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Short communication

Newly recorded genus *Pantilius* Curtis (Hemiptera: Heteroptera: Miridae) from the Korean Peninsula, with a key to the world *Pantilius* speciesJunggon Kim^a, WonGun Kim^b, Wang-Hee Lee^{c,*}, Sunghoon Jung^{a,*}^a Laboratory of Systematic Entomology, Department of Applied Biology, College of Agriculture and Life Sciences, Chungnam National University, Daejeon, South Korea^b 207–404, Dogok Rexle Apartment 221, Seolleung-ro, Gangnam-gu, Seoul, South Korea^c Department of Biosystems Machinery Engineering, College of Agriculture and Life Sciences, Chungnam National University, Daejeon, South Korea

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ABSTRACT

A genus, *Pantilius* Curtis (Hemiptera: Heteroptera: Miridae: Mirinae), is reported for the first time from the Korean Peninsula, based on finding a species of *Pantilius hayashii* Miyamoto and Yasunaga, 1989, which was hitherto known only from Honshu, Japan. The morphological information, such as description and diagnosis, is presented with photographs and illustrations of adult habitus and male genitalia.

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Introduction

One of the mirine bug genera, *Pantilius* Curtis can be recognized as follows: large body, robust, and subparallel, with a dorsal surface covered with dark, short, stiff hairs and silvery caducous pubescences (Yasunaga 1992). The genus *Pantilius* is known by three Palearctic members: *Pantilius gonocerooides* (Rueter 1903), *Pantilius hayashii* (Miyamoto and Yasunaga 1989), and *Pantilius tunicatus* (Fabricius 1781) (Schuh 2002–2013). Among the three species, *P. tunicatus* shows a wide range of distribution, including almost entire areas of Europe, as well as Asian portions of Russia. However, two remaining species occur only in limited areas; *P. gonocerooides* in Himalayan regions, including Nepal and Tibet, and *P. hayashii* only in central Honshu, Japan (Yasunaga 1992).

In this paper, the genus *Pantilius* is recorded from the Korean Peninsula for the first time based on discovery of a species of *P. hayashii* (Miyamoto and Yasunaga 1989). The morphological

information, such as re-description and diagnosis, is presented based on two Korean materials, with photographs and illustrations of adult habitus and male genitalia.

Materials and methods

Photographs of specimens were taken by a Leica M165C microscope and measurements were taken using software from the same microscope. To observe male genitalia, the genital segment was detached and then soaked and boiled in 10% KOH solution at 70°C for 5 min until transparent. After it was placed in distilled water, it was dissected for examination. All measurements are given in millimeters (mm). Terminology mainly follows Yasunaga (1991) and Braimah et al (1982). Specimens were deposited at the Laboratory of Systematic Entomology, Chungnam National University (CNU), Daejeon, Korea. Distribution with an asterisk means its new record in this area.

Taxonomic accounts

Genus *Pantilius* Curtis, 1833 어깨장님노린재속 (신칭)

Pantilius Curtis, 1833: 197. Type species by monotypy: *Cimex tunicatus* (Fabricius 1781).

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Conometopus Fieber, 1858: 304 (junior homonym of *Conometopus* Blanchard, 1851, Orthoptera; syn. Puton, 1869:21). Type species by monotypy: *Cimex tunicatus* (Fabricius 1781).

Diagnosis. Recognized by vertex with distinct longitudinal groove (Figure 1C; arrow); frons roundly triangular in dorsal view (Figure 1C), projecting above base of tylus in lateral view (Figure 1B); second antennal segment twice as long as third and fourth combined (Figure 1A); both sides of pronotum carinate (Figures 1A and 1E); first tarsal segment of hindtarsus not longer than or as long as second tarsal segment (Figure 1D).

***Pantilius (Coreidomiris) hayashii* (Miyamoto and Yasunaga 1989)**
어깨장님노린재 (신칭) (Figures 1 and 2)

Pantilius hayashii (Miyamoto and Yasunaga 1989): 258; Yasunaga 1990: 673.

Pantilius (Coreidomiris) hayashii (Yasunaga 1992): 112 (as subgenus of *Pantilius*). Type species by original designation: *Pantilius gonoceroides* (Reuter 1903).

Diagnosis. Recognized by longitudinal groove on vertex much shorter than eye length; 1st antennal segment longer than width of head; pronotum as wide as width of hemelytra, humeral angle of pronotum strongly projecting and curving upwardly; femur yellow with dark spots (Figure 1A); left paramere with somewhat large sensory lobe and rounded hypophysis (Figure 2A); right paramere straight with one process apically (Figure 2B); vesica membranous with one hook-shaped spicule (*hss*), two rounded saw-shaped lobe-sclerites (*ssls*) and one elongated rod-shaped sclerite (*rss*) with small spinules (Figure 2C).

