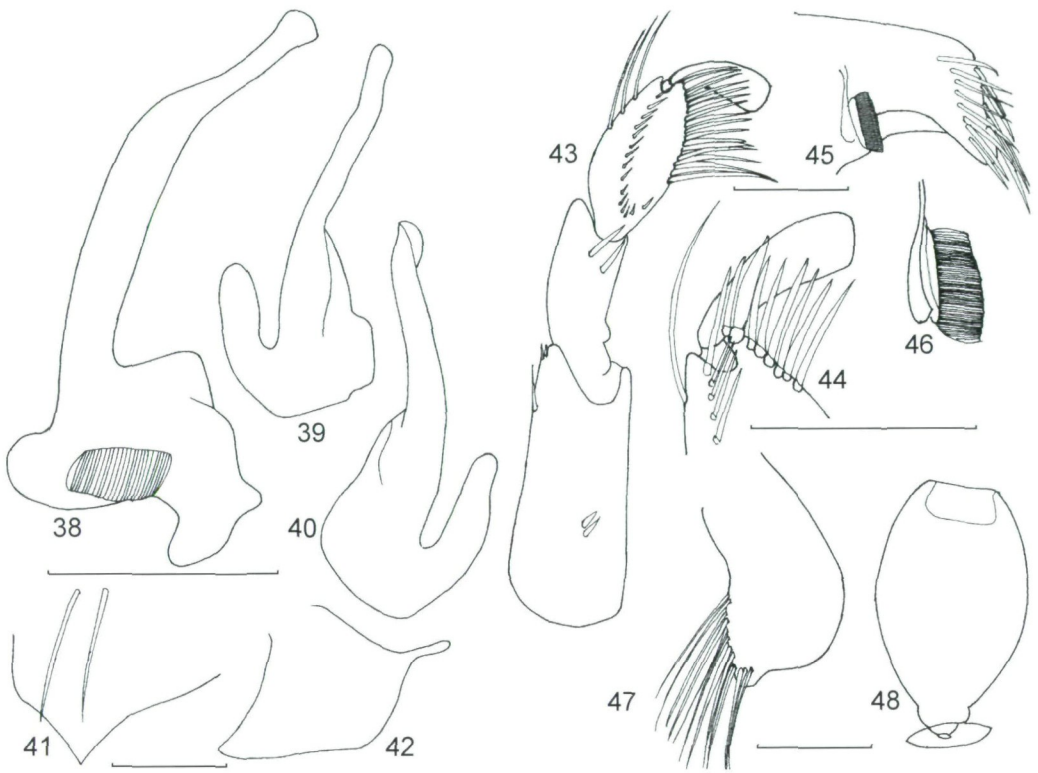
**Male:** Forefemur with four to five spines in middle of length near ventral margin (Fig. 30); one dorsally in apical quarter, two, smaller, apicodorsally and one subapical about halfway between dorsal and ventral margin. Foretibia with three subapical spines ventrally; pala with three long hairs dorsally, dorsal palmar row with about 15 short bristles and one longer bristle apically, ventral palmar row with about 15 long bristles of which penultimate bristle apically more strongly developed (Fig. 31). Claw a rather small, nearly parallel-sided strap. Prestrigilar flap (Fig. 36) with bluntly rounded mediocaudal apex; strigil (Figs. 32, 33) elongate with about 35 teeth in one row. Abdominal sternite VII with two long bristles, its submedial caudal lobe short with rather acute apex (Fig. 37). Free lobe on left part of tergite VIII with median margin curved toward caudal margin (Fig. 37); caudal margin sinuate; lateral margin with small caudal process and about 15 bristles. Shaft of right paramere (Fig. 28) constricted at base, with some scattered spinules, apical half somewhat narrowed; pars stridens with about 22 ribs. Left paramere broad at base, apical part of shaft narrowed and somewhat sinuate, with some scale-like structures at apex (Fig. 29).

**Female:** Spines on foreleg as in male. Receptaculum seminis mushroom-shaped (Fig. 35).

**Comparative notes** (see also under *M. m. melanopardala*): The transverse band on hemielytra in the brachypterous form reminds somewhat of *Micronecta transversa* CHEN & NIESER (in press) from Thailand. This species is slightly smaller (mean length 1.86 mm) and the transverse dark mark on corium is relatively larger and more solid. Moreover the pronotum of the brachypterous form of *M. transversa* is distinctly more reduced, four times as wide as long and in males both parameres have a distinctly broader shaft. *Micronecta melanopardala melanopardala* sp.n. is structurally very similar, although it has much more distinctive and elaborate dark markings. Some measurements and ratios differ due to the fact that the nominate subspecies is represented by macropterous specimens and subspecies *adiaphana* by brachypters. There are slight differences in the numbers of spines laterally on abdominal segments V and VI. The medio-caudal lobe of sternite VII in males of *M. m. adiaphana* has smooth margins whereas in *M. m. melanopardala* the margins are slightly serrate and its apex is slightly more acute and produced. Other male characteristics are identical (comp. Figs. 17 - 23, 25, 26 and 28 - 34, 36).

As the differences are only small and few and the male structural characteristics are virtually identical we consider these forms to belong to the same species. However, due to the striking difference in pattern combined with the small structural differences and the apparently different areas of distribution, we consider them to be separate subspecies. Additional samples from islands between Luzon and Leyte and samples containing both, brachypterous and macropterous, specimens are needed for a definitive clarification of the status of these two forms.

**Etymology:** *Adiaphanos* (Greek compound adjective: "diaphanos" meaning clear or translucent combined with "a" meaning not) referring indistinct dorsal pattern compared to the nominate subspecies.



Figs. 38 - 48: *Micronecta pacheta* sp.n., paratypes, (38 - 47) male, (48) female: (38) right paramere, (39, 40) different views of left paramere, (41) median lobe of abdominal sternite VII, (42) prestrigilar flap, (43) foreleg, (44) apex of pala, (45) right part of abdominal tergite VI, (46) strigil, (47) free lobe of left part of tergite VIII, (48) receptaculum seminis; scales = 0.1 mm.

### *Micronecta pacheta* sp.n. (Figs. 2, 38 - 48)

**Type material:** **Holotype** macropterous male with apex of abdomen and genitalia glued separately on cardboard (UPLB): PHILIPPINES, N. Samar, San Joaquin, Lologayan Falls, 27.I.2000, leg. H. Zettel (219a).

**Paratypes:** same data as holotype, 18 ♂♂, 18 ♀♀, all macropterous (NHMW, UPLB, 4 ♂♂, 4 ♀♀ NCTN).

**Description** (based on macropterous specimens): Generally a rather small, brown, parallel-sided species (Fig. 2). Dimensions. Length ♂ 1.92, s 0.019 {1.92}, ♀ 1.96, 0.031; width ♂ 0.95, 0.030 {0.93}, ♀ 0.96, 0.053; width of head ♂ 0.72, 0.011 {0.72}, ♀ 0.71, 0.022; synthlipsis ♂ 0.32, 0.008 {0.33}, ♀ 0.33, 0.013; width of eye ♂ 0.24, 0.009 {0.25}, ♀ 0.25, 0.013; width of pronotum ♂ 0.75, 0.012 {0.76}, ♀ 0.76, 0.041; ocular index ♂ 1.63, 0.059 {1.69}, ♀ 1.68, 0.080.

**Colour:** Head yellow, eyes grey. Pronotum medium brown without markings except for yellowish lateral angles and posterior margin indistinctly yellowish. Scutellum castaneous, in some specimens with reddish spot medially at base. Hemielytra medium brown with the usual hyaline stripes at base of clavus and base of membrane of right

hemielytron; costal margin and inner margin of embolium yellow. Corium with vague indications of longitudinal stripes, only visible when light shining through. Embolar groove with continuous longitudinal dark band. Venter brown, metasternal xiphus, medial area of thoracic venter and apex of abdominal venter somewhat lighter. Legs yellowish.

Dorsal surface smooth and shiny, hemielytra rather sparsely beset with very small spines. Ratio length/width of body 2.0. Head slightly narrower than pronotum, synthlipsis 1.3 times width of eye. Pronotum dorsally convex, 2.2 - 2.3 times as wide as long. Spines laterally on abdominal segments: V 2 short, 1 long; VI 3 short of which 1 bristle-like, 2 long, bristle-like; VII 2 short, 2 long, bristle-like; VIII 4 short, 2 very long, hair-like. Measurements of leg segments see Table 1.