Re-description. MALE: Body elongate-oval, length 9.50–9.62. FEMALE: As in male (Yasunaga 1992).

Coloration. Generally brown with dark brown spots. Head: generally brown with dark spots; compound eyes reddish dark brown; antennal socket dark brown; antennae generally reddish brown, apical part of second antennal segment dark brown, basal part of third antennal segment pale brown, apical part of third antennal segment dark brown, 1/3 basal part of fourth antennal segment pale brown; tylus pale brown; rostrum almost pale brown, apex of fourth rostral segment dark brown. Thorax: pronotum generally pale brown with dark spots, apex of posterior part of pronotum reddish brown, margin of pronotum dark brown; collar pale brown; callus pale brown; mesoscutellum almost dark brown, scutellum entirely brown with dark spots except for dark apex;

ostiole peritreme pale brown; hemelytra almost brown with dark spots; inner part of corium pale brown; embolial margin pale brown; cuneus pale brown except for dark apex, with longitudinal reddish stripe in inner part; membrane grayish dark brown with reddish veins; legs generally yellowish brown with dark spots; apical part of femora reddish brown; apical part of tibia reddish brown, tarsus almost pale brown; 1/3 apical part of third tarsal segment dark brown, claw pale brown. Abdomen: almost pale brown with dark spots in each abdomen segment in two rows in ventral view.

Surface and vestiture. Body covered with short silvery pubescences; head covered with sparsely short pubescences; antennae covered with densely short dark pubescences; pronotum covered with short silvery pubescences; scutellum covered with short silvery pubescences; hemelytra covered with short silvery pubescences.

Structure. Head: Ocelli absent; vertex width about half as long as first antennal segment, with distinct longitudinal groove in middle; frons roundly triangular in dorsal view, projecting above base of tylus in lateral view; antennal socket prominent; first and second antennal segment relatively thick, second antennal segment twice as long as third and fourth combined, proportion of first to fourth antennal segments 1.3:4.0:1.3:0.8; rostrum not reaching to mid-coxae, proportion of first to fourth rostral segments 0.6:0.5:0.3:0.5.

Thorax: Pronotum carinate in lateral part; collar length as thick as width of third antennal segment; scutellum equilateral; lateral margin of hemelytra slightly rounded, cuneal fracture slightly developed; legs generally slender. Abdomen: rounded, almost reaching to apex of corium of hemelytra. GENITALIA: gonopore somewhat long and round with curved parameres (Figures 2A–B); left paramere with somewhat large sensory lobe and rounded hypophysis (Figure 2A); right paramere with one process apically (Figure 2B); vesica membranous with one hook-shaped spicule (*hss*), two rounded saw-shaped lobe-sclerites (*ssls*) and one elongated rod-shaped sclerite (*rss*) with small spinules (Figure 2C).

Measurements (in mm). Male (n = 2) Body length, tylus–apex of membrane: 9.50–9.62; head length, excluding collar: 0.72–0.75; head width, including compound eyes: 1.29–1.31; vertex width: 0.58–0.61; 1st antennal segment length: 1.32–1.42; 2nd antennal segment length: 3.90–4.22; 3rd antennal segment length: 1.36 (1 ind. missing); 4th antennal segment length: 0.86 (1 ind. missing); total antennal length: 7.44–5.64 (1st to 2nd); 1st rostral segment length: 0.60–0.70; 2nd rostral segment length: 0.51–0.60; 3rd rostral