Male. Forefemur (Fig. 43) with two short spines in basal third, one rather long spine dorsally in apical third and two short spines apically. Foretibia with two large spines in apical third; pala with three long hairs dorsally, dorsal palmar row consisting of about 15 short bristles and one apically longer and thicker bristle, ventral palmar row consisting of about 16 bristles of which basal one longest and penultimate one distinctly thicker (Fig. 44). Claw (Fig. 44) a simple strap, wider apically than at base. Prestrigilar flap (Fig. 42) with sharp mediocaudal angle; strigil elongate with about 55 teeth in one row. Abdominal sternite VII with two long bristles, its submedial caudal lobe short, with rather acute apex (Fig. 41). Free lobe on left part of tergite VIII with median margin broadly curved toward caudal margin (Fig. 47) lateral margin with small caudal process and with 12 - 20 bristles. Right paramere apically expanded, knob-like (Fig. 38); pars stridens with about 25 ribs. Left paramere with comparatively narrow, parallel-sided shaft (Fig. 39).

Female: Spines and bristles of foreleg essentially as in male. Receptaculum seminis urn-shaped (Fig. 48).

**Comparative notes:** For comparison with *M. abra* sp.n. see under that species. The right paramere, with its knob-like apex and rather coarse ribs on pars stridens, is characteristic compared with other Southeast Asian species of *Micronecta*. The yellowish costal margin without dark patches and the uniformly dark embolar groove (Fig. 2) are also characteristic.

**Etymology:** Pachetos (Greek adjective meaning thick, associated with the verb paxyno meaning to thicken) referring to the slightly swollen apex of right paramere.

### *Micronecta skutalis* NIESER & CHEN, 1999 (Fig. 16)

*Micronecta skutalis* NIESER & CHEN, 1999: 86-87.

**Material examined:** PHILIPPINES: Palawan, Brook's Point, Mate, 31.III.1994, leg. H. Zettel (54), 5 ♂♂, 4 ♀♀ macr. (NHMW, UPLB).

**Distribution:** East Malaysia: Sabah (type series); first record for the Philippines: Palawan.

**Note:** Differs from *M. abra* sp.n. which is of the same size, e.g., by the right paramere which in *M. skutalis* is not widened apically (Fig. 16).

Tab. 1: Leg measurements of *Micronecta* species in millimetres. The measurement of the "fore-tibia" in females refers to the joint tibia and tarsus.

	femur	tibia	tars1	tars2	claw		femur	tibia	tars1	tars2	claw
<i>M. abra</i> :						<i>M. melanopardala adiaphana</i> :					
foreleg ♂	0.20	0.08	0.12			foreleg ♂	0.28	0.14	0.14		
middle leg ♂	0.51	0.16	0.26		0.12	middle leg ♂	0.68	0.22	0.33		0.19
hind leg ♂	0.31	0.27	0.26	0.11	0.09	hind leg ♂	0.46	0.35	0.40	0.17	0.12
foreleg ♀	0.20	0.19				foreleg ♀	0.25	0.26			
middle leg ♀	0.50	0.16	0.25		0.13	middle leg ♀	0.66	0.22	0.33		0.18
hind leg ♀	0.33	0.27	0.26	0.11	0.11	hind leg ♀	0.44	0.34	0.38	0.17	0.12
<i>M. melanopardala melanopardala</i> :						<i>M. pacheta</i> :					
foreleg ♂	0.28	0.14	0.14			foreleg ♂	0.25	0.12	0.14		
middle leg ♂	0.66	0.20	0.32		0.16	middle leg ♂	0.63	0.21	0.29		0.19
hind femur ♂	0.44	0.34	0.36	0.15	0.12	hind leg ♂	0.46	0.35	0.38	0.14	0.09
foreleg ♀	0.27	0.26				foreleg ♀	0.26	0.27			
middle leg ♀	0.69	0.23	0.34		0.18	middle leg ♀	0.64	0.22	0.31		0.20
hind leg ♀	0.47	0.35	0.39	0.16	0.16	hind leg ♀	0.45	0.37	0.39	0.17	0.10

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