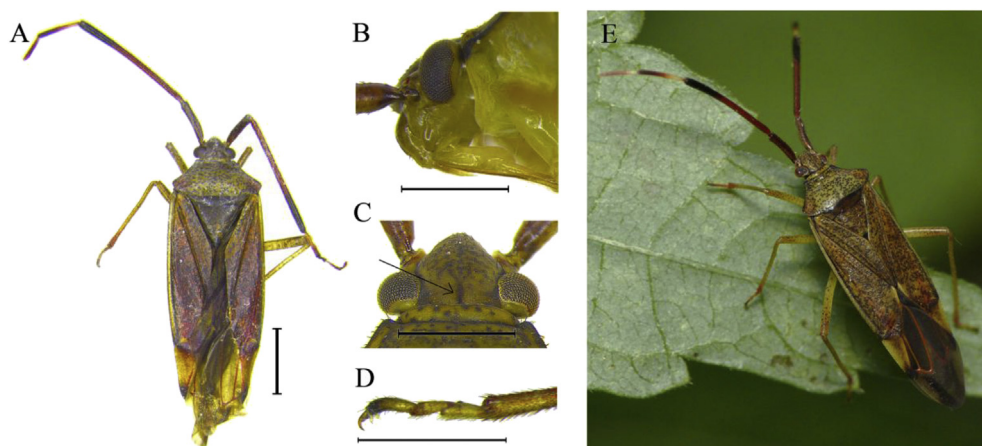


Figure 1. *Pantilius hayashii* Miyamoto and Yasunaga, 1989. A, male habitus; B, head in lateral view; C, ditto, in dorsal view (arrow: longitudinal groove); D, hindtarsus; E, live male. <scale bars: A, 2 mm; B-D, 1 mm>.

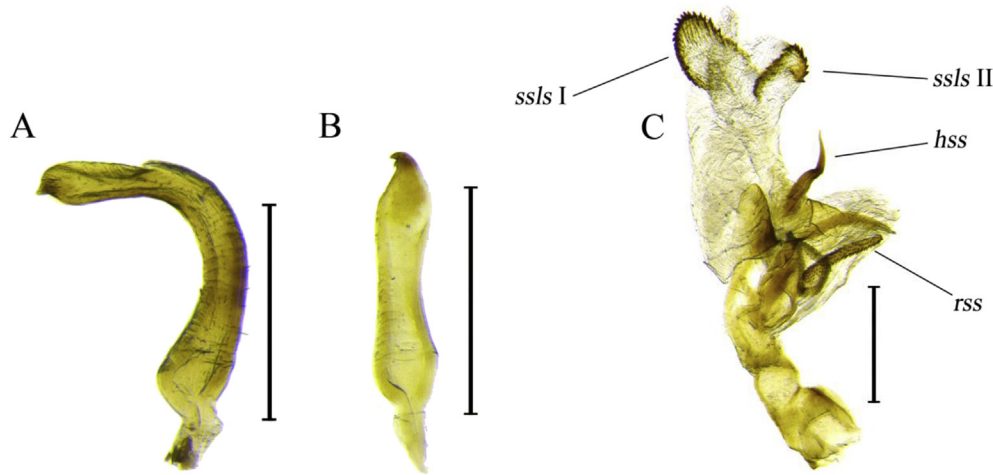


Figure 2. Male genitalia and parameres of *Pantilius hayashii* Miyamoto and Yasunaga, 1989. A, left paramere; B, right paramere; C, vesica; hss, hook-shaped spicule; ssls, saw-shaped lobe-sclerites; rss, rod-shaped sclerite. <scale bar: 0.5 mm>.

segment length: 0.35–0.38; 4th rostral segment length: 0.53–0.57; total rostral length: 1.99–2.25; collar length: 0.14–0.16; anterior pronotal maximal width (straight): 1.12–1.18; mesal pronotal length: 1.09–1.28; posterior pronotal maximal width (straight): 2.72–2.74; anterior scutellum width: 1.58–1.69; mesal scutellum length: 1.91–1.94; outer embolial margin length: 4.61–4.84; outer cuneal margin length: 1.60–1.71; maximal width across hemelytron: 1.35–1.44; foreleg (femur: tibia: tarsus): 1.79–1.89:1.99–2.10:0.67–0.73; midleg (femur: tibia: tarsus): 2.11–2.19:2.26–2.63:0.74–0.78; hindleg (femur: tibia: tarsus): 2.59–2.83:3.81–3.91:0.86–0.90.

Specimen examined. [CNU] 2♂, Geumcheon-ri, Daab-myeon, Gwangyang-si, Jeollanam-do, Korea, by Light trap, 9.x.2015, WG Kim.

Distribution. Korea* (new record), Japan.

Remarks. This species has been attracted to light trap.

Discussion on distribution. This species was known to have a limited distribution as endemic in central Honshu, Japan (Yasunaga 1992), but it is thought to have broader distributions, including continental areas.

Key to the world Pantilius species

1. Longitudinal groove on vertex as long as eye length, 1st antennal segment as long as width of head, humeral angle of pronotum rounded, vesica without any spicule..... *P. tunicatus*
- Longitudinal groove on vertex much shorter than eye length, 1st antennal segment longer than width of head, humeral angle of pronotum strongly projecting and curving upwardly; vesica with long sharp spicule 2
2. Pronotum wider than width of hemelytra; femur entirely yellow without dark spots..... *P. gonoceroides*

- Pronotum as wide as width of hemelytra; femur yellow with dark spots *P. hayashii*

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